



18th IFHIMA International Congress Tokyo 2016

Proceedings

Wednesday, Oct. 12 - Friday, Oct. 14, 2016
Tokyo International Forum



18th World Congress of the International Federation of Health Information Management Association (IFHIMA 2016) was held in Tokyo from October 12 to 14, 2016. 278 members from 43 countries attended the meeting, and 102 papers were presented at the oral sessions and 20 posters were also presented, beside 1 special lecture, 4 special sessions and an International Symposium with 6 symposiasts. In addition to those, on the Summit of Mortality Statistics, 18 invited speakers from different underdeveloped countries presented papers. The relevance of the IFHIMA 2016 theme; “A New Chapter in Global HIM begins: Application, Implementation, and Dissemination” was reflected in a diverse range of papers that were presented. We would like to thank all those who have contributed to producing such a comprehensive conference and proceedings and thus led to the development of the HIM across the world.

It is an honor for me to have the chance to edit the proceedings. I enjoyed working in cooperation with the program committee to call for papers, review papers and finalize papers to be included in the proceedings. About 100 people were invited to referee papers and of these, 54 people actually reviewed papers. These reviewers represent several different countries, which serves to bring a broad set of perspectives to the research arena. I would like to thank all these reviewers for their time and effort in reviewing the papers. Editing the proceedings for an international conference such as IFHIMA is a rather complex process that relies on the goodwill of the committee members. Unfortunately we were not able to include full papers of all abstracts submitted initially, but we believe that we would be able to share many ideas and knowledge by the papers included in this.

I cannot express enough my feeling of appreciation to all the members of the secretariat for the management of the organizing the meeting, editing the proceedings and so many other things beyond my imagination.

The IFHIMA 2016 meeting and its proceedings are a credit to the whole International society involved in HIM, and everyone should be proud of the outcome.

Osahiro Takahashi, M.D.

Chairman of The 18th IFHIMA International Congress Tokyo 2016 Program Committee

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Welcome Message from the IFHIMA President



Angelika Haendel

IFHIMA President

Dear Colleagues and Friends,

On behalf of the International Federation of Health Information Management Associations (IFHIMA) it is my honour to cordially invite you to the 18th IFHIMA World Congress to be held in Tokyo, Japan, from October 12th – 14th, 2016.

The congress theme “A New Chapter in Global HIM Begins Application, Implementation and Dissemination” reflects the growing importance of Health Information Management (HIM) globally. The rapid technological progress in the health care sector brings many challenges to the HIM profession across the globe. However, many developing countries do not yet have an adequately trained HIM workforce. The congress program will be rich in presenting the most up-to-date Health Information Management practices as well as addressing the special needs of Health Information Professionals from developing countries.

The IFHIMA congresses are major events in the field of Health Information Management bringing together practitioners, students, and other professionals interested in Health Information Management from all over the world. IFHIMA is the voice of international Health Information Management, and its international congresses are the flagship events in this area.

The IFHIMA 2016 Congress promises to be an unforgettable event. International leaders and renowned speakers of the discipline will present the most recent advances in Health Information Management. Moreover, the congress will provide a key networking and educational interface for colleagues from healthcare institutions, industry, universities, education programmes and independent research organizations to come together to learn, to exchange experiences and to develop enduring friendships.

We look forward to a memorable congress.

See you in Tokyo in October 2016!

Yours sincerely,



Angelika Haendel

IFHIMA President

Welcome Message



Dr. Toshio Oi

*Honorary Chairman of
Japan Society of
Health Information
Management*



Dr. Tsuneo Sakai

*President of Japan
Hospital Association*

On behalf of the 2016 18th IFHIMA Congress Organizing Committee, we would like to extend our sincere invitation for the 18th Congress of the International Federation of Health Information Management Associations (IFHIMA) scheduled to be held at the Tokyo International Forum from October 12 (Wednesday) to October 14 (Friday), 2016.

The International Federation of Health Information Management Associations (IFHIMA) was established in 1968 as a forum for academic exchange among health information managers from countries around the world. The Japan Society of Health Information Management (JHIM) that is one of the projects of the Japan Hospital Association joined the IFHIMA in 2006 representing Japan. It has served as the executive officer for the Southeast Asia region since 2010, and this year marks the second term for those duties.

The IFHIMA Congress is held every three years in one of the major member countries, and the previous congress was held in Montreal, Canada in 2013. The upcoming congress will be the 18th. It will be the second time that the congress has been held in Asia and the first time that it has been held in Japan.

The main theme of the congress is “A New Chapter in Global HIM Begins: Application, Implementation and Dissemination” and symposiums will be held relating to this theme. Over 1,000 health information managers from over 45 countries and regions around the world will gather in Tokyo to exchange views on the current state of affairs in their respective countries. We also plan to have active discussions on the future outlook for health information management.

The congress will be held on the verge of the birth of the 11th International Statistical Classification of Diseases and Related Health Problems (ICD-11) that is the international statistical standard for causes of death and disease released by the World Health Organization (WHO). WHO high officials will be invited to deliver a keynote address and the Japanese medical industry will work together to make significant contributions to the ICD-11 revisions through academic support in accordance with the positioning of 2016 as a year of important preparations for the successful launch of ICD-11.

Furthermore, the WHO-FIC Network Annual Meeting and the 42nd Annual Meeting of Japan Society of Health Information Management are scheduled to be held at the same time as the congress. As the congress will be a monumental one that will provide a forum for the managers preparing to launch ICD to meet in one place with ICD users from both Japan and overseas, we are confident that it will also serve as a landmark in health information management history.

We very much look forward to your participation in the 18th IFHIMA Congress and to welcoming you to Tokyo.

Sincerely,

A handwritten signature in black ink, consisting of the characters '大井 利夫' (Ooi Toshio).

Dr. Toshio Oi

Honorary Chairman of Japan Society of Health Information Management

A handwritten signature in black ink, consisting of the characters '酒井 恒雄' (Sakai Tsuneo).

Dr. Tsuneo Sakai

President of Japan Hospital Association

Date Tuesday, Oct. 11 - Saturday, Oct. 15, 2016

(Main Conference: Wednesday, Oct. 12 - Friday, Oct. 14, 2016)

Venue Tokyo International Forum (5-1 Marunouchi 3-chome, Chiyoda-ku, Tokyo, Japan)

Main Theme A New Chapter in Global HIM Begins: Application, Implementation and Dissemination

Organizer The 18th IFHIMA International Congress Tokyo 2016 Organizing Committee

Co-hosted by Japan Hospital Association (JHA)
Japan Society of Health Information Management (JHIM)

In Association with Ministry of Health, Labour and Welfare, Japan
Science Council of Japan
Japan Medical Association (JMA)
Tokyo Convention & Visitors Bureau (TCVB)
All Japan Hospital Association (AJHA)
Association of Japanese Healthcare Corporations (AJHC)
Japan Psychiatric Hospitals Association
Foundation for Promotion of Medical Training (PMET)
Japan Council for Quality Health Care (JQ)
Japan Association of Healthcare Management Consultants (JAHMC)
Japan Association for Medical Informatics (JAMI)
Japan Society for Healthcare Administration (JSHA)

Co-sponsored by Japan Hospital Cooperative, Inc.
Japan Society of Ningen Dock
Japan Health Information Manager Association (JHIMA)
Japan Hospital Management Administrator Association (JHMAA)

In Cooperation with Collaborating Centre for the WHO-FIC in Japan
Japan National Tourism Organization (JNTO)

Joint Meeting WHO-FIC Network Annual Meeting 2016 Tokyo
WHO ICD-11 Revision Conference in Tokyo, Japan
The 42nd Annual Meeting of Japan Society of Health Information Management

Opening Ceremony Date: Wednesday, Oct. 12, 2016
Venue: Hall A, Tokyo International Forum
Organizer: The 18th IFHIMA International Congress Tokyo 2016
WHO ICD-11 Revision Conference in Tokyo, Japan
The 42nd Annual Meeting of Japan Society of Health Information Management

GALA Dinner

Date: Thursday, Oct. 13, 2016
 Venue: Hall E, Tokyo International Forum
 Organizer: The 18th IFHIMA International Congress Tokyo 2016
 WHO-FIC Network Annual Meeting 2016 Tokyo
 WHO ICD-11 Revision Conference in Tokyo, Japan
 The 42nd Annual Meeting of Japan Society of Health
 Information Management

Education Day

Date: Tuesday, Oct. 11, 2016
 Venue: Hall D7, Tokyo International Forum

Hospital Tour

Date: Saturday, Oct. 15, 2016
 Destination: Kitasato University Hospital
 Showa University Koto Toyosu Hospital
 Center Hospital of the National Center for Global Health and Medicine

The Number of Paper

Oral Session: 135 titles (Including Opening Session, Special Lecture, Special Session,
 International Symposium, Summit on Mortality Statistics)
 Poster Session: 20 titles

Registration

Overseas	205
Japan	73
TOTAL	278

Countries

Australia	Cook Islands	Israel	Mauritius	Sierra Leone	United Arab Emirates
Bangladesh	Fiji	Italy	Netherlands	Sri Lanka	United Kingdom
Barbados	Germany	Jamaica	New Zealand	South Africa	United States
Belgium	Ghana	Japan	Nigeria	Spain	
Bosnia and Herzegovina	India	Kenya	Oman	St. Lucia	
Botswana	Indonesia	Kiribati	Pakistan	Switzerland	
Canada	Iran	Korea	Philippines	Tanzania	
China	Ireland	Kuwait	Saudi Arabia	Thailand	(in Alphabetical order)
TOTAL	43 countries				

IFHIMA International Congress

NUMBER	YEAR	PLACE	COUNTRIES	NUMBER	YEAR	PLACE	COUNTRIES
1 st	1952	London, England	9	10 th	1988	Dallas, USA	16
2 nd	1956	Washington DC, USA	12	11 th	1992	Vancouver, Canada	18
3 rd	1960	Edinburgh, Scotland	17	12 th	1996	Munich, Germany	36
4 th	1963	Chicago, USA	18	13 th	2000	Melbourne, Australia	27
5 th	1968	Stockholm, Sweden	19	14 th	2004	Washington DC, USA	39
6 th	1972	Sydney, Australia	24	15 th	2007	Seoul, Korea	27
7 th	1976	Toronto, Canada	23	16 th	2010	Milan, Italy	37
8 th	1980	The Hague, The Netherlands	34	17 th	2013	Montreal, Canada	27
9 th	1984	Auckland, New Zealand	17	18 th	2016	Tokyo, Japan	43

* based on the information as of 2016

Opening Ceremony

Wednesday, 12 Oct. 9:30 – 12:00 / Hall A

TIME	TITLE	PRESENTER
9:30–10:00	Opening (Gagaku (Japanese court music))	
10:00–10:05	Opening Address	Toshio Oi (Congress President, the 18th IFHIMA International Congress Tokyo 2016)
10:05–10:20	Remarks from Host	Noriko Furuya (Parliamentary Secretary for Health, Labour and Welfare) Angelika Haendel (President, IFHIMA) Sousuke Kimura (Congress President, The 42th Annual Meeting of the JHIM)
10:20–10:30	Remarks from Guest	Yoshitake Yokokura (President, Japan Medical Association)
10:30–10:45	Remarks from WHO	Margaret Chan (Director-general, the World Health Organization) Introducer: Tuneo Sakai (President, Japan Hospital Association)
10:45–11:00	Break	
11:00–11:30	Opening Session (1)	Chair: Hiroki Nakatani (Former Assistant Director-General, World Health Organization) Eric de Roodenbeke (CEO, International Hospital Federation)
11:30–12:00	Opening Session (2)	Chair: Ties Boerma (Director, Department of Information, Evidence and Research, World Health Organization) James Harrison (Chair of Topic Advisory Group for External Causes & Injuries, WHO-FIC) Stefanie Weber (Head of CC in Germany, WHO-FIC) Christopher Chute (RSG Chair, WHO-FIC)

Oct.
12
(Wed)

Room Floor	Hall A 1F	Hall D5 5F	Hall D7 7F	Hall D6 Foyer 6F			
9:00	Opening Ceremony Opening Session				9:00		
9:30					9:30		
10:00					10:00		
10:30	10:30						
11:00	11:00						
11:30	11:30						
12:00					12:00		
12:30					12:30		
13:00	13:00-15:00 Summit on Mortality Statistics Chair: Osahiro Takahashi	13:00-14:40 Oral Session 1 Chair: Tetsu Tsukamoto	13:00-14:40 Oral Session 3 Chair: Fatima Al Baloushi	Poster Mounting	13:00		
13:30					13:30		
14:00					14:00		
14:30					14:30		
15:00					15:00		
	15:20-17:00 Summit on Mortality Statistics Chair: Osahiro Takahashi	15:20-16:40 Oral Session 2 Chair: Francis Kirubakaran	15:20-16:40 Oral Session 4 Chair: Kazuo Matsumoto	Poster Display			
15:30					15:30		
16:00					16:00		
16:30					16:30		
17:00					17:00		

Program at Glance

**Oct.
13
(Thu)**

Room Floor	Hall C 4F	Hall D5 5F	Hall D7 7F	D6 Foyer 6F			
9:00	9:00-9:50 Special Lecture (Hall A/Hall C: Satellite) Chair: Tsuneo Sakai [SL] Hussein Albishi, Marci MacDonald	9:00-10:20 Oral Session 7 Chair: Makoto Anan	9:00-10:20 Oral Session 11 Chair: Tetsu Tsukamoto	Poster Display	9:00		
9:30					9:30		
10:00			10:00				
10:30	10:30-11:50 Oral Session 5 Chair: Sabu Karakka Mandapam	10:30-11:50 Oral Session 8 Chair: Amanda Burns	10:30-11:50 Oral Session 12 Chair: Naoko Kurabe		10:30		
11:00					11:00		
11:30					11:30		
12:00					12:00		
		12:00-13:00 Sponsored Seminar 1 Sponsored by Sanofi K.K.	12:00-13:00 Sponsored Seminar 2 Sponsored by CHUGAI PHARMACEUTICAL CO., LTD.				
					12:30		
12:30							
13:00	13:00-15:00 Special Session Chair: Angelika Haendel [SS-1] Angelika Haendel [SS-2] Phyllis J. Watson [SS-3] Margaret A. Skurka [SS-4] Lorraine Nicholson [Special remarks] Carol A. Lewis	13:00-15:00 Oral Session 9 Chair: Tetsu Tsukamoto	13:00-14:40 Oral Session 13 Chair: Janice Bryan	13:00			
13:30						13:30	
14:00				14:00			
14:30				14:30			
15:00				15:00			
				Poster Free Discussion			
15:30	15:20-17:00 Oral Session 6 Chair: Kathleen Addison	15:20-17:00 Oral Session 10 Chair: Joon Hong	15:20-17:00 Oral Session 14 Chair: Kathy Giannangelo	Poster Display	15:30		
16:00							16:00
16:30			16:30				
17:00					17:00		
	18:00-20:00 GALA Dinner / Hall E						

**Oct.
14
(Fri)**

Room	Hall C	Hall D5	Hall D7	D6 Foyer		
Floor	4F	5F	7F	6F		
9:00	9:00-10:20 Oral Session 15 Chair: Hussein Ali Y Albishi	9:00-10:00 Oral Session 17 Chair: Vicki Bennett	9:00-10:20 Oral Session 20 Chair: : Deneice Marshall	Poster Display	9:00	
9:30					9:30	
10:00		10:00				
10:30		10:30				
11:00	10:40-12:00 Oral Session 16 Chair: : Kelly Abrams	10:40-12:00 Oral Session 18 Chair: : Susan H. Fenton	10:40-12:00 Oral Session 21 Chair: : Geoffrey Semu		11:00	
11:30					11:30	
12:00					12:00	
12:30					12:30	
13:00	13:00-16:00 International Symposium Chair: Margaret A. Skurka Naoko Kurabe [IS-1] Adebisi Bambe (Nigeria) [IS-2] Kathleen Addison (Canada) [IS-3] Fatima Al Baloushi (UAE) [IS-4] Ramon Romero Serrano (Spain) [IS-5] Sabu Karakka Mandapam (India) [IS-6] Sue Walker (Australia)	13:00-15:00 Oral Session 19 Chair: G.D. Mogli	13:00-15:00 Oral Session22 Chair: Veronica Miller Richards		13:00	
13:30					13:30	
14:00					14:00	
14:30					14:30	
15:00					Poster Removal	15:00
15:30						15:30
16:00						16:00
16:30						16:30
17:00						17:00

**The 18th IFHIMA International Congress
Education Day
Tuesday, 11 Oct. 9:00 – 17:00 / Hall D7**

TIME	TITLE	PRESENTER	COUNTRY
9:00~ 9:10	Welcome	Makoto Anan (Japan Health Information Manager Association, President)	Japan
9:10~ 9:20	Introductions	Kelly Abrams Susan Fenton	
9:20~10:40	Presentation 1 Consultant HIM and Coding / HSTC	Hussein Albishi (Saudi Health Information Management Associates, President)	Saudi Arabia
10:40~11:00	Break		
11:00~12:00	Presentation 2 HIM Education in Japan	Yasutaka Kawamura (Japan Health Information Manager Association, Vice-president)	Japan
12:00~13:00	Lunch Break		
13:00~16:30	Panel Presentation HIM Education in each country		
13:00-13:10	Introduction of Panelists	(Chair) Kerryn Butler-Henderson (University of Tasmania) Naoko Kurabe (Hokkaido Information University)	Australia Japan
13:10-13:30	1) Introduction of Korean HIM Education Program	Oknam Kim (Korean Health Information Management Association)	Korea
13:30-13:50	2) Distance Training Course for HIM in Japan (Tentative title)	Yuka Kamakura (Japan Health Information Manager Association, Director)	Japan
13:50-14:10	3) The Educational System Used at the International University of Health and Welfare	Masami Takizawa (International university of Health and Welfare, PhD, HIM)	Japan
14:10-14:30	4) Transforming HIM practices in Ghana	Tegbey Isaac Eyram *Absent (Ghana Health Information Management Association, President)	Ghana
14:30-14:50	5) Changing Health Information Education in the U.S.	Susan Fenton (Associate Dean for Academic Affairs, PhD, RHIA)	America
14:50-15:10	6) HIM Education and Workforce Transformation in Canada (Tentative title)	Kelly Abrams (Canadian College of Health Information Management, Vice-president)	Canada
15:10-15:40	Break		
15:40-16:30	Q&A		
16:30~17:00	Closing Remarks	Kelly Abrams Susan Fenton	

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We would like to send special thanks and appreciation to the following companies, organizations and individuals for their generous support to the 18th IFHIMA International Congress Tokyo.

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(In alphabetical order / As of 6th October, 2016)

There are still many others not listed here.

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✿ Remarks from WHO



Margaret Chan

Director-general, World Health Organization

Margaret Chan, from the People's Republic of China, obtained her medical degree from the University of Western Ontario in Canada. She joined the Hong Kong Department of Health in 1978, where her career in public health began.

In 1994, Dr Chan was appointed Director of Health of Hong Kong. In her nine-year tenure as director, she launched new services to prevent the spread of disease and promote better health. She also introduced new initiatives to improve communicable disease surveillance and response, enhance training for public health professionals, and establish better local and international collaboration. She effectively managed outbreaks of avian influenza and of severe acute respiratory syndrome (SARS).

In 2003, Dr Chan joined WHO as Director of the Department for Protection of the Human Environment. In June 2005, she was appointed Director, Communicable Diseases Surveillance and Response as well as Representative of the Director-General for Pandemic Influenza. In September 2005, she was named Assistant Director-General for Communicable Diseases.

Dr Chan was elected to the post of Director-General on 9 November 2006. The Assembly appointed Dr Chan for a second five-year term at its sixty-fifth session in May 2012. Dr Chan's new term will begin on 1 July 2012 and continue until 30 June 2017.

*Quoted from WHO website (<http://www.who.int/dg/chan/en/>)

Opening Remarks at the Tokyo ICD-11 Revision Conference

Margaret Chan

Director-general, World Health Organization

Good morning. Madam Furuya, we are very honored to have you here, Vice Minister of Health, Labor And Welfare, and of course, my old friend, Dr. Sakai, President of the Japan Hospital Association, my new friend, Ms. Haendel, the President of the IFHIMA and Dr. Kimura, President of the 42nd annual meeting of Japan Society of Health Information Management, and of course, our very distinguished Honorary Chairperson of the Japan Society Dr. Oi, President also of the IFHIMA congress for this year, and last but not the least, another old friend of mine, Dr. Yokokura. So, ladies and gentlemen, distinguished participants, particularly WHO Collaborating Centers, friends and colleagues of the health information management, and the family of the international classifications, so good to see so many of you here in Tokyo. WHO welcomes you to the Tokyo conference on the 11th revision of the International Statistical Classification of Diseases and Related Health Problems, in short ICD-11.

First let me thank Japan for hosting this event and the Japan Hospital Association for its generous financial support over several years. The conference takes place as WHO releases the 2016 version of ICD-11 for comments from its member states. The work you will be doing during the next few days in this conference will prepare ICD-11 for further refinement leading up to its implementation beginning in 2018.

Let me share with you, my friends, colleagues, this revision has been the most challenging, complex and far reaching ICD revision in the 100-year history of this standard statistical instrument. As the review committee, the external review reported in 2015, revision has been a delicate balancing act between the conservatism needed to maintain statistical comparability with ICD-10 and also the innovation that is needed to make ICD scientifically up-to-date and fit for purpose in this digital age. I thank all participants for giving us your time and your expertise. You are among the thousands of clinicians and experts in information technology who have contributed to this comprehensive revision.

We are pleased today to welcome participants from our collaborating center, the International Federation of Health Information Management Associations. I thank the federation for promoting a well-trained and competent international workforce fluent in ICD coding to manage health information. The opportunities opened by advances in information and communication technologies are huge. The ICD revision aims to make full use of these advances, improving both the ease of use and the specificity and consistency of the coded data. ICD-11 has been built for use in an electronic environment, building upon the foundation of the last revision of course, and especially it is important for me to note that more and more countries in WHO introduce electronic health records.

Coding tools, browsers, different files, print products and web services take advantage of new technologies in the digital age. ICD-11 also aims to be consistent with other information products, which are very familiar to some of you or to all of you, such as the Standardized Nomenclature of Medicine, clinical terms, in short we call it SNOMED-CT.

Revision has been further challenged by the fact that ICD is now used by so many, for so many different purposes. For statistical purposes, it groups together medical terms reported by doctors, physicians, medical examiners, and coroners on death certificates. In practice, ICD has become the international standard diagnostic classification for all general epidemiological and many health management purposes, including reimbursement by governments and by insurers.

Ladies and gentleman, at the international level gathering high quality, specific, and comparable statistical data has never been more important. Cause-specific mortality targets and indicators, many of them are found in the 2030 agenda for Sustainable Development including for its very ambitious health targets. As we learn during the era of Millennium Development Goals (MDGs), information systems for civil registration and vital statistics are absolutely critical to track progress and make strategic cause corrections.

It is very important in a different dimension, particularly in the climate of financial austerity that governments who are very generous in supporting many countries to achieve MDGs and now SDG, they need to report back to their parliaments, their diets, and their tax payers whether or not they are getting good results for their investment. It is very important that we make full use of this statistical data to show progress and to show results on our investment. This is true, ladies and gentleman, but most especially in resource-constrained settings where the overarching SDG objective of leaving no one behind faces the biggest challenges and I hope that we can make full use of this statistical information to show progress so that development partners and generous countries can continue to mobilize resources to support countries who need their support.

Let me share also with you the challenges I had. Some 85 countries in WHO membership, representing 65% of the world's population, do not have reliable cause-of-death statistics. This means that causes of death are neither known nor recorded and health programmes in many of these countries are left to base their strategies on crude and imprecise estimates. ICD-11 aims to provide an avenue for all countries to increase the coverage and quality of mortality data by age, sex, and cause. For the first time, we are pleased to welcome experts from many lower-income countries in Africa and Asia, whose presence here is sponsored by the Japan Ministry of Health and I want to thank you and also sponsored by WHO. Speakers during this conference will update you on the many improvements in ICD-11, including expanded content, the use of combined codes, new primary health care concepts, and additional coding options. The new foundation component contains all entities for diseases, dis-

orders, injuries, external causes, signs and symptoms in a network of relationships enabling a range of improved management options.

As another new feature, diagnostic categories used in traditional medicine are covered in a separate chapter. These categories are based on traditional medicine conditions, which originated in ancient China and are now commonly used in China, Japan, The Republic of Korea, and elsewhere. Particular attention will be given to testing the chapter in integrated health care settings in targeted countries where both traditional and western medicine are practiced.

In summary, this is a historical occasion and a historical opportunity to give the medical, epidemiological, and public health communities a cutting edge statistical tool. Specific, precise, and comparable data are the foundation of everything we do. I want to thank you, thank all the experts who have given us your advice and your expertise and I wish you a most successful conference. I thank you.

✿ Opening Session (1)



Eric de Roodenbeke

CEO, International Hospital Federation

Eric de Roodenbeke, PhD (1956) is a French national with an extensive international experience in health systems and policies and a strong background in hospital management. Since June 2008 he holds the position of CEO of the International Hospital Federation. Prior to this he has worked a total of 4 years at the World Health Organization and the World Bank leading various health intervention, educational, management and capacity building programs mostly in Africa. He was Director of several French hospitals of different types for an overall period of 10 years. He has also worked at the French Ministry of Foreign Affairs for 10 years both at head quarter and in field projects in Africa, Eric de Roodenbeke holds a Ph.D. in health economic; a Hospital Administration post graduate diploma and a University diploma in Public Health. He has taught in various masters programs and senior continuous education course and published several books as well as various articles in professional journals.

Enhancing Patient Empowerment

Eric de Roodenbeke

CEO, International Hospital Federation

Dr. Eric de Roodenbeke

Ohayo gozaimasu. Good morning, everyone. Thank you very much for your kind word, Dr. Nakatani. I didn't understand them, but I saw the hammer. So, I guess I have to be on time and you know that I speak too much. It's really a great honor and an immense pleasure for me to be today with all of you. Really, I'm grateful for the Health Information Management Associations Federation to have invited me to this meeting. When I was invited to give a speech, I said that I was not going to talk about health information. I am going to talk about the reason why we are doing health information, the reason why we are working, all of us: the people we care for, the people we call the patients. But don't take me wrong. This doesn't mean that we don't care about health information. Health information is a critical element for all of us. Consider that as the first statement before I start my presentation.

I would also want to thank Dr. Tsuneo Sakai for having invited me, and I really want to recognize him as President of the Japan Hospital Association and also member of the International Hospital Federation Board and President of the International Hospital Federation International Award Committee. Thank you Dr. Sakai and I'm very happy to be working under your guidance and leadership, because you are my boss, as we know board members are the bosses of those working for organizations.

Just as a quick reminder, the International Hospital Federation (IHF) is the umbrella organization of national organizations that are providing healthcare services. So here in Japan, the Japan Hospital Association is a founding member of IHF. And it's very likely that most of the hospitals you are working in, as a health information specialist, are members of the International Hospital Federation.

When I say that it's very important to talk about patient empowerment, it is because this is not an option for us. Patient empowerment is there. It's present for many reasons and out of them, I would really want to point out four of them.

The first one, and you all know about it, is the global burden of disease which is mostly related to chronic condition. Even the communicable diseases, as we have seen with HIV/AIDS, have become also a chronic burden. You know well the story, I don't need to further elaborate. What I want to highlight is the importance of the complexity of the multi-chronic conditions and I guess that ICD-11 is tackling that, because this is a major issue as well as the incidence at younger age of Obesity that is making this factor a major burden for all society. Chronic condition means that people, patients have to be fully involved in taking care of themselves.

The second element is the so-called Dr. Google that we all know. I mean it's common that patients, people before they have any interaction with health professionals, they get information on their own. So, they are already much more empowered than before and this is moving fast as data coming from the US is showing. With the new generation, we can expect that almost 100% of people will be informed through internet. The quality of information, that's another issue. But at least in hospitals, we know that before, during, and after, patients get their information, and want to be taken care of in regard to what they know.

The other important element making the patient at the center of the system is the WHO framework that has been adopted last year by the World Health Assembly. There is a commitment from all member states to organize their service delivery around the patients, around the people, so that health services are person-centered.

The next one and it's not the least one, relates to the fact that more and more voices are coming from the population. Health democracy is strengthening. It's part of a basic right that people are claiming.

So, all these four reasons are putting patients the center. At the same time they are the ones that need to be more empowered but they are also empowering themselves.

When we see current trends on patient empowerment what do they really mean? We see mainly two major approaches in regard to patient empowerment. The first one is that the patient is responsible for his health or her health. The second one is more about the way practitioner should behave in regard to the patient. The idea is that they have to move from providers to advisors.

If we look at the first one, It can be summarized by the quest for healthy lifestyle: there are many campaigns making patients, people responsible for their health. However, we know that behavior change is not just about information. There is a huge societal dimension related to our living conditions, to the cost of healthy food linked with the strategy of the agro business, and many other factors that are impacting our health status, and not only our own behavior. So, that's one major trend, the patient is responsible. I will not say that we are not responsible of our health, but that's certainly not 100%.

The second other big trend is around the role of the practitioner in its interaction with the patient. WHO has been leading a very important international campaign to change the practitioner-patient relation. And as you can see you proper behavior is described in statements that the medical profession, and I guess the word medical association and the Japanese Medical Association here, are complying with or at least have adopted. This is based on goodwill. Goodwill is important, but it's not all. What we really think at the International Hospital Federation is that the interaction for collaboration perhaps needs to be formalized. Currently there is a movement showing that it's important, but what is advocated for, should be just the regular practice. We therefore need to move to another perspective on

patient empowerment.

That is not only on relying on goodwill, but it's on creating the enabling conditions. We have in health-care facilities, in healthcare organization, an important responsibility for creating these enabling conditions. Health education is very important, especially during health-related episodes. So clearly in the healthcare organization, we should never miss the opportunity to do health education with the patient. The mission of the healthcare organizations is health.

It's obvious that all those who are involved in the healthcare organizations have to be on board with the patients to be able to develop our mission which is to provide health. So, we don't consider that patients are beneficiaries or consumers as we can see sometimes, **but they are stakeholders**. They are at the center. They are the third party.

You have the health professionals, you have those who are doing the administration of the organizations, and you have the patients. These are the three parties and we have to take them on board fully through that perspective.

We have done a quite comprehensive survey, with the International Association of Patient Organization with whom we work quite closely, in 27 countries to see what's the current status about the patient's involvement from an institutional point of view, not the goodwill, not blaming or making them responsible or guilty for their health, but how much they are involved through different approaches, whether they are on the board, whether they are in the committees, whether the design of the hospital is really done by including the patients. And we found about 50% of the countries that have regulations on patient's involvement. So, we are really in the right directions even though we still have a good way forward to be going.

In many countries where there is no regulation, and that's very good news, there are also many initiatives of various nature that I have listed there that you can read quickly: patient right groups, complaint boxes, voluntary worker involvement in organization, ad hoc participation, etc. So, there is really a good movement for patient empowerment as a stakeholder in the hospital, as an institutional movement and this is good news. But we still need to move it forward. And for that, we consider that there is a challenge around the strategy of the hospitals, because if the patients are involved, I would say in the routine of the hospital, we are still often in top-down approaches. It's very rare that we have the patients fully involved when we are doing the design of a master plan of a hospital, when we reorganize the delivery system of the healthcare services or departments, while this should be the common thing.

We believe that information technology is going to offer many opportunities to go a little more bottom-up rather than top-down.

Information technology, as we know, allows very much to reach the patients very quickly, because all

of us, now we are connected. So that means there is a huge opportunity for the dissemination of evidence-based information. At the beginning, I mentioned Dr. Google that we all know. But the downside of Dr. Google is that the information is of various quality and there is no screening. So, we have a responsibility to reach out to the population and to the patients to make sure that they have the right evidence-based information and especially related to health behavior.

We have also a responsibility around the quality of care. So, we have to contribute through all these outreach devices to deliver supportive quality care and especially what is related to behavior change. There are very interesting experiences in mental health that are done especially by the Dartmouth Institute in the US. The logo that is on the bottom of my slide is from this organization and I recommend that you have a look there. It's amazing what they have been doing.

Personalization is critical as we all want to be treated as individual, and the information technology allows that. Last but not least, we don't want to be an object. We want to be an interacting person. And therefore, the engagement is much more active through the use of all these connected devices. So, we have at least the environment, we have the enabling tools. We just need to use them effectively to empower the patient. For the assessment and monitoring of their pathologies and following them up, for interventions, and especially for prevention, we can do quite a lot and for engaging them to take care of their own disease more effectively. And as we have seen the big burden of chronic condition, this is critical for life expectancy and living in good health or healthier as longer and ageing.

We have a number of elements that help us. Talking on the way back here after Coffee break, and taking the stairs rather than the elevator, Dr. Nakatani was saying that with their watches, everybody is now looking for the steps. It's obvious that all this information is collected and all this collected information can build up a lot of interesting data for person-centered interaction. We have to be cautious however with this collection of information. We don't want that health insurances take advantage of that information to do cream skimming in the way they approach the coverage of population. Let's not underestimate the challenges with these opportunities coming from all these personal devices collecting a huge amount of data related to our daily life and supporting our activities.

The second thing and Dr. Margaret Chan mentioned in her opening address is electronic health records. It's very important and there is now, I think, a general consensus that the way forward with electronic health records is that the patients have the ownership of the information. The electronic health records have a future if they are patient-owned. Clearly, the authorities have the responsibility to develop the infrastructure and organize the data. ICD-11 is obviously here a very important building block to set the rule on information collection, the storage and analysis. But beyond public authorities responsibilities, the patients have really the ownership of their health data. I really think that the debate whether the patient needs to know about their pathologies and conditions is behind us. We should not ask any more whether we need to inform or not a patient that has a cancer with a probability of sur-

vival is 20%. it's quite well acknowledged, in most of the countries at least around the world, that the patients need to know, need to be informed in the right mode, of course. And so, that's the reason why they have to be the one that have the hand on the electronic health record. The ethical dimension about the usage of the electronic health record has been quite well advanced. So clearly, that's an important building block of the patient empowerment. And it's important as we are moving forward with these ubiquitous electronic health records that the information systems are of course standardized if possible worldwide, because people are moving around the world.

Transparency, is also very important, because we are all accountable. This was something that Dr. Chan was saying about the governments that are providing funds. Well, we all know that public health expenditure, all around the world, is partly or almost totally funded through public funds whether it's coming from social health insurance or income taxes or any kind of taxes. So, it's obvious that there is really an important dimension for transparency. But more than this public transparency, there is a really important need for transparency on clinical outcomes. Interesting initiatives can be mentioned: Dartmouth Atlas of Health Care, the ICHOM Initiative on the outcome-based measurement. You also have an interesting example, coming from the French High Authority for Health. They are publishing all the results of the accreditation of public and private hospitals. So, anyone in France can go on the computer and see for each hospital how the medical records are managed, what are the health outcomes on the major pathologies, and what are the feedback from the patients as well as other information. In the US, it's also very common to have access to such data. I don't know how it is in Japan, because I don't read Japanese. But I'm sure that here also and as in many parts of the world, transparency is moving forward. So, that's also a very important element of the patient empowerment.

If we combine all that, we are going to the big data agenda which is also driving very much the patient empowerment. What is important, and the work that you are doing in the health information from that perspective is critical, is to break the silos. If we want really to have patient-centered care, it's not possible if we still work around the silo of the various specialties of medicine related to specific pathologies or organs. The person doesn't have one major cause of disease and other causes. We all have comorbidity, multi-morbidity. And it's not so obvious to say that one is more important than another one. They are all combined. So, we really have to organize ourselves to get all the information so that the organization is set up in such a way that we can care for the patient according to his or her needs and not according the way we have set up the medical specialties. So, the big data is going to be an important element to support the patient empowerment, to improve the health evidence decision making, and to enhance the efficiency and quality of health services.

While putting all the pieces together for better use of information to empower patients, hospitals have a key role there. There has been a very interesting initiative and probably, some of you know about it. It's coming from Catalonia, Barcelona where they have created a whole system to make sure that the health information, the information overall is supporting the interaction with the people that need the

care in the hospital. This is already in practice. But even though this has been presenting for several years by this hospital, this is not still the common ground. So, I will invite all of you as health information specialists to participate and to lobby your management if they are not on this way to make sure that the patient is really the key stakeholder, is really the one we are all working for and is driving the reason why we are there. Thank you very much.

✿ Opening Session (2)



Ties Boerma

*Director, Department of Information, Evidence and Research,
World Health Organization*

Dr. Boerma is the World Health Organization's Director of Information, Evidence and Research. He has over 30 years of experience working in global public health and research programmes, including 10 years at national and districts levels in Africa. He has worked for different United Nations organizations, bilateral donors, national governments and research institutions and has published extensively on AIDS, maternal and child health in epidemiological, demographic, and public health journals. A national of the Netherlands, he received his degree in medicine (MD) from the University of Groningen, and a PhD in medical demography from the University of Amsterdam.



James Harrison

*Chair of Topic Advisory Group for External Causes & Injuries,
WHO-FIC*

Professor Harrison is an Australian injury epidemiologist and public health physician. He has directed the AIHW National Injury Surveillance Unit since 1990 and the Research Centre for Injury Studies at Flinders University, Adelaide, since 1997. He is active nationally and internationally in the measurement and classification of injury; injury burden, determinants and outcomes in populations; and the descriptive epidemiology of injury for public health purposes. His research and publications deal with aspects of injury including road safety, the safety of Indigenous Australians, suicide and self-harm, occupational safety, sports injury, spinal cord injury and the safety of health care. He has authored over 80 peer-reviewed journal papers and many other reports.

In 2015, Professor Harrison was appointed by the WHO to co-chair the taskforce established to complete the 11th revision of the International Classification of Diseases (ICD-11) in the form required for coding causes of deaths and hospital-admitted cases. He also leads the revision of the injury and external causes chapters. In other activities related to data for health, Professor Harrison chairs the steering committee of the SA and NT DataLink Consortium and is on the Steering Group of the Inter-

national Collaborative Effort on Injury Statistics and the governance committee of the Australian National Coronial Information System. He co-led the Injury Expert Group in the Global Burden of Diseases 2010 project.

Academic qualifications: Bachelor of Medicine and Bachelor of Surgery, University of Melbourne, 1980. Master of Public Health, University of Sydney, 1990 Fellow, Australasian Faculty of Public Health Medicine, RACP, 1990. He was awarded the Distinguished Career Award of the American Public Health Association Injury Prevention Section (2013) and the Australian Injury Prevention Network Award for Contribution to Research in Injury Prevention and Safety Promotion (2015).



Stefanie Weber

Head of CC in Germany, WHO-FIC

- Medical Degree from the Goethe-University in Frankfurt, Germany
- Medical informatics specialist certified by the German Association for Medical Informatics, Biometry and Epidemiology (GMDS)
- Head of Medical Vocabularies Unit of DIMDI since 2010. DIMDI is the publisher of official medical classifications and provides additional terminologies and standards that are important for health telematics. DIMDI develops and operates database-supported information systems for drugs, medical devices and health care data and is responsible for a program of health technology assessment (HTA).
- Involved in Medical Vocabularies work at DIMDI since 2002. This includes amongst others:
 - Work with the German Medical Procedure Classification and its index for Germany.
 - Training for Mortality Coding in Germany.
 - Project lead for the development of the Classification Maintenance Tool in collaboration with WHO.
 - Coordinator of the Secretariat of the Iris Institute since 2012. Involvement in the Iris project since 2004
 - Head of the WHO Collaborating Center for the Family of International Health Classifications in Germany since 2008
 - Lead of the WP5 of the Joint Action on Rare diseases of the European Union



Christopher Chute

RSG Chair, WHO-FIC

Dr. Chute is the Bloomberg Distinguished Professor of Health Informatics, Professor of Medicine, Public Health, and Nursing at Johns Hopkins University, and Chief Research Information Officer for Johns Hopkins Medicine. He received his undergraduate and medical training at Brown University, internal medicine residency at Dartmouth, and doctoral training in Epidemiology at Harvard. He is Board Certified in Internal Medicine and Clinical Informatics, and a Fellow of the American College of Physicians, the American College of Epidemiology, and the American College of Medical Informatics. His career has focused on how we can represent clinical information to support analyses and inferencing, including comparative effectiveness analyses, decision support, best evidence discovery, and translational research. He has had a deep interest in semantic consistency, harmonized information models, and ontology. He became founding Chair of Biomedical Informatics at Mayo in 1988, retiring from Mayo in 2014, where he remains an emeritus Professor of Biomedical Informatics. He has been PI on a large portfolio of research including the HHS/Office of the National Coordinator (ONC) SHARP (Strategic Health IT Advanced Research Projects) on Secondary EHR Data Use, the ONC Beacon Community (Co-PI), the LexGrid projects, Mayo's CTSA Informatics, and several NIH grants including one of the eMERGE centers from NGHRI, which focus upon genome wide association studies against shared phenotypes derived from electronic medical records. He has been active on many HIT standards efforts and currently chairs the World Health Organization (WHO) ICD-11 Revision.

WHO PANEL

The ICD: What it Means to Countries and to Global Health

Ties Boerma¹, James Harrison², Stefanie Weber³, Christopher Chute⁴

Director, Department of Information, Evidence and Research, World Health Organization¹

Chair of Topic Advisory Group for External Causes & Injuries, WHO-FIC²

Head of CC in Germany, WHO-FIC³

RSG Chair, WHO-FIC⁴

Dr. Ties Boerma

Good morning, everyone. We've come to the last half hour of the opening session which is again about the ICD Revision Conference where I think the Director-General already gave a very nice overview of many of the issues that we're dealing with. In fact, this ICD Revision Conference is not just an annual meeting. It's been 26 years since the last one. So, it's really a very special occasion on what we think is a very important topic. And this follows several days of the meeting of the WHO Family of International Classifications, the WHO-FIC on many technical issues related to the ICD, but also other classifications such as the ICF and ICHI. We are very grateful to the Ministry of Health of Japan, to the Japan collaborating center of the WHO-FIC, and the Japan Hospital Association in hosting this meeting, organizing it and actually working with WHO all the way through the whole revision process and now, this meeting. I would like to start with a very brief video about the ICD if that's possible. Can I have the 2-minute video on the ICD? Thank you.

[VIDEO]

It all starts with a code. It doesn't look like much, just a few letters and numbers. But it's a very important code because it's about a person's health. It's about a pregnancy, a birth, a disease, an injury, an outbreak, a death. It's a code with a long and winding journey. It starts with one person, in one hospital or clinic. But it doesn't end there. It joins up with other codes in databases in cities, regions, and countries. It becomes a small, but important part of a big picture. It's used to monitor the health of populations, large and small to plan how services are delivered and resources are allocated, to help diagnose diseases and detect changing disease patterns. And where does this code come from? The International Classification of Diseases or ICD, ICD is a common language used all over the world by doctors, nurses, policymakers, researchers, and many others to classify diseases and conditions so they have the best possible picture of everyone's health. Around the world, more than 100 coun-

tries use ICD to record the reasons people die, to monitor the health of their populations, and to help make financing decisions about their health systems. The world needs better health data and ICD is delivering it. It's another way the World Health Organization is building a healthier world.

Dr. Ties Boerma

That was a very brief overview of how all that individual health information is of absolutely critical importance for global public health in countries locally and globally. So, in this panel that is coming now, we are going to have a little sneak preview of what we're going to discuss in the coming days on the ICD revision. I have three speakers who will all give a little snapshot of what they think is really important in the revision. I'd first like to invite Professor James Harrison who is from Flinders University in Australia who is also the Co-Chair of the Joint Task Force on the ICD for Mortality and Morbidity Statistics.

Dr. James Harrison

Thank you, Ties and thank you all for the opportunity to speak to you. My topic is Better Information for Health and the Place of the International Classification of Diseases in that. I'll speak on these four themes, all briefly. As I think the video underscores and Dr. Chan's presentation also, the ICD is fundamentally health information infrastructure. Like other infrastructure, it underlies other things and tends not to be noticed very much itself, except on occasions like this. Here are some examples of the many things that depend on ICD coded information.

Comparison is crucial to the usefulness of health information, and the ICD has long been a force for comparability. If we didn't have the ICD or something like it, we would have to invent it. Fortunately, we don't need to do that, because our predecessors began to develop this system, this key infrastructure more than a century ago. And ICD and its predecessor classifications have been part of what I'm inclined to call the first health information revolution.

William Farr and his contemporaries in the middle of the 19th century built a three-part information system comprising vital registration of deaths, cause coding of the deaths, and suitable population data that allowed them to conduct what they often called political arithmetic using empirical data to both identify problems and to provide a basis for solving them. It's the classification part of what Farr and his contemporaries developed that's most relevant to this conference. They developed an international classification of causes of death in the 1850s and maintained it through several revisions to the 1880s. Drawing on that work, Jacques Bertillon and the committee that he chaired in the early 1890s developed a new classification which is ICD-0 if we count back from our own era. Bertillon's classification was revised in 1900 and about once per decade throughout the 20th century. Since ICD-6 published in 1948, the ICD has been a responsibility of the World Health Organization.

These powerful health information systems spread in the 19th century and further in the 20th century.

However, one must say as Dr. Chan pointed out that this revolution remains far from complete and many parts of the world lack those systems even today.

The final revision of the ICD in the 20th century was the tenth published in the early 1990s. There has been another revolution since that occurred, one that necessitates a new approach to the ICD. ICD-10 was written before the modern era of electronic information. It has been modernized, of course. But it remains at base a product of the pre-digital era in which it was designed and written.

In contrast, ICD-11 is a product of the modern information age. It was envisaged from the outset as a database which will operate in networked environments and inter-operate with other digital systems. Of course, the 11th revision has taken account of the changes in knowledge and concepts of disease, as the next speaker will point out. But perhaps the most important aspect of the revision is the one that marks it as the first revision of and for the digital and networked era. These changes also provide the basis for enabling the ICD to be more useful in more ways and in more settings. I will end by touching on this new flexibility.

ICD-11 must, of course, be an effective replacement for ICD-10. The default use of ICD-10 is to assign a single underlying cause of death code. ICD-11's digital and network design will, I'm sure, be found not only to replace ICD-10, but to bring advantages in terms of efficiency, consistency and maintenance. More fundamentally, the new design allows essentially the same core components of ICD-11 to also serve other uses and users. Settings with less developed information systems will also be able to use the infrastructure, to make use of the data that they do have and to produce useful outputs. Already some countries and regions have requirements that go beyond the default model. The most common examples are the systems that collect data on hospitalized cases and code them according to clinical modifications of ICD-10.

ICD-11 has capabilities designed to serve such sophisticated users as well, now and into the future. The capabilities of ICD-11 will enable it to serve a wider range of users and to support users as their requirements evolve over time. I'll conclude with this slide that summarizes my remarks. Thank you.

Dr. Ties Boerma

Thank you very much, James. And since we don't have a setup where we have the whole panel on the podium, I would like to ask one question. We know that many countries are still poorly implementing the ICD-10 and death registration levels are low, use of ICD is low in many low and middle income countries and the quality of the ICD data may also be poor. What do you think the ICD-11th revision can do to overcome this problem?

Dr. James Harrison

Well, I think the integral flexibility that enables the same core tools to be able to be used in a variety of

settings will make ICD more readily adoptable in many parts of the world. In addition, I think that the networking character of ICD-11 will encourage that. Already there's beginning to be a flavor of social networking around users of the ICD, facilitated by the global networking capabilities. While Internet access is not equal across the world, it's spreading widely. We need to think of the ICD-11 not just as something for 2018, but as a tool for the coming decades also. And during its period of use, I'm sure that its ability to enable people to operate collaboratively between places and also to be used in very flexible ways will enable more places, incrementally, to begin - and to improve - vital registration and cause coding.

Dr. Ties Boerma

Thank you. I would now like to call on our second speaker in the panel which is Dr. Stefanie Weber who is from Germany, from the German Institute for Medical Documentation, DIMDI and who is also a Co-Chair of the Joint Task Force on ICD for Mortality and Morbidity statistics.

Dr. Stefanie Weber

Thank you very much. And thank you very much for listening to me and for inviting me here to speak to you. I would like to give you a little sneak preview of how ICD-11 will try to capture the advances in medical knowledge. This is of course much more than I can present now in a few minutes. But there will be lots of talks in the next 2 days about this topic. So, I encourage you to join them and take the time to look at the topics that interest you most.

ICD-10 was approved by the World Health Assembly in 1990 until ICD-11 will be approved and implemented it will be almost 30 years down the road. This is a long time for medicine and lots of advances have happened, especially in the field of diagnostics and in the field of the treatments. So, this of course has to be captured in a new classification. Emerging diseases or diseases of great public health relevance like the Zika virus outbreak do need quick changes in the classification and this cannot always be handled through the old classification only. So, it is time for a revision now and put all the content into a new structure.

One thing that really influenced medicine a lot over the last years were the advances in genetic diagnostics and testing. The time when Mendel's Laws were discovered, of course it's before ICD-10, but till the Human Genome Project was declared completed in 2003, it was a long time and this completion of the Human Genome Project in 2003 in the middle of the implementation phase of ICD-10 really shows that a lot of innovations happened and have to be reflected in the new classification. As an example, rare diseases have been separated into the specific diseases by genetic testing a lot. And right now the Orphanet database, a European database for rare diseases, holds more than 5800 rare diseases and only few of them have been represented in the ICD-10.

I have tried to pick two very simple examples for you to get a little idea about what's coming up. And

I picked two examples which I think are of high relevance for public health. The first one, I picked the codes from ICD-10 and ICD-11, ICD-10 on the left side, ICD-11 on the right side for birth with very low birth weight. As you can see in ICD-10, it's only two codes and the grouping was up to 1000 grams or less. And then, the second one was up to 2500 grams or less. In many settings now, it's possible to treat children which are born with even much lower birth weight. So in the ICD-11, the grouping is more detailed and spread out and the lowest code holds the level of 500 grams. Still I think this example is a very good example for how you have to build codes for public health relevant fields:

You can see that from the ICD-10 codes to the ICD-11 codes, there is an equivalence in the level of birth weight. So, the 1000 grams are reflected in the first code block and the 2500 grams are reflected in the next two blocks. So this way, it will be possible to have a backward and forward compatibility between the two classifications to monitor this important field over a long period of time. So, data you have collected with ICD-10 or previous versions, you will be able to compare to ICD-11, an important thing that has to be recognized when building a classification especially for the statistical purpose that the joint task force was put in place for.

The other example that I put here is the codes for HIV. On the left side, there are the ICD-10 codes: there are many codes for HIV disease. HIV, as you know, has not been around much before ICD-10 was approved by World Health Assembly. So at that point, it was not really well known and well discovered. Nowadays in the right side example, you can see that HIV is not grouped anymore as a reason for resulting diseases as in ICD-10 here on the left side, but that it's rather grouped due to clinical stages. We have clinical stage I to IV and only two major infective diseases, tuberculosis and malaria that are often associated with HIV will be recorded as separate codes.

The other infections and cancers and whatever evolves from HIV will be cluster coded. So, you will be able to use multiple codes together. And this way it's much better to reflect the actual situation of patients with HIV. There are multiple diseases that might develop in the course of their long period of disease. This, of course, is a much more significant change than the one that I showed before. So, with the Revision Conference starting now, I think it's a great chance for all member states and all participants to take a closer look at their fields of relevance and check if the changes that have been implemented by all the experts and all the groups that have worked on ICD so far are really what you think is feasible and practical for your country and which is something that you would like to use. I think there are many parts in the ICD-11 that are very good and that you should take a look at. Thank you very much. Thank you, Chair.

Dr. Ties Boerma

Thank you, Stefanie. Just one question, because I think you gave a nice overview of the expansions in contents and methods that are part of the ICD-11. And one easily gets this impression that it's going to be very comprehensive but also much more complex. I think we are also looking for things

that can be done easier where health workers have to spend less time, where coders can do more accurate work and so on. And I think you have had some excellent experiences with IRIS and ICD-10 and so on. Do you see that the ICD-11 is going in that direction?

Dr. Stefanie Weber

I think that the ICD-11 as well as the ICD-10 does have to cover a certain level of complexity in order to serve all the statistical reporting needs. But with the ICD-11 now being based in an electronic environment and a better opportunity to implement it into electronic tools, the tools will really help to make the ICD-11 much easier to use than the ICD-10 - just being developed on paper - could have been. So, I think in many settings, it will be easier to use the ICD-11 if you have the appropriate tools.

Dr. Ties Boerma

Okay, thank you very much. So, I'd like to move on to our third speaker which is Professor Christopher Chute from the Johns Hopkins University who is also the Chair of the Revision Steering Group of the ICD.

Dr. Christopher Chute

Thank you very much. It's my great privilege to have worked with an outstanding team of people both at WHO and throughout the world for these past 10 years. It's been an extraordinary journey. And what I'm going to talk about are some of the innovations and opportunities that have come about. I want to begin with the recognition that this innovation actually began almost 400 years ago with a London Bills of mortality, the use of which was published a century later in the John Graunt's edition of 1663, which had a table of findings that allowed for the first time the innovation of counting causes of disease. And it enabled an understanding of small area epidemiology of endemic and epidemic diseases and fundamental issues of small area analysis that we now understand as the basis of epidemiology and statistics in the modern healthcare era.

Of course, some of these categories were, how do we phrase this interesting, my favorite is "Found Dead in the Streets", down in the bottom. And we could quibble about whether the underlying pathophysiology of that condition was well thought through. So, there was opportunity for more innovation that came, of course, with the great Carolus Linnaeus in Sweden almost a century later, who introduced his Genera Morborum, a very robust catalog of disease. But it had a serious problem in that an understanding of the germ theory of disease and the underlying causes of infection were yet a century into the future.

Much of his work was deeply flawed in the 17th and 18th century, but lest we be quick to judge Linnaeus for his lack of understanding, we must also understand our own limitations here in 2016 as we are evolving and emerging into the innovations of disease etiology, causation, understanding associated with genomic information which will transform the way we think about disease over the next

century. We are only at the beginning of that underlying genomic revolution.

I also want to cite Farr as have my colleagues who understood that the problem of studying health and healthcare and public health at the end of the day came down to having a standardized units of disease, of outcomes, of problems that could be used statistically to learn about public health and information. And he said at that time, absent these basic units of measure, how can we understand healthcare? It's analogous to trying to do physics without the notion of a second, a meter or, a gram. It's analogous to trying to do chemistry without a periodic table. And the catalogs of disease that began with Farr and subsequently moved into the ICD are that legacy.

We all understand that healthcare begins with patients, moves through data, generates knowledge and if we're very clever, we reinsert that knowledge back into the healthcare process. This is a wheel of enlightenment, a *samsara* in a sense where we can have a virtuous cycle of discovery, application, and learning. What holds the wheel together now and into the future will increasingly be resources like ICD-11 that allow us the comparability and consistency of the underlying information to improve care. The spectrum of use of ICD has also witnessed and experienced great innovation over the past centuries. Historically of course, it was and remains been important for vital statistics and throughout much of the 20th century to the present was used for reimbursement. But the future, the opportunities are really in clinical applications of quality, comparative effectiveness, decision support, and of course discovery, how do we know what healthcare interventions work, how do we understand how to improve healthcare and generate evidence so that all people can enjoy the best possible health, another fundamental goal enabled by the underlying ICD.

There are many innovations that have been engineered into ICD-11 that are new and novel. The opportunity to create tabular classifications that fit specific use cases, linkages to basic science and clinical terminologies, programming interfaces that allow the use of ICD on applications in cellphones around the world with open public application programmer interfaces, capacity to link to electronic medical records, and of course, the structure to contain the criteria and semi-automated coding logic so that we have comparable and consistent ICD coding throughout the world. Finally, ICD-11, I submit, is a classification for the 21st century. It embraces the traditions of statistical and clinical use cases, it invokes modern computing principles in its architecture that you will hear about throughout the week. It has robust information architecture. It is increasingly relevant to biomedical and clinical communities both in the research and practice context and has the potential for growth and maturation to truly fit the information age of the 21st century. Thank you.

Dr. Ties Boerma

Thank you very much, Chris. You already showed us very clearly the dynamic nature of the ICD revision and the many areas that are providing us with exciting opportunities. Do you think that by 2018 we are ready with all of those or do you see it more as an incremental process? And what would come

first and how do we build it from there?

Dr. Christopher Chute

That's an excellent question. There is great richness and depth to the ICD-11 revision. And I think by 2018, most of us, all of us frankly will probably not be able to leverage all of it directly and immediately. That is an opportunity, because the depth and the richness of what is in ICD-11, the opportunity to integrate it with digital environments and very simple tools such as cellphones in resource limited areas will afford this opportunity for growth, for continued development and continued sophistication as the depth and capability of ICD-11 is able to unfold in the user community going forward.

Dr. Ties Boerma

Thank you very much.

Dr. Christopher Chute

Thank you.

Dr. Ties Boerma

We've to come to the end of our session to introduce the ICD. And as I said, we still have quite a bit of discussion ahead of us in the coming 2-1/2 half days. The ICD-11 is a big animal. The foundation layer as we heard has over 47,000 entities in each of those 13 properties. We have received 7000 inputs in the process of developing the revision where there are currently 6000 codes in there, and of course, a smaller number of that will be used for reporting. There are 26 chapters in the tabular version. And within that for the first time, there will be a chapter on traditional medicine. And this afternoon, there will be a side event on the traditional medicine chapter. So, we are looking forward to 2-1/2 days of very interesting presentations and discussion. I'd like to thank the three panel members for their excellent presentations and to you all for listening. Thank you very much.

Special Lecture



Hussein Albishi

*Advisor to the Vice Minister of Health for Planning and Development HIM and Clinical Coding Specialist
Clinical Coding Centre Ministry of Health Riyadh, Saudi Arabia*

Hussein Albishi is a certified Health Information Manager (CHIM) with 27 years of experience in health information management (HIM). Graduated from Curtin University of Technology, Perth, Australia with a Health Sciences degree majoring in HIM.

Hussein is currently working with the HSTC leaders and other government stakeholders to achieve the Saudi 2020 National Transformation Program objectives and the Saudi 2030 Vision. The main goal is to establish a national HIM Strategy to support the Healthcare transformation activities. He also has lead the ICD-10 implementation in all MOH hospitals and PHCs.

Hussein is also working as a HIM consultant at the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI). He is the president of the Saudi Health Information Management Associates (SHIMA). Hussein has been working as the coordinator for the East Mediterranean Region in the International Federation for Health Information Management Associations (IFHIMA) for many years. He is currently a member of the Global Health Workforce Council (GHWC) since 2014.



Marci MacDonald

*Director, Clinical Information Services/Privacy Officer
Halton Healthcare Services Oakville, Ontario, Canada*

Marci MacDonald oversees the 3 Clinical Information Services Departments, the 3 Admitting and ER Registration Departments, and corporate Privacy, for the tri-site corporation of Halton Healthcare, with hospitals in Oakville, Milton and Georgetown.

Marci is a Health Information Management Professional, who serves and has worked with many health information management and related groups. Namely the Utilization Managers of Ontario, the Ontario Health Information Management Association, the Canadian Health Information Management Association, the Council on Education for CHIMA, and is currently the President-Elect for the International Federation of Health Information Management Associations, which in part involves working on a project implementing world wide coding standards with the World Health Organization, and working toward creating a global curriculum for HIM's. She supports education by serving on Advisory Committees with George Brown College and Ryerson University. She has also been involved in the multiple provincial initiatives, including privacy, clinical data quality and various Ministry of Health client registry initiatives.

Abstract only

Global Health Workforce Council Activities

Hussein Albishi¹, Marci MacDonald²

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Changes in technology, social constructs, values, legislation and regulatory factors internationally have redefined what health information management professionals do, where they work, and how they work.

It is imperative that we address the growing gap that has resulted between academic training and competencies and the skills needed to ensure workforce readiness.

Recognizing this, AHIMA obtained grant funding from the United States Department of Commerce - International Trade Association Market Development Cooperator Program (award #IT13MAS1120001), and approached IFHIMA to co-chair and collaborate to create a workforce to address such concerns, focusing on curricula.

The Global Academic Curricula Competencies for Health Information Professionals was developed through the efforts of the international Global Health Workforce Council (GHWC), a leadership group under the AHIMA award. The Council brought together dedicated individuals from USA, Saudi Arabia, Nigeria, United Arab Emirates, Brazil, Spain, India, Australia, Germany, Japan and Canada.

Building on existing educational programs worldwide, the resultant curricula is a resource for academic programs and workforce development efforts across health information professions worldwide, including Health Information Management (HIM), Health Informatics (HI), and Health Information and Communication Technologies (HICT).

The emerging body of knowledge around Information Governance in the healthcare ecosystem anchors the entirety of the health information professions

✿ Special Session



Angelika Haendel

President, The International Federation of Health Information Management Associations (IFHIMA)

Angelika Haendel, holds a bachelor degree in health sciences as well as a master degree in health care management. She's employed at the Friedrich-Alexander-University in Erlangen, Germany with responsibilities for Health Information Management, Quality Management, DRG Controlling and Integrated Care. Moreover, Angelika Haendel is president of the International Federation of Health Information Management Associations (IFHIMA) (2013-2016), editor-in-chief of IFHIMA Global News, co-chair of the EFMI (European Federation for Medical Informatics) working group "Health Information Management Europe" (HIME), board member of the national German HIM Association (DVMD) as well as editor of the German HI/HIM-Journal mdi.

Future of Health Information Management and IFHIMA

Angelika Händel, M.A.

President of IFHIMA 2013 - 2016

DVMD board member

University Erlangen-Nuremberg, Germany

Introduction

The profession Health Information Management (HIM) comprises a broad spectrum of working fields across the entire healthcare landscape in hospitals, long-term care or mental healthcare agencies, community care and government agencies, to name but a few. Health Information Management includes practices such as data management, clinical coding, patient records management, data security, data analyses, privacy, statistics and tracking and reporting of health status from local, regional and global health communities.



Health care organizations are dependent on enormous information generated at different sources. In developed countries, the technological advancements has created a large space for HIM profession to function at multiple levels.

However, HIM profession is not yet a formally recognized workforce in many nations. A wide gap exists among nations in the availability of trained HIM professionals and the perspective towards the HIM profession. Many countries, particularly the developing countries do not have adequate trained HIM workforce to match the emerging requirements in various domains of Health Information Management.

Emerging Trends and their Impact in Health Information Management

Healthcare industry has for many years lagged behind modern e-technologies. But is now rapidly

catching up especially with the adoption of electronic records in health facilities. It is not only the adoption of electronic patient records but also many other ehealth applications that will possibly be implemented in the near future. It can be expected, that in the next five years a number of technological and societal trends will add complexity to the management of health information.

1. The ongoing shift from paper based to electronic patient records is a very important achievement as it enables a more widespread availability of patient data. Moreover, electronically accessible health data can be used in planning, managing, and deploying resources, disease surveillance and research. Yet, with the benefit of a broader use of health care data there will be increasing complexity in data.
2. The electronic patient record is filled with data from different IT-Systems within the hospital e.g. data from laboratory software system or surgery systems, which are generally different to the master patient data system. Moreover, there are different ways data are collected, e.g. manual data input as well as automatic data transfer from e.g. diagnostic devices. Therefore, health IT- and Health Information Professionals will have to deal with increasing interoperability issues.
3. In the course of further development of consumer engagement patients will become more active in placing data into their patient record, for example by uploading self-collected data from their health devices. The increasing use of mobile services will also bring challenges regarding privacy and confidentiality of data as well as challenges related to the quality of data.
4. The increasing participation of patients in their therapy and disease process imposes an increasing demand for training and education of patients in the use of electronic health devices and in collecting and transferring data gathered by themselves.
5. The growing trend towards cloud computing will create rising problems regarding data safety and data protection.
6. More and more data gathered from outside the hospital or healthcare settings will flow into the patient record. For example in the context of integrated care programs with cross-institutional patient records. This raises the complexity of data. We have to cope with increasing interoperability and the merging of patient data.

Trends	Consequences
Ongoing adoption of electronic patient records in health facilities	Increasing data volume and increasing complexity in data
Electronic patient record: Multiple data sources and different ways of data input	Increasing problems regarding interoperability, data safety and data protection
Increasing use of mobile services and applications in health care	Challenges regarding privacy and confidentiality, quality of data
Increasing integration of patients in the disease process	Increasing demand for training and education patients in the use of electronic health devices
Cloud computing	Rising problems regarding data safety and data protection
Rise of integrated care and cross-institutional electronic patient records	Increasing complexity of data, rising interoperability issues and considerable effort to merge data

Table 1: Emerging trends in health care industry and the consequences for the HIM profession

As healthcare systems will become more multidisciplinary and much more complex, Health information Management professionals need to change to meet the demands of an increasingly digital workplace.

There will be the need for higher qualified HIM professionals who can take on more management tasks such as assisting in planning and the implementation of electronic health records. Many HIM professionals are already highly skilled in data analysis and data use. As health care organizations are faced with growing competition, the hospital management will need more statistical calculations and trend analysis. The related information for these statistics will probably come from a variety of sources. HIM professionals will be faced with merging and integrating complex data from these various sources. There will also be a growing need for comprehensive knowledge in the fields of data protection, confidentiality, especially with regard to increasing patient rights and consumer involvement. Last but not least, ICD 10 to be replaced in a few years by ICD 11 and the implementation of new reimbursement systems such DRGs will also continue to add challenges for our profession.

As a result of these challenges, Health Information Management Professionals probably will have to move beyond traditional task-oriented roles to skills that include strategic planning, senior project management and leadership activities. There is a need to develop and enhance skills in preparation for responsibilities for these new tasks.

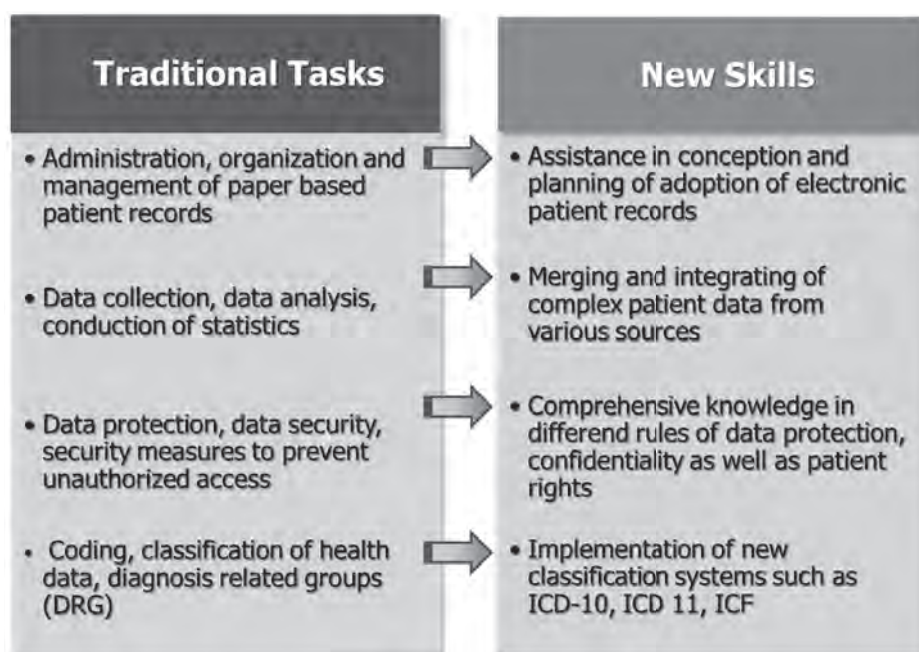


Table 2: Upcoming Challenges for Health Information Management Professionals

International Federation of Health Information Management Association (IFHIMA)

The acronym IFHIMA stands for „International Federation of Health Information Management Associations“. IFHIMA was founded in 1968 as a forum for the exchange of Information on the profession. As an umbrella organization IFHIMA acts as the “global voice” of Health Information Management for 23 member nations and hundreds of individual members. Moreover, IFHIMA is a non-profit, non-gov-

ernmental and independent organization, with official relations with WHO.

IFHIMA member nations are grouped into the six WHO regions according to their geographical location: African Region, Region of The Americas, South-East Asia Region, European Region, Eastern Mediterranean Region, and the Western Pacific Region.

FHIMA is dedicated to the professional growth and development of its members with particular emphasis on education and best-practices.

IFHIMA's goals are to:

- Promote the quality and use of patient records and health information globally.
- Provide best practices in health information management.
- Develop and implement international standards in health information management.
- Advise and assist developing countries with building and enhancing formalized training and education programs.
- Raise the profile of health information management professionals globally.

IFHIMA member nations



www.ifhima.org

How can IFHIMA – as an umbrella organization – address the evolving skills and the training needed?

IFHIMA's mission is to strengthen the health information management profession globally. This includes sharing the latest news in the field of Health Information as well as sharing best practices. Moreover, IFHIMA's mission is to support its member nations and their members in advancing the need for well educated, trained HIM professionals who will ensure high quality documentation along the continuum of care as well as sharing best practices in the field of clinical coding, analytics, research and planning in the field of healthcare. The mission includes assisting developing countries in the establishment of HIM associations, their workforce, as well as nations that have mature, evolving health systems and delivery organizations.

Selection of current activities

Global Curricula

In 2013, The American Health Information Management Association (AHIMA) in collaboration with IFHIMA established the Global Health Workforce Council (GHWC). This council consisted of 13 appointed members from 11 different nations with a cross section of expertise from around the globe. This international working group developed a global academic curricula standard to guide educational programming and workforce training in Health Information Management, Health Informatics and Health Information Technology. The curricula was completed in July 2015 and is

available on the IFHIMA and AHIMA websites. <https://ifhima.org/global-health-information-curricula-competencies/> or <http://www.ahima.org/about/global>

WHO-Working Group

IFHIMA is part of the Education Implementation Committee of the WHO Family of International Classifications (WHO-FIC). Currently IFHIMA is working on a project with the WHO to develop and promote an international training strategy and explore the development of international certification strategy for coders.

DIWHIM Task Force

IFHIMA established the Development of International Workforce for Health Information Management (DIWHIM) task force to assist developing countries in implementing core record management systems, as well as formulating basic health information management educational standards, in accordance with specific country needs and requirements.

Educational Modules

IFHIMA provides educational modules on its website as a resource for individuals or organizations wishing to establish basic learning programs and to foster education and communication among persons working in the field of Health Records/Information Management around the world. Adherence to the guidelines and other information contained in the modules is completely voluntary.

HIM Workforce

In an increasingly digital world, healthcare has become more multidisciplinary and health systems much more complex. Health Information Management professionals face new challenges. In response in 2016, IFHIMA established an Information Governance Work Group to address this emerging area.

While on the one hand the increasing adoption and use of health information technology will face many challenges health professionals worldwide there will be on the other hand many interesting career opportunities for HIM professionals around the globe.

The future looks bright for all Health Information Management professionals, especially for those who recognize the relevant requirements of the HIM profession and therefore continuously adapt their skills and competencies.

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Special Session



Phyllis J. Watson

Retired. Professor. Health Information Management University of Sydney, Australia

Professor Watson worked as a Health Information Manager and educator of health information professionals for 48 years. Was Head of School of HIM at Cumberland College of Health Sciences/The University of Sydney from 1977 to 1997. She has been a member of the MRAA/HIMAA since 1965 holding numerous positions at both State and national level including Secretary/Treasurer, Vice-President, and President. She has also been involved with IFHRO/IFHIMA since 1968 and as International Director held positions of Secretary/Treasurer, Vice-President, and President on the IFHRO/IFHIMA Council/Board from 1976 to 1992. She was awarded Life Membership of HIMAA in 1996. She also consulted for WHO in the Western Pacific and other regions. In January 1994 she was awarded Member of the Order of Australia (General Division) for services to Medical Records. In April 2001 she was awarded an Honorary Doctor of Health Science from The University of Sydney.

IFHRO to IFHIMA – The Journey An Historical Overview - 1949 to 2016

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Honorary Member

International Federation of Health Information Management Associations Sydney, Australia¹

Past President of IFHIMA²

Abstract

The Journey commenced in 1949 and continues through to 2016. This presentation covers the development of the Federation from the beginning when dedicated medical record workers were striving for professional recognition in their own countries and also internationally. The Journey covers the many changes and challenges experienced along the way with a number of successes and some disappointments. The original name *International Federation of Medical Record Organizations (IFMRO)* was changed to *International Federation of Health Record Organizations (IFHRO)* in 1976 and to the *International Federation of Health Information Management Associations (IFHIMA)* in 2010. Although the name was changed to reflect the changes in the profession over the years, the main issues of concern throughout our journey, include professional recognition, lack of human resources, financial limitations, support for medical/health record workers in developing countries and the education and qualification of medical record/health information management personnel in both developed and developing countries.

In the late 1950's and even the early 1960's recognition of the medical record profession was still in its infancy in many countries and some medical record workers found it difficult to look beyond their own shores and even beyond their own working environments. These concerns however did not diminish the enthusiasm and energy of early pioneers who fought strongly to keep the interest alive during the years between each international congress where close friendships and professional contacts were made and rekindled every four years. Although a federation had not been formed, the first four international congresses were proof that such international gatherings were both stimulating and worthwhile.

We hope the journey as outlined reflects the ups and downs but also the developments and achievements managed by many people from different countries who believed in, and continue to believe in, the success and future of international cooperation of medical record/health information professionals.

Part 1 – 1949 to 2000

In 1948 Elsie Royle from Manchester, England helped to establish an Association of Medical Record Officers (AMRO) in the UK. Also in 1948 she visited Canada and the USA and returned to England fired with enthusiasm and a dream of the possible "*linkage between medical record keepers throughout the world*".

In 1949 she extended an invitation on behalf of the UK Association to national associations and

individuals to participate in an international congress of medical record keepers in London 1952.

The First International Congress

Enthusiastic responses were received and after many months of international correspondence the First International Congress on Medical Records was held at King's College in London, United Kingdom in 1952. At the opening ceremony Elsie Royle greeted 309 participants from 9 countries with:

"We meet internationally for the first time to discuss and study a subject which is common to all countries, nine of which are represented here today. We meet in an atmosphere free from rule, regulation or constitution".

She also spoke of the idea of an international organization and expressed the view that:

"By the end of the week we shall no doubt be considering, individually and collectively, what benefit we have derived from this congress. Already there is talk of exchange of personnel, travelling scholarships and more congresses. All are important, but their significance will diminish if for one moment we lose sight of the real reason for our deliberations – the patient".

The Congress was a great success and at the close of the scientific program representatives from seven countries met in a business session to discuss future developments in international relations for medical record personnel. With the enthusiasm evident at the congress it was obvious that people wanted and needed the opportunity to meet and exchange ideas on an international level. It was also realized that post congress enthusiasm could easily evaporate so it was unanimously agreed to hold a second international medical records congress hosted by the American Association in the USA in 1956. It was also agreed that the Canadian, the UK and the USA Association representatives should draft a constitution for an international body which would ultimately assume responsibility for international liaison to be considered at the next congress. Altogether nine recommendations were determined and presented to the final plenary session of the congress

Over the next four years the first congress committee continued as the communications committee in preparation for the second International congress with four sponsoring organizations the American Association of Medical Record Librarians, the Association of Medical Records Officers of the United Kingdom, the Canadian Association of Medical Record Librarians, and the newly formed Australian Federation of Medical Record Librarians.

With what we now call "snail mail" progress was slow between 1952 and 1956 but a provisional constitution was prepared with particular attention to membership and financial responsibility.

Second International Congress

The Second International Congress on Medical Records was held in Chicago with a total of 723 participants from 12 countries which was again a resounding success with an excellent scientific program and social events.

A second Business Meeting was held with official delegates and committees from the four sponsoring associations and other interested participants from seven countries. The four sponsoring countries had four representatives each but as at the first meeting in 1952 only one vote per country. Delegates

recommended an international organization be established but agreement could not be reached on the constitution as some members wanted to refer back to their association. It was agreed that a third congress be held in the UK in four years. An interim international committee was formed with one member from each of the four countries.

There again followed four years of international correspondence by “snail mail” in an attempt to reach an agreement on the formation of an international medical record association but the stumbling block was still agreement on the constitution.

Third International Congress

The next stop in our journey takes us to Edinburgh, Scotland in 1960 and the Third International Congress on Medical Records which again was well attended with an excellent scientific program.

At the Business Meeting Sweden joined Australia, Canada, UK and the USA as the fifth sponsoring nation but again no decision could be reached on the formation of an international organization. Most concerns related to limited financial and human resources but enthusiasm was not diminished and it was agreed that a Fourth International Congress be held in the USA in 1963. The 1956 draft Constitution was discarded and a simple set of guidelines for the formation of an international federation was to be prepared.

Fourth International Congress

After another four years of correspondence the members of the Interim International Committee met again at the Fourth International Congress on Medical Records in Chicago USA in 1963. The Congress again showed the strong interest in an international meeting for medical record practitioners with over 1000 participants from 18 countries.

At the fourth Business Meeting as previously there were four official delegates from each of the five sponsoring national associations plus observers from seven other countries. For the first time all participants of the congress were invited to attend as observers in order to make the objectives of the proposed federation more widely known. Once again, however, the formation of an international medical record federation was deemed premature although it was stressed that interest in its development was in no way diminished.

At this meeting Elsie Royle Mansell announced her retirement. The international committee however was retained with “interim” dropped from the title and a permanent International Medical Record Committee established to be chaired by Mary Rose from the USA. It was unanimously decided that a Fifth International Congress be held and the invitation from the Swedish Medical Record Association accepted for it to be held in Stockholm, Sweden in 1968.

Fifth International Congress

We travel back in Europe to Stockholm, Sweden in 1968 to the Fifth International Congress on Medical Records with 750 participants from 19 countries. The Congress was opened by H.R.H. Prince Bertil who reminded participants that:

“as in all international congresses it is the establishment of contacts as much as formal sessions that is of lasting value”.

Dr. Boga Skrinjar-Nerima, representing the World Health Organization (WHO) Geneva, followed and spoke on the Development of Statistical Services by WHO. As an active supporter of medical record workers she encouraged those present to move forward with the formation of an International Federation.

The next speaker, Elsie Royle, spoke of the development of the international movement to date and threw out a challenge to all:

“I would ask you to have the courage to form an International Federation without further delay, seeking membership from ten national associations. All that is needed is a simple constitution, and I stress simple, administered by a small administration”.

Agreement was unanimous and the *International Federation of Medical Records Organizations* (IFMRO) was formed 16 years, five congresses and many thousands of letters after the idea was first discussed in London in 1952. Elsie Royle's dream was now a reality.

The Voting Body of IFMRO was to be the Grand Council composed of one accredited delegate from each national member association. From these delegates a Board of Managers was to be elected and given the responsibility for the day to day business of the Federation. It was determined that international congresses would continue to be held every four years. The invitation from Australia to hold the next congress in Sydney, Australia in 1972 was accepted.

The elected Executive included: President: Betty James, Australia, Vice-President: Lorraine Gay, USA, Secretary: Bart Verwaart, The Netherlands and Treasurer: Ronald Howell, the United Kingdom.

In 1972 our travels take us to Australia and the Sixth International Medical Records Congress the First Congress to be held under the joint auspices of the International Federation of Medical Records Organizations and a national association. The Congress was again a resounding success with 409 participants from 24 countries – fifteen more countries than the first Congress and seven more than the Fifth.

At the Grand Council Meeting associations of Norway, Nigeria and Venezuela were accepted as members. An Associate Member category was established for persons in countries without a national association. Four sub-committees were formed: the Publications Committee with Gerald Wakely NZ, Convenor, Ways and Means Committee, Mary-J Waterstraat, USA, Convenor, an Advisory Committee for Developing Nations and a Training and Education Committee. The last two were combined with Betty James as Convenor.

Also at the Grand Council meeting the elected office bearers on the Board of Managers for 1972 - 1976 were President: Lorraine Gay, USA, Vice-President: Liliane Gauthier, Canada, Secretary: Bart Verwaart, The Netherlands, Treasurer: Dorothy Bell, Australia. The rest of the Grand Council consisted of one Director from each of the following: New Zealand, Nigeria, Sweden, and the United Kingdom.

The years between the congresses were busy ones for the Board of Managers and the Grand Council with a detailed review of the IFMRO constitution. During this time although the International Federation had not collaborated in a formal capacity with WHO previously a solid relationship between

the two organizations developed. To improve communication a decision was made to publish an International Newsletter twice a year and produce an Information Brochure on IFMRO, printed in English and French. It was also decided to develop education material relating to medical record practice and clinical coding.

In 1976 we travelled to Toronto, Canada for the 7th International Medical Records Congress with 2000 participants from 23 countries. Dr. Boga Skrinjar again represented WHO and continued her active support of IFMRO.

Two new member nations were accepted, the Indian Association of Medical Record Librarians/Officers, and the German Association of Medical Documentalists (DVMD). There was a change of name from Board of Managers to Executive Committee for day to day business but the Grand Council remained the Governing Body. The Organizations name was also changed from International Federation of Medical Records Organizations (IFMRO) to International Federation of Health Records Organizations (IFHRO).

The elected Executive Committee for 1976 - 1980: President: Liliane Gauthier, Canada, Vice-President: Sjaak Velthoven, The Netherlands, Secretary/Treasurer: Phyllis Watson, Australia, Councillors: Basil Bonner, UK, Gerald Wakely, NZ. An important decision at this meeting was that in future one of the nominated Executive members should be a representative of the country hosting the next international congress.

Other decisions of the Grand Council included that the International Newsletter continue to be produced with Gerald Wakely as Editor. A report from the President would be included in each issue as well as articles from Member Nations. Design suggestions for an IFHRO Logo and Letterhead would be sought through the Newsletter and voted on by all National Directors. A very important decision at this time was that a surcharge equivalent to US\$ 10.00 be added to future congress registration fees to assist IFHRO's financial situation.

Another important development in 1978 was the submission by the IFHRO Secretary to the World Health Organization (WHO) for recognition as a non-government Organization (NGO). The submission was successful and in January 1979 IFHRO was admitted into official relations with WHO as a NGO.

Then in 1979 an Honorary Membership category was established and awarded for the first time to Elsie Royle Mansell. In March 1979 Sjaak Velthoven (IFHRO Vice-President) presented her with an inscribed plaque referring to her as the *Mother of the Federation*.

In 1980 our journey took us to The Hague, The Netherlands for the 8th International Health Records Congress. As at previous congresses the organizers had prepared an excellent scientific program and offered wonderful social events.

At the Grand Council Meeting the logo design used by the Congress Committee was formally accepted as the logo for IFHRO. The election for the Executive Committee resulted in President: Sjaak Velthoven, The Netherlands, Vice-President: Carol Lewis, USA, Secretary/Treasurer: Basil Bonner, UK, Councillors: Gerald Wakely, NZ, and Patricia Hewes, Canada.

Four new member nations were accepted the Italian Society for Hospital Medical Records, Japan Medical Record Association, Association of Medical Record Officers of Kenya, and the Korean Medi-

cal Record Association.

The New Zealand Medical Record Association won the bid to host the Ninth International Health Records Congress in Auckland New Zealand in 1984.

The week prior to the beginning of the Ninth International Health Records Congress a two week *Train the Trainers Workshop for Educators* was held in New Plymouth with eleven participants assisted by WHO and four tutors. Participants then attended the Congress and discussions were held at the end of each day. This Congress, organized by a small association, was again most successful with excellent scientific sessions and social events.

At the Grand Council meeting two new Associations were accepted the Jamaica Medical Record Association and the Colombian Association of Health Statistics. Nine Associate members were also accepted. The resignation of the Swedish Health Record Association was accepted with regret. A new category of Friends of IFHRO was established which included interested persons from member associations.

The elected office bearers for the next four years were: President: Carol A. Lewis, USA, Vice-President: Phyllis J. Watson, Australia, Secretary/Treasurer: Mark Thorburn, NZ, Councillors: Ulli Hoffmann, Germany, and Shoshana Shnitzer, Israel. The news of the death of IFHRO's founder Elsie Royle Mansell in January 1986 was sadly received.

With the success of the Educators' workshop in New Zealand IFHRO was able to conduct a second Workshop before the 6th European Medical Record Congress in Malta. The conference was organised by the German Association of Medical Documentalists and chaired by Ruth Zwick. A Coding Seminar was conducted after the Conference.

Back to the USA in 1988 and the 10th International Health Records Congress held in Dallas, Texas with 2600 delegates including 79 international participants.

At the Grand Council meeting it was reported that the American Medical Record Association agreed to set up a US dollar account for IFHRO at AMRA Headquarters in Chicago. A number of alterations to the constitution including membership, business by mail and telephone, and issues relating to the financial records were also ratified. The Medical Record Association of The Philippines was welcomed as newest member. The Canadian Health Record Association won the bid to host the 11th International Health Records Congress.

The elected Executive for 1988 – 1992 were President: Phyllis Watson Australia, Vice-President: Ulli Hoffmann, Germany, Secretary-Treasurer: Peggy Starks, USA, Councillors: Philip Roxborough, NZ, and Ayala Shay, Israel.

Another 4 years have passed and we now travel to Vancouver, Canada in 1992 for the 11th International Health Records Congress hosted by the Canadian Health Record Association with participants from 18 countries.

At the Grand Council Meeting three new Member Nations were accepted: the Institute of Hospital and Health Service Administrators of Ireland, the Chinese Medical Records Association and the Indonesian Society of Medical Records and Health Information (PORMIKI), eight new Associate members were also welcomed.

The elected Executive for 1992 – 1996 were President: Ulli Hoffmann, Germany, Vice-President: Vicki Tichbourne, Canada, Secretary-Treasurer: Philip Roxborough, NZ, Councillors: Jennifer Mitchell and Ayala Shay.

Another very successful Post-Congress Educator's Information Exchange Workshop was held.

In 1996 – we travel to Munich, Germany for the 12th International Health Records Congress. Prior to the Congress two workshops were conducted. An Educators Information Exchange Workshop with 9 participants from 8 countries followed by a Coding Workshop with 15 participants from 11 countries. Although numbers were small both were very valuable for participants as it gave them the opportunity to interact on an international level.

The Congress was a great success with a wealth of excellent sessions and the opportunity to network with international colleagues at the well organized social events.

The Grand Council Meeting was again a highlight of the Congress. Observers were welcomed and allowed to ask questions during the meeting. The Hong Kong Medical Record Association was welcomed as a national member. IFHRO now had 20 member nations.

The Executive Committee for 1996 – 2000 was President: Vicki Tichbourne, Canada, Vice-President: Willem Hogeboom, The Netherlands, Secretary-Treasurer: Philip Roxborough, New Zealand, Councillors: Susan Walker, Australia and Jean Clark, USA.

David Dobson and Cynthia Williams, members of the Jamaica Medical Record Association, presented an Award of Honor to Carol Lewis in recognition of her tireless involvement and assistance to JMRA.

Australia won the bid to host the 13th International Health Records Congress to be held in Melbourne in 2000.

Part Two – 2000 to 2016 Prepared by Phyllis Watson for Lorraine Nicholson

It was the beginning of a new era for IFHRO as we moved into a new Century. Electronic developments were now making communication easier.

The Congress held in Melbourne in 2000 was most successful with 375 participants from 26 countries. As at previous congresses the program offered participants the opportunity to learn of new developments in many countries, to meet new colleagues and enjoy the social activities.

At the Grand Council meeting changes were made to the structure of IFHRO. They included a change of the role of the Grand Council from the decision making mechanism of IFHRO to the General Assembly which would act as an International discussion forum. More responsibility was transferred to the Executive Committee. The frequency of Congresses was changed from four to three years commencing from 2004 and the Executive Committee was expanded to consist of seven members of the General Assembly which included the President, President-Elect, Secretary-Treasurer and Four Regional Directors.

The Executive Committee for 2000 – 2004 included President: Willem Hogeboom, The Netherlands, Vice-President: Jean Clark, USA, Secretary/Treasurer: Philip Roxborough, New Zealand and Councillors: Lourdes Palapal, The Philippines and Lorraine Nicholson, the UK.

Another successful Educator's Information Exchange Workshop was held following the Congress with 22 Participants from 13 countries.

Back to the USA in 2004 for the 14th International Health Records Congress in Washington, DC – with a record breaking 4000 participants from 39 countries. A successful Educator's Forum preceded the Congress and set the scene for the sessions and social events which followed.

The General Assembly included Executive Committee members, National Directors and Observers. Denmark was welcomed as the 21st national member. Reports were presented by the President, the Membership Task Group, the Editorial Committee, and the European Task Group. A report was also presented on the Internet and Public Relations. It was noted that the position of Secretary/Treasurer had been eliminated. The Korean Medical Record Association won the bid to host the 15th International Health Records Congress in 2007 in Seoul, Republic of Korea.

The Executive Committee for 2007 – 2010 were President: Lorraine Nicholson, UK, President-elect: Margaret Skurka, USA, Directors: Africa, Robert Wamalwa, Kenya; the Americas, Marci MacDonald, Canada; Europe, Angelika Haendel, Germany; the regions of Eastern Mediterranean and South East Asia were vacant. In addition Keneti Vaigafa, Western Samoa was accepted as an ex-officio member for the Western Pacific.

Following the formal part of the meeting five topics were discussed: Electronic Health Records, Privacy, Security and Confidentiality of Personal Health Information, Clinical Data Management, Health Record/Health Information Management Education, and Needs of Developing Countries. In addition the Joint WHO/International Credentialing initiative was discussed in detail.

In May 2007 we travel to Asia for the first time to Seoul, Republic of Korea for the 15th International Health Records Congress hosted by the Korean Medical Record Association with 759 delegates including 93 international participants from 26 countries (12.25% of total delegate numbers).

The theme, *Business Intelligence in Health Care Management*, enabled delegates to participate in workshops and discussions, and network with their international peers.

At the closing ceremony certificates were presented to ten Underlying Cause of Death (UCD) Coders from Korea and two from Canada and to two Korean (UCD) trainers.

Venturing into the latter years of the first decade of the 21st Century was exciting and challenging with 2008 being a special year to celebrate the 40th Anniversary of the formation of IFHRO, the 60th Anniversary of the World Health Organization and the 60th Anniversary of the Institute of Health Records and Information Management (IHRIM) formerly AMRO and a founder member of IFHRO.

Our travels take us back to Europe in 2010 for 16th IFHRO Health Records Congress and General Assembly in the Milan International Convention Centre, Italy hosted by the Italian Medical Record Association (AIDOS- IMERA). President of AIDOS-IMERA, Dr. Leonardo la Pietra warmly welcomed delegates and explained that AIDOS-IMERA was established at the end of 2004 to promote the spread of safety awareness and culture within the Italian Health System. He also explained that Health Information Management and Quality of Care had a long history and gave a very interesting presentation on the history of medical records.

At the General Assembly, 32 directors and alternate directors' were present representing 16 mem-

ber nations. Twenty-five observers were also present. The President took members through each proposed change of the constitution which included: The provision for the immediate past president to remain a Board member for the purposes of continuity and increase the Federation's available workforce. At the meeting it was also agreed that the name Alternate Director be changed to **Deputy Director**.

A significant decision at this meeting however was the change of name of the Federation to **the International Federation of Health Information Management Associations (IFHIMA)**.

The Executive Committee for 2010 - 2013 were President: Margaret Skurka, USA, President- Elect: Angelika Haendel, Germany, Directors: Africa and Eastern Mediterranean, Joon Hyun Hong, Republic of Korea; the Americas, Marci MacDonald, Canada; Europe, Stuart Green UK; South East Asia, Yuki-ko Yokobori, Japan; Western Pacific, Sallyanne Wissmann, Australia. In addition Lorraine Nicholson remained as immediate Past President.

In 2013 our journey took us again to Canada for the 17th IFHRO Health Records Congress and General Assembly in Montreal. An IFHIMA Education Day preceded the Congress and focused on leadership skills required for Health information managers. As well as an excellent scientific program and social events the congress offered a poster display with 38 excellent posters from 10 countries covering a wealth of topics.

At the General Assembly initial discussion focused on four key issues of IFHRO/IFHIMA including Data Quality, Education, Electronic Health Records and Needs of Developing Countries.

Following further discussion it was determined that IFHIMA priorities going forward include:

1. **ADVOCACY** - includes work with our global partners; continued outreach to non-member nations; our ongoing work with WHO-FIC/IFHRO Joint Collaboration and contributions to the development of ICD-11.
2. **KNOWLEDGE DOMAIN** - with the need to continue IFHRO/IFHIMA's work on HIM education and competencies. Areas requiring special attention included the electronic health record, data quality and data management.
3. **MEMBERSHIP** - questions to be addressed included: How can we support countries in need of help with their health/medical record services? HIM education and individual recognition? How IFHIMA can increase membership? And How best can IFHIMA meet the needs of all members?

In addition, with the global demand for more accurate and complete mortality and morbidity coded data IFHIMA will continue to work through WHO-FIC to support these initiatives as well as vetting the future ICD-11.

Other decisions included that an ex-officio Board Member position be created, entitled Membership Chair/Treasurer to be the responsibility of the incoming President to appoint an individual to serve for the same 3 year term as the President, and an increase in the size of the Executive Board by one member from seven to eight. The rationale was that it would align with the six WHO Regions and increase the size of the Board in order to deal with workload efficiently and effectively, and to more equitably represent the regions by having a Board member responsible for each region without the need

to combine responsibility for regions.

The elected Executive and Board Directors for 2013 to 2016 were: President: Angelika Haendel, Germany, President-Elect: Marci MacDonald, Canada, Directors: Sallyanne Wissmann, Australia, Yukiko Kokobori, Japan, Yoo-Kyung Boo, Republic of Korea, Wole Ajayi, Nigeria, and Lorraine Fernandes, USA. In addition Margaret Skurka, as immediate Past President joined the Board as an ex-officio member.

The years between 2013 and 2016 were busy for the Executive Board who continued to follow the three priorities as they moved forward to 2016. Their greatest achievement was the acceptance of five new member nations including:

- Barbados Health Information Management Association (BHIMA) in 2013;
- Ghana Health Information Management Association (GHIMA) in 2015;
- Tanzania Health Records and Information Association (THERA);
- Saudi Arabia Health Information Management Association (SHIMA) in 2016) and the
- Health Information Management Association of India (HIMA) who applied to rejoin after some years.

Conclusion

In this presentation we have only been able to give a brief summary of the history of IFMRO/IFHRO/IFHIMA and have not given details of congresses and business meetings or mentioned the many persons involved in making them successful. We wish to acknowledge the work carried out since 1949 by so many professionals, not only presidents and executive members but also those who have worked on projects, participated on committees, organized congresses, and given their time to assist developing countries in an endeavour to improve medical record services around the world.

We have witnessed changes and at times incredible challenges which have dominated our profession from the beginning and will continue to do so in the future. There is still a lot to be done and IFHIMA will only continue to grow with support, ideas, persistence and commitment by all members. As our journey continues we also need to ensure that as a Federation we are united by our common goals and objectives. As recorded in 1952 Elsie Royle (Mansell) observed *Lifelong success of any profession is a steady undiminishing provision of competent members who are actively concerned with maintaining consistently high professional standards.*

In 2016 we should look to the future but not forget the past. Changes will be made but hopefully the original underlying philosophy of the Federation will be maintained and strengthened.



Margaret A. Skurka

Indiana University Northwest, USA

Margaret is nationally recognized as an educator in Health Information Management (HIM) and an expert in ICD-10-CM and ICD-10-PCS. She has been in the HIM profession for 40 years. She is a full professor at Indiana University, at the Northwest campus in Gary, Indiana, and serves as Assistant Dean and Chair of the Department of Health Information Management. She carries the senior title of Chancellor's professor. She also consults to physician practices and ambulatory surgery centers.

Margaret understands coded data, the importance of accuracy and the tie to reimbursement. She performs effective audits of clinical documentation and follows this up with on target physician education and feedback. She was on the ground floor of teaching ICD-10-CM/PCS nationwide as faculty in the American Health Information Management Association (AHIMA) Academies. At the University she has taught courses in diagnostic and procedure coding, quality management, and other aspects of HIM. Her lifetime in academia has given her a solid knowledge of the core of HIM and given her the opportunity to be an author and well as an educator. She also has had a strong commitment to the HIM profession with her work in speaking and assuming leadership roles in the national association, the AHIMA, as well as the state association in Indiana, the Indiana HIM Association. She was recognized by the University of Illinois, Department of HIM as the Alumnus of the Year in 2004.

Early in her career, Margaret worked in a suburban hospital in a management position in the HIM Department. She also worked as the Interim Director of Education for the AHIMA in Chicago, and did consulting in ambulatory care, long term care and physician practices. Most recently when she is not at the University in the summers, she does extensive speaking, consulting and writing in the profession. Margaret and Karen Zupko teamed up in 1989 and developed "Code It's"™, which was a popular diagnostic coding aid.

Margaret received her Master's degree from Purdue University in Education and Personnel Services. Her bachelor's degree was from the University of Illinois in Health Information Management. She carries a certification from AHIMA as a CCS, a certified coding specialist. She was also named a Fellow in the AHIMA in 2008, and received the AHIMA Distinguished Member of the Year award in 2010. This is the highest honor AHIMA bestows. She was the national President of AHIMA in 2000 and served 6 years on the Board of Directors. Most recently she was named the Chancellor's Professor for 2015 at Indiana University Northwest.

IFHIMA DIRECTORS: Governance and Leadership

Margaret A. Skurka

Indiana University Northwest, USA

This presentation will cover the current Governance and Leadership of IFHIMA. The IFHIMA Executive Board is made up of 8 elected officers. These positions are the President and the President-Elect, and 6 Regional Directors. The Past President also serves in an ex-officio capacity for at least one year. The presentation will review the responsibilities of the 6 Regional Directors, covering the 6 WHO Regions of: Africa, the Americas, The Eastern Mediterranean, Europe, South East Asia and the Western Pacific. The Executive Board meets yearly face to face and otherwise conducts business via regularly scheduled teleconferences. The importance of the involvement at the Regional level will be emphasized.

It will also be important to review the responsibilities of the IFHIMA National Directors and Deputy National Directors. These individuals serve at the General Assembly during the face to face meetings every three years. The National Director must be a member in good standing of his/her national association. The individual is the representative for their country and are expected to contribute to IFHIMA on a regular basis. The Deputy Director serves in the absence of the National Director. Electronic communication is the primary method of communicating. Members in attendance at this session will be encouraged to become more involved at their country or Regional level. Specific suggestions will be made on ways to become more involved, including authorship of articles in the Global News and representing IFHIMA at Regional meetings. IFHIMA thrives and survives because of its Health Information Management volunteer work force. All are welcome and dedication and good strategic thinking welcomed.

PAPER

The IFHIMA Executive Board includes the President, President-Elect, and past President. Other board members include the 6 Regional Directors who have responsibility for their respective regions. These regions currently include : Europe, The Americas, Africa, the Eastern Mediterranean, South East Asia, and the Western Pacific.

The Regional Directors have various duties. These include attendance via teleconference at least quarterly and attending one face to face meeting each year. They are responsible for providing communication from their region to the Global News and also leading the regional team of National Directors from the countries in their Region.

The requirements of a Regional Director are to serve a 3 year term of office at their own expenses, or the expense of their National Member Association. They may serve 2 consecutive terms. They must also be the nominated Director of a national organization in good standing with IFHIMA. Also, they do not have to reside in the region they represent. They must have relative electronic communication available, and respond regularly to email communications. They should participate in at least 75% of the board meeting/teleconference of a given year.

It is typical after a General Assembly (GA) meeting, to convene a short meetings of the representatives of the various countries in their region who are at the meeting. Our Regional Directors should be pro-active in generating ideas to raise the profile of IFHIMA and also work on increasing the number of countries in their region to belong to IFHIMA. It is good if the National Director can attend meetings of the country associations in their region.

National Director's and Deputy National Directors also have responsibilities within the IFHIMA organization. The responsibilities are very similar to the Regional Directors. They serve for 3 years, and must be in good standing in their country. They have a vote in the GA if their country is current on their dues. They also must participate in regular electronic communication and be familiar with and contribute to the web site. Their terms begins at the triennial GA meeting. They are responsible for effective communication with IFHIMA, following through on obtaining dues payments from their country, and exercise their right to be seated as a voting member at the GA meeting. They should also contribute regularly to the Global News and the IFHIMA web site, be proactive in recruiting new members, and contribute to any Regional Newsletter. It is good also if National Director's take responsibility for building a relationship, if possible, with the WHO Country office. The National Directors should produce a regular report on IFHIMA activities for their national board and also keep their Regional Director's current on events in their region. In summary, they could contribute to the betterment of IFHIMA in as many ways as possible.

IFHIMA has Strategic Initiatives that are updated every 3 years. Board members, Regional Directors, and National Directors should contribute to any White Papers that emerge from these initiatives.

Communication is a big part of the responsibilities of everyone involved in IFHIMA leadership. Email communication has been stressed as it is the quickest, often easiest, and most inexpensive way of communicating. When dealing with individuals from all over the world, it is our way of communicating with each other, sharing thoughts, and managing the week to week business. IFHIMA leadership works as a team.

The overall objectives of IFHIMA are

- To promote the quality and the use of patient records and health information globally
- To provide best practices in Health Information Management
- To develop and promote international standards in Health Information Management
- To support developing countries in building up formalized training and education programs
- To raise the profile of Health Information Management Professionals globally

Promotion of IFHIMA is everyone's responsibility and we all should make contributions at the local, country, national, and international level. Challenges going forward from the Congress always include maintaining momentum. Almost all of the volunteers also have full time jobs that take precedence over volunteer activities. IFHIMA is fortunate to have committed leaders who take their roles seriously.

Two closing thoughts---One always takes away from an activity as much as one puts in, and Never miss an opportunity to tell someone THANK YOU.

REFERENCES

IFHIMA web site, www.ifhima.org

Special Session



Lorraine Nicholson

Past President of IFHIMA

Lorraine Nicholson was an operational health records manager in the English National Health Service (NHS) for many years and she held a fellowship in the Centre for Public Policy and Management at the University of Manchester for 12 years. She is an independent HIM Consultant, who has undertaken work in all the home countries of the UK, the States of Guernsey and the Isle of Man. Her work with the Department of Health in England included updating the national retention schedules for all types of NHS records including health records, development of the NHS Code of Practice for Records Management and development of the Information Governance Toolkit (IGT) against which all English NHS organisations are assessed annually. She has had a special interest in health records in developing countries for many years and her overseas consultancy portfolio includes work at Ministry of Health and hospital level in Malaysia, Thailand, Uganda and the West Bank and the Gaza Strip. She is a Past Chairman, Chief Executive and a Fellow of the Institute of Health Records and Information Management (IHRIM UK), a Past President of the International Federation of Health Information Management Associations (IFHIMA) and IFHIMA's current Membership Chair.

This paper was not presented at the meeting because the author was not able to attend.

Title of presentation: The IFHIMA/AHIMA Book Donation Project “Helping to Improve the Quality of Health Information Globally”

Joint IFHIMA/AHIMA Book Donation Project 2013/2014

Lorraine Nicholson FHRIM (UK)

Membership Chair 2013-2016

Past President of IFHIMA 2007-2010

ABSTRACT

The IFHIMA/AHIMA Book Donation Project was conceived following an invited presentation on the “HIM Education Issues in Developing Countries” made to the International Educator’s Day held immediately before the 17th IFHIMA Congress in Montreal, Canada in May 2013. This presentation initiated discussions with the late Kathleen Frawley, a past president of AHIMA, and other educators during the congress and for many months afterwards. The overall objective of the project was to bring the very latest in HIM knowledge and principles to HIM practitioners and teachers around the world to help them to improve HIM practices in their respective countries and thereby support efforts to improve the quality of health information globally. A project to address some of these needs was identified and this went through a number of iterations before the final shape of the program was agreed.

Once the final format of the project was agreed IFHIMA and AHIMA worked diligently and harmoniously together for many months to define how best to execute their mutual goal the logistics and financial aspects of which were both complex and challenging. Requesting nations received one copy of five newly published AHIMA book titles, defined by both organizations, and AHIMA and IFHIMA jointly funded the shipping costs through equal contributions. The project adopted a different approach than initially envisaged, but financing, logistics, and international shipping considerations proved to be considerably more challenging than anticipated. The objective of the project was met by the delivery of a program that was both meaningful and forward-looking.

1. DEVELOPING THE PROJECT

1.1 Presentation for the International Educator’s Day in Montreal in 2013

A presentation that I made by invitation to the International Educator’s Day prior to the 17th IFHIMA Congress in Montreal in 2013 entitled “HIM Education Issues in Developing Countries” stimulated a very positive and enthusiastic debate amongst the participants, which continued throughout the congress and beyond!

My presentation was informed by my own work in a number of developing countries on different continents over many years and, latterly, by my visit to Nigeria to speak to the National Working Committee on Electronic Health Records in Lagos in August 2012 and my outreach visits on behalf of IFHIMA

to Kenya and Tanzania in January/February 2013. It was also informed by IFHIMA Colleague Joon Hong's Survey of HIM Education in 12 Countries in Africa and the Eastern Mediterranean regions in 2012. One of her research questions related to HIM Education and 7 countries out of the 12 surveyed cited HIM Education as an urgent priority in their country. Respondents also cited the need to raise the profile of HIM Education and initiate the development of an HIM learning environment in their respective countries. Moreover respondents requested help to access HIM teaching resources and materials and cited a lack of education and training options and they requested a partnership to provide input and/or advice to develop them. An additional source of information for the presentation was IFHIMA's On-line Member Survey conducted during Margaret Skurka's Presidency in 2012, which revealed an increased need for training in developing countries and a suggestion that IFHIMA should try to develop practical educational HIM programs at different levels for developing countries.

During the development of my paper and presentation to the international educators, I decided to draw upon one of my most recent outreach visits to Tanzania to develop a case study as evidence for the need for support in developing countries which are striving to provide basic education and training programmes for HIM practitioners and to expand the range of materials available for study and research in higher education. I visited academic libraries and in-service study departments as well as operational coding departments and I saw the overwhelming need for coding manuals, reference books, professional journals and computers to help them to study and undertake research. Encouragingly, I also saw the shining eagerness of the students who wanted to take further programmes of study in HIM!

The case study that I presented was based on real life experience, which I hoped would bring the situation alive, increase awareness of the issues and identify some of the ways that individuals could help to make a difference not just in Tanzania but elsewhere in the developing world!

1.2 Outreach Visit to Tanzania

In January 2013 I visited Tanzania on behalf of IFHIMA at the invitation of the national HIM association THERIA (Tanzania Health Records and Information Association) to assess the current situation regarding Health Information Management (HIM) and HIM Education and to help the Association to identify requirements to move HIM forward nationally. I visited the Training Centre for Health Records Technology (TCHRT), which was established in 1991 at Kilimanjaro Christian Medical Centre (KCMC). At the time of my visit it was the only school licensed for HIM training by the Ministry of Health. By means of support from a qualified UK clinical coding trainer and donations of ICD10 books and coding manuals from a UK-based charity the Centre had been delivering training in ICD10 and OPCS Procedure Coding (OPCS 4), which is the UK's procedure classification system, since 2004.

At the time of my visit, the Centre had very old training resources, no computers for teaching or research, only very old but well-used textbooks were available, no regular professional or peer reviewed

journals were available for study and research, the coding reference and training manuals that they had were very well-worn and there were insufficient numbers of books for the number of students attending the centre. I took a photograph of the empty shelves in the library at the Centre, which told their own story and the Principal and his teaching staff told me that donations of any books and/or teaching materials would be greatly appreciated! I think that the photograph of the library shown below was iconic and one of the most persuasive elements of my presentation, which stimulated the ensuing debate! “One Picture is Worth a Thousand Words” – *this exact phrase appeared in a 1918 newspaper advertisement for the San Antonio Light, a daily newspaper in San Antonio, Texas, USA.*



Library at the Training Centre for Health Records Technology in January 2013

There was so much that the Centre needed but despite having to use archaic equipment, antiquated materials and limited resources such as journals, reference books etc. the Centre was delivering great results in terms of academic standards and operational capabilities in its graduates!



*Second Year Students at the Training Centre for Health Records Technology
Kilimanjaro Christian Medical Centre (KCMC), Moshi, Tanzania – January 2013*

Tanzania wasn't unique – their situation mirrored the situation elsewhere in the developing world!

1.3 Meeting the Need for HIM Text Books and Initializing the Project

Those of us lucky enough to study and work in well-resourced educational facilities take books and other educational resources for granted. The Educators present in Montreal described the numbers of books that were discarded every year and expressed a desire to put them to good use to help HIM students in the developing world.

Some early feasibility studies were undertaken regarding the redistribution of these books but the logistics and shipping costs were prohibitive. However, further discussions ensued and in mid-2013 IFHIMA and AHIMA joined forces to deliver a one-time project to provide textbooks to select countries and programmes around the world with the aim of advancing the HIM profession through education and collaboration. The project was enabled through a generous donation of new textbooks by AHIMA, coordinated by IFHIMA and transportation costs were jointly funded by AHIMA and IFHIMA. The project was under the initial guidance of AHIMA's late-President Kathleen Frawley, who had championed education for health information management professionals throughout her distinguished career. Outreach was undertaken in late-2013 to help the IFHIMA Board identify potential recipients so that the project could be initialized.

2. DELIVERING THE GLOBAL PROJECT AND SHIPPING THE BOOKS

2.1 Project Logistics

Delivery of this global project was very complex and planning and execution of the numerous tasks involved required extensive support from both organizations in addition to the joint funding for international transportation costs. A total of 34 sets of 5 books were distributed to 19 countries mostly by Express Air Shipment via DHL Aid Relief in early December 2014 except for the shipments to India, which were sent via the Centre for Health Informatics of the National Health Portal in New Delhi and Africa, which were sent via the East Central and Southern Africa Health Community (ECSA-HC) in Arusha Tanzania respectively. Both of these consignments were sent via DHL Air Freight because of the size and weight which made Express Air Shipment prohibitively expensive.

2.2 Shipping and Delivery of the Books

During the shipping phase of the project the various consignments were tracked on-line as they were transported around the world and both IFHIMA and AHIMA were delighted when confirmation was received that the books had been safely delivered. Throughout, we witnessed the obvious delight of the various people and organizations around the world through the photographs and letters of appreciation that we received! The photos shown below are only two of many photos received!



*Students at the School of Health Sciences,
Department of Health Information Management at Manipal University in Karnataka, India*



Book Recipients in Indonesia

The generous assistance of the following organisations who absorbed transportation and distribution costs within their regions is gratefully acknowledged:

- East Central and Community (ECSA-HC), Arusha, Tanzania
- Centre for Health Informatics of the National Health Portal, New Delhi, India
- WHO Regional Office for the Eastern Mediterranean
- Secretariat for the Pacific Health Information Network (PHIN) at the University of Queensland

Both IFHIMA and AHIMA express the hope that the donated books will continue to support teachers, students and operational health information managers and practitioners around the world going forward.

3. SUPPORTING HIM EDUCATION GOING FORWARD

3.1 Future Challenges for the HIM Profession

There are undoubtedly interesting and challenging times ahead for the HIM profession in order to meet the challenges of Electronic Health Record (EHR) implementation, increasingly demanding service

delivery targets and the work needed to improve the quality and quantity of health data and information to enable the delivery of safe and effective healthcare and to support epidemiology and research. Education will be a key factor in meeting these challenges and ensuring that the HIM workforce is well-prepared for what lies ahead!

3.2 Additional Book Donations at the IFHIMA Congress in Tokyo in October 2017

Funds for this valuable book donation initiative are now exhausted and there are no plans to repeat it due to its cost and complexity. However, the IFHIMA Executive Board decided to take the opportunity offered by IFHIMA's 18th international congress in Tokyo in October 2016 to try to continue the initiative to deliver much-needed books to delegates from the developing world. All of IFHIMA's National Directors who were attending the congress were asked to take some books to Tokyo as a donation to help improve educational resources in the developing world. These books would then be collected and distributed to delegates from developing countries to take back to their home countries after the close of the congress. This proved to be a very successful continuation of book donations for the developing world!

3.2 Other Educational Initiatives to Support HIM Education in the Developing World

Other notable educational initiatives to support HIM education in the developing world have also been implemented since the congress in Montreal in May 2013. It is heartening to hear that there has been input from a number of organisations in Canada, the USA, the UK and other countries by means of donations of books, computers and teaching expertise in Tanzania and elsewhere!

Marci MacDonald from Canada, IFHIMA's President Elect, co-chaired and represented IFHIMA together with IFHIMA President, Angelika Haendel, on the Global Health Workforce Council (GHWC), which is a group that was brought together by means of joint IFHIMA/AHIMA project enabled through a grant from the US Dept. of Commerce to AHIMA to look at standard HIM competencies and education on a global scale <http://ifhima.org/global-health-workforce-council-ghwc/> A huge thanks goes to Marci MacDonald from Canada, who co-chaired this international council together with Professor Bill Rudman from AHIMA.

Dr K.M. Sabu, Associate Dean of the School of Allied Health Sciences (SOAHS) and Professor in the Department of Health Information Management at Manipal University in Karnataka, India has established and is chairing the "Development of International Workforce for Health Information Management (DIWHIM) Task Force" in collaboration with IFHIMA sabu.km@manipal.edu Mr. Hussein Albishi from Saudi Arabia is Vice Chair of this working group and IFHIMA's President, Angelika Haendel, is Chief Mentor. Dr Sabu's work is focussing on education and training for the large and very important lower level workforce in HIM Departments i.e. receptionists, clerical staff, filing clerks etc. There is more information about this initiative on the IFHIMA website at <http://ifhima.org/working-groups/> and updates will be posted as they become available.

International Symposium



Adebisi Adeshina Bambe

Lasuth Lagos, Nigeria

Educational Background	Period
Primary Education	
<ul style="list-style-type: none"> St. Paul Breadfruit School, Lagos 	1965-1972
Post Primary Education	
<ul style="list-style-type: none"> Nigeria Premier College, Yaba, Lagos 	1973-1978
Tertiary Education	
<ul style="list-style-type: none"> Ordinary National Diploma (Health Records Admin. & Bio-statistics) Lagos University Teaching Hospital Idi-Araba, Lagos (LUTH) 	1996-1998
<ul style="list-style-type: none"> Higher National Diploma (Health Records Admin. & Bio-statistics) Lagos University Teaching Hospital Idi-Araba, Lagos (LUTH) 	1998-2000
<ul style="list-style-type: none"> Bachelor of Theology (B.Th) WOBICOTS, Lagos (Seminary & Theological) 	2001-2006
<ul style="list-style-type: none"> B.Sc Health Information Management Houdegbe North American University, Cotonou, Benin Republic 	2010-2012
Key Skills and Attributes	
<ul style="list-style-type: none"> Good interpersonal analytical and communication skill Efficient and Effective managerial ability Counselling 	
Objective	
<ul style="list-style-type: none"> To contribute significantly to the development of Health Information Management in Nigeria and around the world. To improve the resourcefulness of the practice. To further improve patient care through instituting machinery for quality data that will reflect the true picture of diseases pattern and other contributory elements of ill-health in the country, and around the world. To contribute to the training and re-training of students and members of the practice and position them for effective services to patients, health workers and administrators at different levels. 	

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Hallmarks of Electronics Health Records in Patient Care Management

Adebisi Adeshina Bambe

Lasuth Lagos, Nigeria

Purpose

Scientific collection, compilation, and presentation of health data in a timely manner is very instructive, if only the work force in health care facility were to remain alive and alert to their responsibilities. Presently, health data collection methods are grossly inadequate and vary in most facilities. To this end, the hallmarks of EHR in patients care managements should be well defined to gain across the board standard format devoid of conflicting methods of data arrangement and organization in the layout of pages and document flow-linkable Collected data must be good enough for evaluation purposes.

Background

Errors arising from poor judgments occasioned by inaccurately collected data by care givers in the course of patient management, had often led to wrong diagnosis. As a result, patient becomes exposed to abuse and mismanagement, which could ultimately aggravate the patient situation through complications, arising from wrongly applied treatment and inappropriate drug usage. To eliminate this, painstaking collection of faultless data, collected under a serene condition can not be wished away; knowing that the prognosis or the diagnosis as the case may be, will be instructive on the patient management planning, and the train of treatments that will follow.

SOLUTION

1. The solution to these challenges is to ensure data integrity, availability, dependability, accessibility, security and maintenance of prescribed standards in formatting templates.
2. Exposure of care givers to training and re-training to enable them keep abreast the trends in their various fields.
3. Painstaking collection of data and its entry into the computer system must not be compromised.
4. Sharing should be made easy among users. Thus, there is need for networking of computers across a geographical region to reduce:
 - a) Costs
 - b) Time, and
 - c) Waste

CONCLUSION

Electric health record increases efficiency. However, it must be characterized by but not limited to some basic components like the (1) Personal identification information (2) Medical History (3) Family Medical History (4) Medication History (5) Treatment History (6) Medical Directives. All information to the above must be keenly collected, stored and shared appropriately to render services that are devoid of ambiguity to the very patient in need of care.

International Symposium



Kathleen Addison

*Senior Provincial Director – Health Information Management,
Alberta Health Services*

Kathleen is a Health Information Management (HIM) Professional with more than 35 years experience. In her current role as Senior Provincial Director, Health Information Management, Alberta Health Services, she provides strategic and operational leadership for the provincial Health Information Management Service.

Kathleen is a forward thinking innovative change agent whose career has been focused on the identification and implementation of leading practice in HIM. She has led staff and key stakeholders through significant change achieving desired outcomes which includes developing and implementing a single provincial HIM Service Delivery Model; leading multiple service locations through business process re-engineering, standardization and implementation; and the development and implementation of an Enterprise Information Management Governance Framework which has evolved into an Enterprise Information Management Program.

Kathleen has presented at provincial, national and international conferences and has also served as the Co-Chair of the Information Governance Practice Council for AHIMA from 2014 – 2016.

Kathleen is a certified member of the Canadian Health Information Management Association (CHIMA) and is their current Board Chair. She is also a member of AHIMA and COACH.

Title of presentation: Deploying Advanced Informatics Solutions in the Digital Health Era ? Beyond the HER

**International Symposium
Health Information Management in the Era of Digital Health
in Canada**

Kathleen Addison

*Senior Provincial Director – Health Information Management,
Alberta Health Services*

Paper written by Kathleen Addison, CHIM, Senior Provincial Director, HIM, Alberta Health Services and Current Board Chair, Canadian Health Information Management Association (CHIMA) with content contributed by Ron Parker, Canada Health Infoway.

Canada is a very large country with a small population:

- 10 provinces, 3 territories
- 2nd largest country in the world (10M km²)
- 35.8 Million people
- Among the lowest population densities in the world (3.3 per km²)
- 76% urban, 24% rural
- Most live within 400 km of the US border

Canada Health Infoway (CHI) was established in 2001 as an independent not-for-profit corporation. It is equally accountable to fourteen federal, provincial and territorial governments. It has an independent Board of Directors appointed by its Members. Since 2001, the Federal Government has provided \$2.1 billion dollars in capitalization. This has been matched by the provinces and territories so that the dollars spent today are over \$3B:

- \$500M: Electronic Health Records (2001)
- \$600M: Electronic Health Records and Telehealth (2003)
- \$100M: Health Surveillance Systems (2004)
- \$400M: Electronic Health Records and Wait Time Systems (2007)
- \$500M: EHR, EMR, Consumer Health (2010)

The value this has created is a shared governance model to enable the ongoing agreement among all fourteen governments.

Canada's per capita spending on health care is above the Organization of Economic Cooperation and Development (OECD) average for 2013, according to the most recent available data. We are comparable to France and Denmark, and well below the United States, which spends almost twice as much

as we do per person – see Appendix A.

The electronic health record (EHR) represents an opportunity to have an integrated view of the information held in various sources. This means that information is shared by many providers. It also means that shared information must be accessible when and where the client / patient and their providers need it.

While health service providers share information today, it is on a case-by-case basis, and the gathering and transport of that information often requires significant time and effort. As a result, information is not consistently shared, and is only shared where the need for the information can be anticipated in advance. Capturing health information electronically provides an opportunity to use technology to provide that data quickly, across distances and different care settings, rapidly and in an on-demand basis.

CHI initially developed and published an EHR Solutions Blueprint in 2003 and a second more comprehensive version published in 2006. The original focus of the Blueprint was to achieve a longitudinal lifetime EHR for every person in Canada; interoperability of Point of Service (POS) Applications and portals via an information infostructure and patient-centric health data that is *clinically relevant for sharing*, across the continuum of care, where and when it is needed.

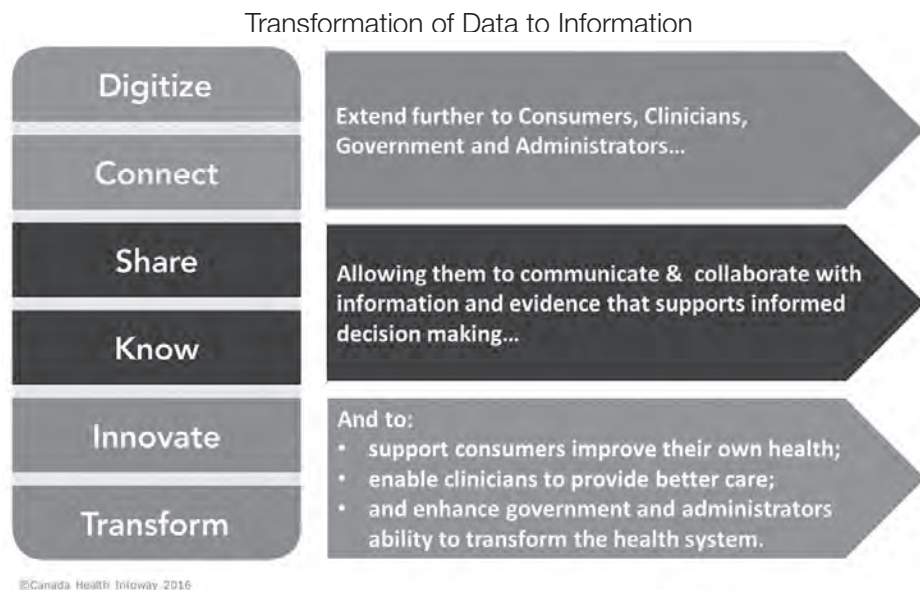
The EHRS Blueprint provided a common vision and set of concepts, a framework for communication and collaboration and a method of evaluating and prioritizing information system projects. The need to have an EHR became universally accepted by decision makers, and this made much progress possible. Funding of projects was done fairly, transparently, and accountably as there was confidence in the process.

There were also challenges including too much focus on “infrastructure” and gathering of information rather the making it readily available to information consumers; focus on implementation, without considering challenges of deploying and scaling effective solutions; sharing of information was difficult due to lack of connectivity, standardization, and support for care team collaboration; moving from a project-by-project approach to an enterprise approach to digital health as a “program” of planned activities; moving from organizational silos to collaborative processes and continuity and coherence of services.

Today there is a transition from the EHR and e-Health to “Digital Health”. Information sources and consumers multiply when considering mobile applications:

- Digital information is a core asset of the health sector
- Digital information needs to flow
- For patients and their informal support as well as for health service providers and administrators

Health Care Transformation Through The Use of Information:



Digital Health and Analytics:

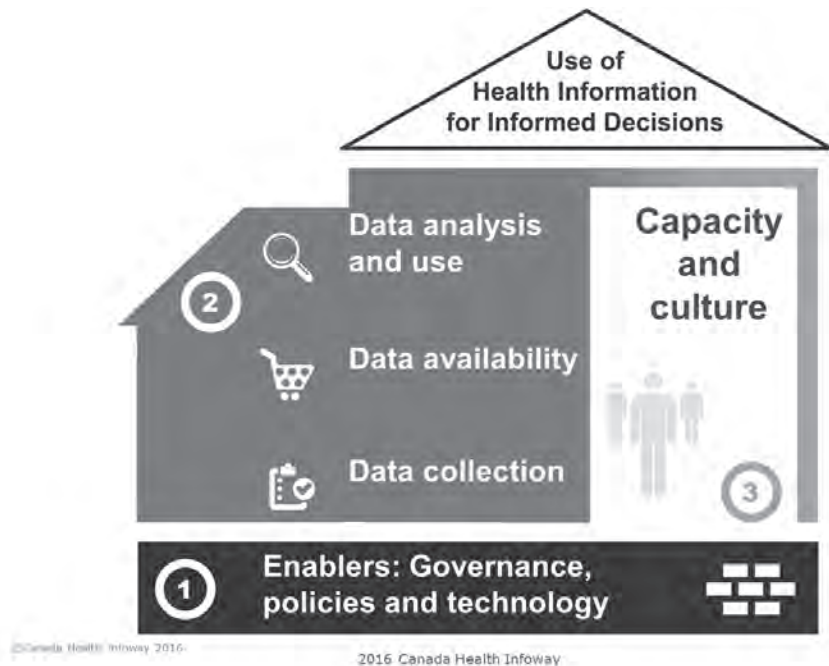
The CHI definition for analytics is “the systematic use of data, information technology and methods to create insights in context that inform clinical and business decision making around the planning, delivery, management and measurement of health care” adapted from the Healthcare Information Management Systems Society (HIMSS) Clinical and Business Intelligence Community of Interest 2013. This definition of health analytics reflects recent approaches in the so called “Big Data” space. It also includes a focus on analytics to support clinical point of care functionality i.e. real time, patient/personalized analytics and encompasses health system use, secondary use data warehousing and business intelligence. Analytics is more than methods and technology. If we focus on analytics at point of care, clinicians and patients see the value, it informs real change. The more the information is used, the better it gets.

Analytics needs to support your business strategy. This is where CHI is seeing early signs of success in analytic use – when it is tied to strategy. Below are some examples:

- Bringing care closer to home – remote patient monitoring – analytics that support alerts, best practices;
- Providing easier access – analytics on wait times, reducing visits to Emergency Room (ER), cancer synoptic reporting and wait times, patient access to primary care;
- Support new models of care – chronic disease management, diabetes care across continuity of care, or monitoring: monitor a patient’s adherence to their care plan and be alerted when there is a lack of adherence or gaps in care;
- Improve patient safety – alerts and reminders, drug recalls, surveillance.
- Enabling a high-performing system - measurement: clinical, health system management, pop-

ulation health (public health) and research - measure the success of treatment plans against outcomes to inform future decision making.

CHI – Vision for Health System Use



The first block is the foundation upon which we can build enablers such as governance, the legislative frameworks and policies that identify responsibility and accountability for the appropriate use of health data. It is also the technology to transform data into information, and keep it secure. The second and third blocks focus on the data itself in terms of its collection and availability, and our capacity to make good use of it. Guiding principles were identified for each of these building blocks:

Implications and Opportunities for Health Information Management (HIM):

HIM is impacted by digital health:

- The “patient record” is no longer just in the file room, or even in one facility or organization;
- The patient record spans many mediums, sources, perspectives, and uses;
- Identity, privacy, and appropriate access must still be managed;
- HIM disciplines are relevant but need to extend beyond health facilities and the types of care.

HIM and Health Analytics:

- Effective analytics require trusted quality data;
- HIM professionals know better than anyone:
 - the various types of data sources
 - the relative consistency of the data that exists
 - the relative quality of that data
 - the data challenges

- HIM must be at the table when organizations or ministries are planning for using analytics.

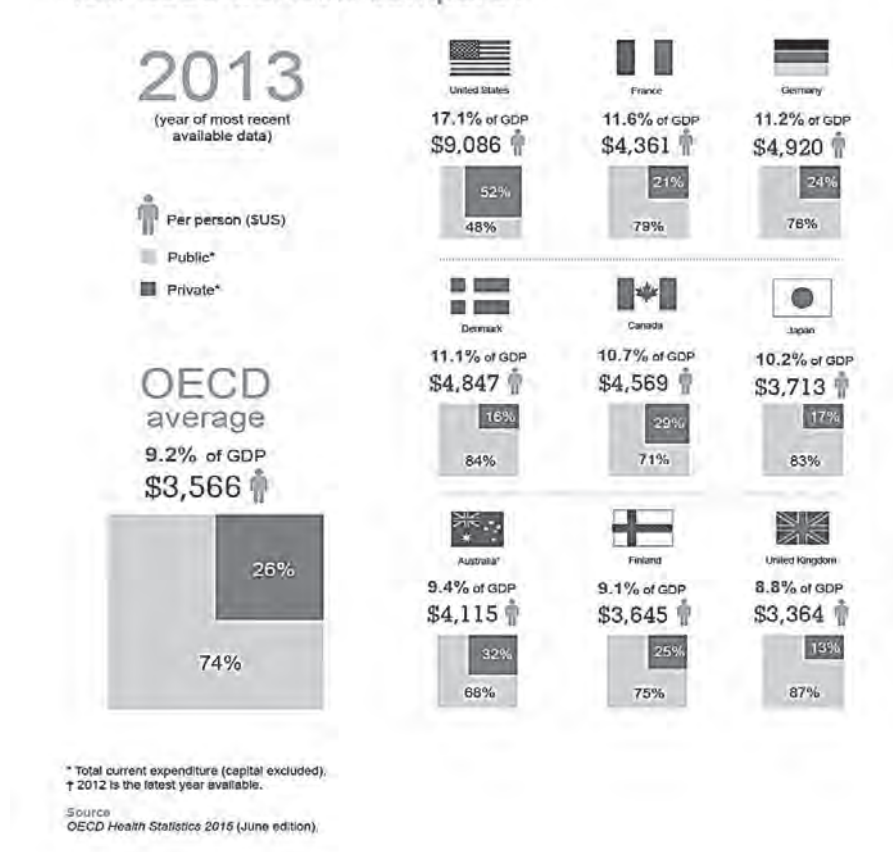
HIM Future:

- Back to the fundamentals:
 - Information is “data in context”
 - Data must be timely, consistent (standardized), and of high quality
- HIM extends beyond traditional boundaries i.e. acute care and needs to be broader i.e. “Health Services Ecosystem”
- Expansion of roles into information governance, master data management, information lifecycle, etc.

CHIMA is working and collaborating with industry defining these future roles for HIM.

APPENDIX A

How does Canada compare?



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International Symposium



Fatima Abdullah Hyder Al Baloushi

Al Ain Hospital, Al Ain, UAE

Work Experience

August 2015 to Date	Strategy and Performance Management Director Al Ain Hospital Al Ain UAE
April 2014 to August 2015	Operations Director Al Ain Hospital AlAin, UAE
August 2012 to March 2014	Head of Health Information Management Department AlAin Hospital AlAin, UAE
November2011- to August 2012	Acting Head of Health Information Management Department Al Ain Hospital Al Ain
July 2008- to November 2011	Senior Health Information Officer Health Information Management Department Al Ain Hospital Al Ain, UAE
March 2004 – July 2008	Medical Records In-Charge Primary Health Care Administration Al Ain, UAE
June 2003	Projects Conducted at, both Tawam Hospital and Oasis Hospi- tal: shadowing Managers, revising policies and job descriptions, designing and conducting survey).
September 2001-May 2002	Hospital Rotation, Medical Records Department, Tawam Hospi- tal (filing, retrieving, assembly, quantitative analysis, coding).

Abstract only

Health Information Management; The UAE Experience

Fatima Abdullah Hyder Al Baloushi

Al Ain Hospital, Al Ain, UAE

The UAE has rapidly advanced in the healthcare sector following the healthcare reform in 2005. With this advancement came the need to recognize and enhance supporting fields such as health information management. There was a strong government drive to create a highly effective EMR system that support the concept of 1 patient 1 record throughout the country. And even though many challenges were faced in the process we understand that we are on the right track and close to achieving this aim. From the workforce aspect however, recognizing the difference between HIM, Health Informatics, And IT professionals and how they are all needed because they play different roles in the process of creating and maintaining healthcare data systems is not there yet. Lest of all is understanding the need for well qualified and trained HIM professionals. Therefore, most facilities have taken it as their responsibility to improve their workforce level, but this results in having no clear minimum required standard at the country level and no proper representation for HIM professionals at the national, regional or international levels.

Currently, there have been many efforts from HIM professionals at an individual level from the GCC region to come together and create a communication forum that will hopefully lead to a more unified practice standards at the region level, as well as a recognition to the field and professionals within it. We are also hoping to enhance the qualification levels and the competencies of the workforce.



Ramon Romero Serrano

Sociedad Española de Documentación Médica (SEDOM)

EUCATIONAL BACKGROUND

- Fechas (1982) LIC. MEDICINE AND SURGERY
UNIVERSITY OF VALENCIA
- Fechas (1991) MEDICAL SPECIALIST DOCUMENTATION (MANAGEMENT OF
PATIENTS / CLINICAL DOCUMENTATION / MANAGEMENT IN-
FORMATION SYSTEMS
UNIVERSITY OF VALENCIA
DEPART . Hist . SCIENCE AND DOCUMENTATION UNIVERSITY
OF VALENCIA
- Fechas (2003) DIPLOMA MANAGEMENT OF SANITARY SERVICES

WORK EXPERIENCE

- Fechas (1997-2015) UNIT CHIEF CLINICAL DOCUMENTATION AND ADMISSION
DEPARTAMENTO DE SALUD VALENCIA-DR. PESET
- Tipo de empresa o sector CONSELLERIA DE SANITAT- GENERALITAT VALENCIANA
- Principales actividades y responsabilidades PATIENT MANAGEMENT , DESIGN AND IMPLEMENTATION OF
INFORMATION SYSTEMS MANAGEMENT AND CLINICAL DOC-
UMENTATION
- Fechas (1994-1996) MEDICAL ASSISTANT DIRECTOR
HOSPITAL LLUIS ALCANYIS XATIVA Y CENTRO DE ESPECIALI-
DADES ESPANYOLETO
- Fechas (1989-1994) MEDICAL UNIT ATTACHED DOCUMENTATION AND ADMISSION
HOSPITAL LLUIS ALCANYIS XATIVA Y CENTRO DE ESPECIALI-
DADES ESPANYOLETO

ADDITIONAL INFORMATION

2013-2016 CO-CORDINADOR PARA EUROPA DE IFHIMA (IN-
TERNATIONAL FEDERATION OF HEALTH INFORMATION MAN-
AGEMENT ASSOCIATIONS)

Health Information Management (HIM) Departments in Spain Servicios de Admisión y Documentación Clínica (SADC)

Ramon Romero Serrano, C.¹; Conejo Gómez, C.¹

Sociedad Española de Documentación Médica (SEDOM)¹

SADC-HIM Departments have similar structure, functions and goals throughout Spain, although regional variations exist.

Prior to them, medical record departments existed in some hospitals.

The SADC-HIM Departments, as we know them today, responded to a need in the healthcare system of a Department structured and created under three premises:

1. Create and manage a homogenous, reliable and comprehensive information system to support management processes, develop performance and use indicators, monitor healthcare quality and prepare information for epidemiology, morbidity, mortality or healthcare demand uses.
2. Manage all the patient documentation in adequate format.
3. Manage patients' demand of healthcare attention, persuing optimal use of resources and facilitating the access to health services.

SADC-HIM Departments are multidisciplinary:

- Directed by a physician competent in management of health information, medical record and patient demand.
- Other professionals: HIM technicians, nurses, clerical staff.
- SADC-HIM Departments are situated in the healthcare organization at the same level as a Clinical department, highlighting the role of HIM

Characteristics of HIM Department leadership:

- Physicians uniformly trained mostly through post graduate Master in Health Information Management.
- Professional cohesion reflected in the creation in 1985 of the e Sociedad Española de Documentación Médica (SEDOM), currently member of IFHIMA.
- Stable laboral position in all hospitals of the national healthcare system since 1990s.
- Other professionals in the SADC-HIM departments:
- HIM technicians: Uniform training through non-university level specialization in Health Information and Healthcare Administration.
- Nurses and clerical staff
- Valuable collaborators of the physician in charge

The functions of the SADC-HIM departments cover the knowledge domain of the HIM professionals in Spain:

- Healthcare information systems
- Medical record and clinical documentation
- Patient management

Healthcare information systems area 1:

- Clinical codification of hospital discharges
- Leadership in the transition from ICD-9-CM to ICD-10-CM and PCS (CIE-10ES in Spain)
- Elaboration of the Minimum Basic Data Set of Specialized Care Registry
- Management of indicators based on patient classification systems such as Diagnostic Related Groups (DRGs)

Healthcare information systems area 2:

- Management of information flows for population-based Cancer Registries.
- Construction and maintenance of control panels of clinical department performance, activity and quality
- Monitoring of patient attraction and dependency between healthcare areas.

Healthcare information systems area 3 :

- Management of the inter-regional patient care compensation system (SIFCO)
- Traceability of other compensable episodes of care:
- Free election of hospital, payable attention, private provision of public care.

Medical record and clinical documentation area 1:

The SADC-HIM department is responsible for medical record management, whatever the format of the record. The department guarantees access and traceability of access to the medical record, respecting confidentiality and legislation.

The main functions are:

- Planification and organisation of medical record departments, including the transition from paper to digital format.
- Management of demands of third party access to medical records.

Medical record and clinical documentation area 2 :

- Participation in the Information Security policy concerning file protection and education of staff
- Management of Electronic Health Record (EHR) user profiles and access levels
- Implementation of modules and versions of EHR in synergy with other departments involved and with user education

- Transmission of corporate EHR improvement proposals

Patient management area .1:

The SADC-HIM department ensures citizen access to the healthcare system coordinating and managing the demand for the diverse areas and levels of attention facilitating inter and intradepartmental integration of care

Main functions:

- Patient identification management in hospital and population based healthcare information systems
- Emission and renovation of accreditations of healthcare assurance cards
- Inscription of newborns in the national civil birth registry

Patient management area. 2:

- Management of hospital admissions, discharges and transfers
- Registry, validation and management of surgical demand applications
- Design and management of outpatient and day hospital schedules, analysis of activity and delays
- Integration of circuits of Primary and Specialized Care
- Coordination of the process admissions and discharges in the emergency departments, registration of episodes of care.

CURRENT SCENARIO / FUTURE PERSPECTIVES

Maximum collaboration and coordination between Management, Innovation and Healthcare Information Systems is vital.

And the HIM professionals should to be able to offer services to:

- Professionals
- Patients
- Healthy citizens

FUTURE PERSPECTIVES

Services for healthcare professionals

- Design, implement and manage information systems
- Education towards a better commitment with the patients
- Education of clinicians in the importance of patient empowerment
- Facilitate education of frontline professionals in management of new tools
- Difusion of the use of healthcare information systems as management tools

Services for patients

- Design, implement and manage information systems orientated for consultation and management by the patient
- Guarantee security and reliability of the EHR
- Design blogs and webs with health information
- Education of patients in the importance of patient empowerment
- Mediation between patients and healthcare professionals.
- Promotion of use of understandable language

Services for citizens

- Design, implement and manage information systems orientated for health promotion and disease prevention
- Facilitate access to healthcare and educate carers in use of healthcare data
- Update indicators of performance and use in order to enable citizens to adopt informed decisions concerning healthcare services.

International Symposium



Sabu Karakka Mandapam

Manipal University, India

Prof. Sabu Karakka Mandapam, is currently the Associate Dean of School of Allied Health Sciences and Professor of Health Information Management at Manipal University, India. He is also the member (Southeast Asia region) for the Global Health Workforce Council based in Chicago, USA formed by American Health Information Management Association (AHIMA) with the support of the US Government. He also function as the Chair of the Working group 'Development of International Workforce for Health Information Management' task force constituted by the International Federation of Health Information Management Associations (IFHIMA). His persuasion and engagement with the National Initiative of Allied Health Sciences (NIAHS), a Government of India initiative has recently brought formal recognition for HIM education in India. He served as an expert member in National Curricula design Task force for Health Information Management formed under NIAHS.

Prof. Sabu has obtained Master of Applied Science degree in Medical Documentation in 1998 from Mahatma Gandhi University, Kerala, India and Doctorate degree in Health Information Management from Manipal University in 2006. He has more than 16 years of teaching and administrative experience and served in different academic and administrative positions in education sector. He is involved in many HIM professional activities in India and few other countries.

He is one among the pioneers in establishing HIM education and training through regular and distant modes in India. He has been instrumental in introducing research concepts in HIM practice with the distinction of being the first Doctorate holder from HIM discipline in India. He has served as an expert member in academic committees of various institutions in India. As a faculty he has guided more than 40 Post Graduate and Under Graduate project work/thesis. Prof. Sabu has several publications in National and International peer reviewed journals to his credit and has presented many papers in scientific meetings across the Globe. He has also received few awards for his academic and professional achievements. His counsel and contributions has enabled Botho University to successfully establish the first HIM program in Botswana, Africa.

He is actively involved in streamlining and enhancing the academics/training quality of regular Allied Health Science programs and establishing several short term training programs at SOAHS, Manipal University, India. He has vastly contributed to the overall development of the institution through establishing new programs and International collaborations.

A Paradigm Shift in Health Information Management Education and Profession: Challenges for India.

Sabu Karakka Mandapam

SOAHS, Manipal University, India

ABSTRACT

The Indian healthcare is in an accelerated phase, more healthcare facilities have been added to the existing healthcare infrastructure. Health insurance and accreditation have also gained momentum. In recent years, the government agencies have initiated various measures to streamline the unorganized health professions sector in the country. Initiatives include, the creation of the national task force for curricular standards, Health Sector Skill Council, National Occupational standards and National Skills Qualification Framework. It is worth to note that, the Health Information Management (HIM) professional aspects have got attention in these initiatives. This would create a major shift in the outlook towards the HIM profession, which is being always related to a misnomer medical record keeping. The HIM as an academic and professional field is weak and no parallels can be drawn to indicate the ignorance of HIM profession in the country. A country with 1.3 billion population and nearly 200,000 hospitals, the HIM workforce to cater to the evolving needs of the Indian healthcare sector is meagre. Same scenario exists in the education sector as well, having 677 universities, the number of HIM academic programs at universities and professional institutions are very few.

Considering the projected huge gap of around 600000 HIM workforce in the country, a drastic re-modeling of HIM education and training is required. However, the healthcare & education sector in India has not prepared to address this challenge and it might take many years to reap the benefits of the initiatives taken by the Government of India. Creation of more trained HIM professionals and workforce to meet the emerging requirements of healthcare, especially with the digital integration at different Healthcare levels is a critical aspect in this direction. The discussion would focus on the current scenario of Health Information needs, the HIM education and professional dimensions and its scope for the growth in India. The implications and outlook for HIM education and profession in the context of recent recognition adorned to HIM profession by Government of India would be analyzed. A strategic plan for strengthening HIM profession in India would be highlighted. The country would need lots more investment in the HIM sector, both in public and private sector. Centers of excellence for education and research in the HIM domain will change the dynamics of this profession in the country.

1. INTRODUCTION

In this review, an attempt has made to critically analyze the need and challenges of establishing Health Information Management (HIM) education and profession in India. The discussion focus on the paradigm shift in the HIM education and professional sector due to emerging Healthcare scenario, especially in the Indian context. The review also provide an overview on HIM education and profession evolvement in past decade and the scope of HIM profession in India. The discussion also highlight on

future directions and challenges for strengthening HIM education and profession in India.

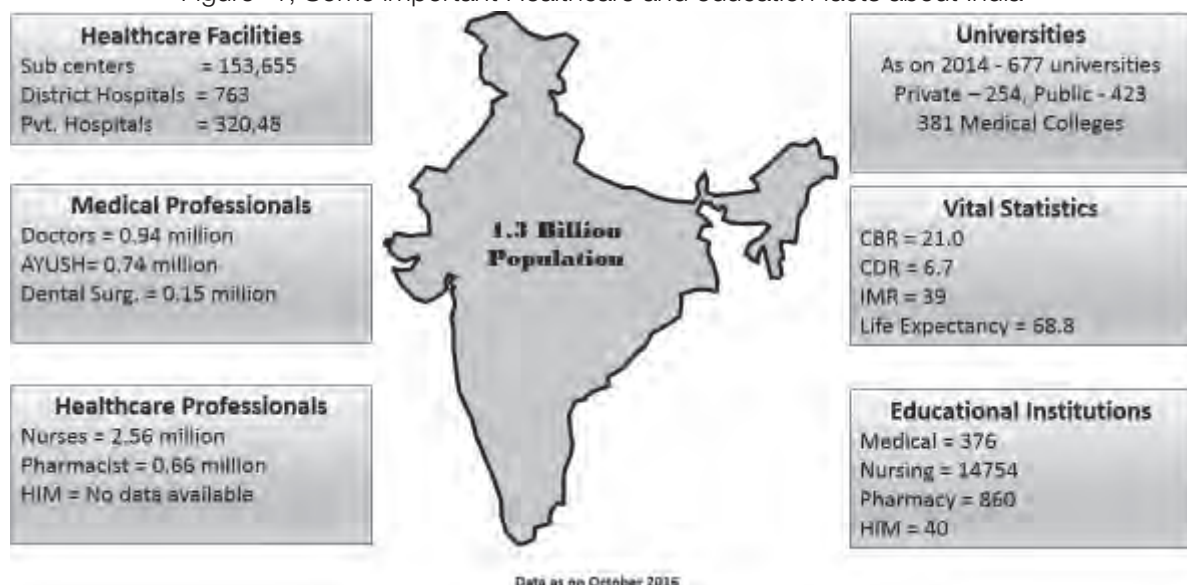
1.1. An Overview of Indian Healthcare System

The healthcare delivery system in India is categorized as public and private, rural and urban. The health sector in India functions at four different levels: primary, secondary, tertiary and quaternary. Private medical sector is the primary source of Healthcare in India, 70% population in urban and 63% in rural settings are depended on private healthcare facilities. The 68% of the population in India lives in rural areas. As on 2014, only about 18% of population is covered with any type of health insurance. A large number of people also depends on alternative medicine and treatment centers/clinics for their healthcare needs. In India the health is a state subject and Healthcare is predominantly a physician oriented system.

1.2. Why HIM is Critical for India- Important Facts

The Healthcare needs of 1.3 billion people of India are catered through a huge number of healthcare facilities spread across vast geographical areas. Huge number of healthcare facilities functioning at different levels requires adequate support system to manage enormous health information generated every day. However, the analysis shows that, the HIM education sector is not adequately grown in pace with the actual requirements. The analysis shows India has nearly 0.2 million allopathic medical facilities, 0.94 million doctors, 0.15 million dental surgeons and 2.56 million nurses. Around 0.74 million Ayurveda, Yoga, Unani, Sidda and Homeopathy (AYUSH) practitioners are also providing medical services to a large population. It is interesting to note that, no clear data is available on HIM workforce in India, pointing the negligence of HIM education and profession. From the education perspective, India has 677 universities, 376 medical colleges, 14754 nursing and 860 pharmacy colleges. However, training programs in HIM domain are only offered in around 40 educational institutions. Above scenario signifies the need for more HIM programs in India. Figure- 1 provides an overview of the Indian Healthcare and education scenario.

Figure- 1, Some important Healthcare and education facts about India



2. HIM EDUCATION AND PROFESSION IN INDIA

This section discusses about the present scenario and future perspectives for HIM education and profession in India.

2.1. HIM Profession in India: Some Facts

HIM education and profession in India is on a major transition phase. In recent times, a positive perception towards the importance of HIM professionals can be observed in the healthcare system. In last few years, the awareness about the need of qualified and skilled HIM workforce especially in the private Healthcare sector has increased. Government also recognized the importance of HIM profession and workforce needs and has initiated very important steps in strengthening and streamlining HIM domain. Currently, no exact data exist on availability of trained HIM professionals in the country. A projection made in the year 2012 by National Initiative of Allied Health Sciences (NIAHS) formed by Ministry of Health & Family Welfare, Govt. of India indicates a gap of 688,500 trained medical record professionals in the country. The nationwide survey conducted by NIAHS also revealed that, there is a need to shift the focus from traditional medical records training to more comprehensive HIM training on par with global standards. The survey also identified lack of career pathways for HIM professionals. India would certainly need more HIM programs and training institutes in Medical Record /HIM profession across the country to fill the existing gap. Dearth of qualified trainers and faculty to conduct HIM training programs would be a major hurdle in this direction.

2.2. HIM Education and Training in India

The HIM education and training is one of the most neglected Healthcare domain in India, except few dedicated efforts from some corners of the country. However, such small steps are not adequate enough to create a major impact, but these efforts have inspired many youngsters to take up HIM as a career and Healthcare organizations started realizing the importance of qualified HIM professionals. An effort to understand the current situation of HIM education has yielded some interesting facts even though clear statistics on HIM education and programs are not available in the country. Table – 1 provides some information on availability of different levels of HIM education/training programs in India.

Table – 1. HIM professional programs in India

Educa- tion Level	Program titles (commonly used)	No. of Institutions/training centers offering such programs (Approximate)
Certificate	Medical records and coding	Not Available
Diploma	Medical record technology	26
Bachelors	Medical records/Health Information Administration	11
Masters	Health Information Management or equivalent	5
Doctorate	Health Information Management	1

3. PARADIGM SHIFT IN HIM EDUCATION AND PROFESSION

A visible paradigm shift is happened in the Indian healthcare sector. The review mainly focus on how these developments would benefit HIM education and profession and change the face of HIM profession in India.

3.1 National level Initiatives in HIM education

In March 2011, the Ministry of Health and Family Welfare nominated the Public Health Foundation of India (PHFI) as its technical partner and constituted the National Initiative for Allied Health Sciences (NIAHS) secretariat with a mandate to develop a framework to improve allied health training, education and regulation in the country. In this process, NIAHS has made consultation with more than 300 national and international experts and all the relevant stakeholders. In 2012 NIAHS submitted a comprehensive report to Government of India on current Allied health ecosystem and a roadmap for the capacity building in various Allied health domains. Subsequent to this, NIAHS has took strong initiatives with an objective to create national guidelines for education and career pathways for niche allied health professions. Based on national level survey, NIAHS identified 44 major Allied health professions for streamlining process. In the first phase, 12 domains including medical record domain were identified on priority. A national level taskforce was created for each domain. In the process of multiple national level consultations, there is a strong need identified by the task force to rename the professional domain from 'Medical records keeping' to 'Health Information Management', a major decision which would transform the HIM profession in India. In January 2016, National curriculum review committee constituted by the ministry formally approved the national level model curriculum for HIM. Major highlights of the proposed training programs and educational levels is depicted in Figure-2 and approved HIM career pathways is provided in table 2.

Figure – 2, Program levels approved at the national level.



Table – 2, HIM career pathways recommended at national level.

Level	Professional Title	Job Responsibility
Level 4	Health Information Management Assistant	Supports in maintaining medical records
Level 5	Senior Health Information Management Assistant	Supports in maintaining medical records, disease coding, statistics and registries
Level 6	Health Information Management Technologist	Carry out documentation analysis, prepare statistics and ensure quality control measures.
Level 7	Health Information Management Officer	Overall supervision of HIM department includes manual and digital health information systems
Level 8	Assistant Manager - Health Information Management	Assist in overall administration of HIM department and all related activities in a hospital/healthcare organization
Level 9	Deputy Manager - Health Information Management	Oversee overall administration of HIM department and all related activities in a hospital/healthcare organization
Level 10	Manager - Health Information Management	Lead overall administration of HIM department and all related activities in a hospital/healthcare organization

Various other initiatives at national level also gives thrust on HIM domains. National Skills Qualification Framework (NSQF) and Health Sector Skill Council (HSSC) has been formed and is in the process of developing skill sets in various domains including the HIM domain. Existing professional associations are also in the reviving state, Health Records Association of India (HERAI) and Indian association for HIM professionals has initiated various measures with an objective to strengthen HIM professional activities in the country. The new life given to HIM domain at national level would see many more HIM education and professional activities in India in the years to come.

3.2. Paradigm Shift In Healthcare And Health Information Management

This section mainly discuss about three major areas in healthcare sector, which has creating a paradigm shift in Health Information Management profession and education in the country.

3.2.1. National e-Health Authority Initiatives

The e-Health Authority of India was mooted in 2004 and further establishment of National e-health Authority (NeHA) is a major boost for e-health reforms in India. NeHA has come out with different strategies to strength the healthcare delivery system by streamlining health information utilizing the benefits of Information Technology. Following are the highlights of e-health initiatives indicating the need of strengthening HIM education and emerging role of HIM professionals in the country.

- Development of Integrated Health Information System for India
- Laws and regulations relating to the privacy and security of the patients health information and records
- Adoption of e-health solutions for aggregation of health data and storage/exchange of EHR
- Nationwide Electronic Health Record Store/Exchange System that ensures the security, confidentiality and privacy of patient

- Setting up of state health records repositories and Health Information Exchanges (HIEs)

3.2.2. Healthcare Accreditation and Paradigm Shift in HIM

In the last decade, Quality healthcare becomes a major thrust in Indian healthcare system. Healthcare accreditation has evolved as major activity among private hospitals. Now government hospitals also realized the importance of accreditation and are attracted towards it. It is a known fact that, health information is the backbone of a healthcare system, every activity in a hospital is directly or indirectly depended on health information generated at different levels. However, the importance of managing huge health information and harnessing the benefits to all it extend have not tapped appropriately and adequately. Healthcare accreditation has brought more relevance to the effective management of health information especially the information pertaining to patient care. This has considerably increased the requirements of trained HIM professionals across the country especially in the private sector. Some of the key aspects of Healthcare accreditation in India is highlighted here to understand the huge scope of HIM profession in this important activity of healthcare system.

- National Accreditation Board for Hospitals & Healthcare providers (NABH) established in the year 2000 is a member of ISQua
- Standards are revised periodically, 4th Edition released in January 2016
- Information Management system is one of the main standard
- Till September 2016, 421 Hospitals were accredited by NABH as compared to 227 in 2014, a nearly 50% growth in 2 years.
- In government sector, 20 Primary Health Centres, 2 Community Health Centers were also accredited by NABH.
- In the year 2010, NABH accreditation was made compulsory under the central government health scheme.
- Joint Commission International (JCI) accreditation system is also adopted by some private hospitals with an objective to attract international patients. Till September 2016, 30 healthcare facilities in India were accredited by JCI.

The above facts clearly indicates the growing accreditation requirements in Indian healthcare sector. The available data shows that a mere 0.25% (approximate) of healthcare facilities in India only has some kind of accreditation. The emerging healthcare accreditation scenario warrant a huge number of trained and skilled HIM workforce in the country.

3.2.3. Health Insurance Sector and Paradigm Shift in HIM

Health Insurance (HI) sector in India is poised to grow at a higher rate owing to the emerging healthcare needs of the population. The government and private sector is promoting affordable HI schemes among the population. Various statistics indicates the HI coverage was within a range of 18 – 23% at the end of the year 2015 and every year about 1% of population is added under some sort of health Insurance coverage in India. The predications and facts about HI stated below provides an overview about the scope of HIM professionals in relation to the paradigm shift in HI sector.

- By 2033 the health insurance coverage would encrust 50% of the population
- Healthcare treatment getting more standardized
- Big Data Analytics & Predictive Modelling tools is emerging
- Lack of data on disease, usage pattern impacts are impacting HI product innovation
- Medical coding and billing becoming a necessity in healthcare due to booming HI industry.

3.3. Paradigm Shift: HIM Workforce Requirements

The major reason for paradigm shift in HIM education and profession is due to the changes and streamlining process occurring in many core areas of the healthcare system where health information plays a vital role. Some of the important aspects which would change the set pattern of managing health information at different levels are already discussed in previous sections. These changes are inevitable as healthcare is in the trail of transformation through various e-health initiatives, mandatory healthcare accreditation, surging health insurance sector and multiple efforts to strengthen health sector skills and workforce. Analyzing the existing HIM scenario and ongoing streamlining process in the healthcare sector, India must focus on following challenges in the HIM domain.

- i) Standard HIM curriculum across India established under NIAHS would make HIM as an accepted domain in the education sector leading to commencement of more HIM training programs at different levels. This would create a huge requirement for HIM trainers.
- ii) Proposed HIM career pathways will bring more relevance for HIM profession and a large number of existing unskilled HIM personnel's would force to upgrade their skills and acquire formal education to suit the prescribed career progression. This situation would further lead to requirement of more HIM trainers to transform the existing workforce.

More requirements for HIM workforce would arise in the public and private sectors to supplement the following initiatives and developments in the healthcare sector.

- iii) Extensive e-Health initiatives and strengthening of HIMS across different levels.
- iv) National standards for Electronic Health Records and its sustainable implementation
- v) More uniform HIM standards are evolving in accreditation and Health Insurance sector
- vi) Huge need for strengthening the health statistics across all levels of Healthcare system.
- vii) More requirements for SNOMED-CT, as more healthcare facilities are adopting EMR and other clinical decision support systems.
- viii) Transition from ICD -10 to 11 revision across the country.

4. CONCLUSION

In recent past, the healthcare system in India is in a transformation process. A paradigm shift has happened in many aspects of healthcare delivery system across all the levels. HIM sector would witness dramatic changes and gain significance due to the paradigm shift in the healthcare sector. The country would need lots more investment in the HIM sector, both in public and private sector. Centers of excellence for education and research in the HIM domain will change the dynamics of this profession in the country.

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International Symposium



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Sue is a qualified Health Information Management professional, with postgraduate qualifications in public health and health services management. She is the course coordinator for the Bachelor of Health Information Management in the School of Public Health and Social Work at the Queensland University of Technology in Brisbane Australia. She is also the Director of the National Centre for Health Information Research and Training (NCHIRT) which is hosted by the School. Sue has qualifications in health information management, public health and health services management. She also has extensive experience in developing and presenting educational programs about health classifications and other health information management subjects for international and Australian audiences. Sue is a member of the World Health Organization (WHO) Family of International Classifications Network. She contributes to the work of WHO through participation in mortality and morbidity coding committees and global training activities.

Prior to joining QUT in 1994, Sue worked in public and private hospitals in Sydney and Brisbane, was a data manager at the Queensland Cancer Registry and a policy officer in the Epidemiology and Health Information Branch of the Queensland state health department.

Sue is also a member of the Global Health Workforce Council, which has developed core curricula for the education of Health Information Managers, Health Informaticians and Health ICT professionals. She is a full graduate member of the Health Information Management Association of Australia and a member of the Association's Editorial Board, Editorial Review panel, Research Advisory Committee and International Special Interest Group.

Abstract only

The My Health Record System in Australia

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Abstract:

The My Health Record (previously known as the Personally Controlled Electronic Health Record) was launched in Australia on 1 July 2012 to provide a secure online summary of an individual's health information. The individual controls the information that is entered onto their personal My Health Record, and also provides authorisation to health care practitioners to access it. Operated under the auspices of the Commonwealth Department of Health, each My Health Record potentially contains a Shared Health Summary incorporating hospital discharge summaries, pathology and imaging results, prescriptions and drug supply information and referrals. In addition, details regarding immunisations, organ donor status, allergies and alerts, adverse reactions and advanced care plans are also potentially included.

Authorised healthcare providers including general practitioners, specialists and hospital staff are able to access these details online from anywhere there is an internet connection at any time the information needed, such as in an emergency or for supporting ongoing care. The My Health Record is also designed to encourage patients to take an active role in the management of their health and to make appropriate health decisions through improving their ability to understand their health issues, better communicate with health professionals and seamlessly navigate their way through the health system. It is hoped that My Health Record will ultimately be able to be integrated with telehealth and other applications to support the care of patients in remote locations and to assist with the monitoring of patients in their own homes.

This presentation will provide details about how the My Health Record system has operated since its introduction and outline plans for future enhancements to the system.

Summit on Mortality Statistics

Improvement of District-Level Maternal Mortality Reporting with Reproductive Age Mortality Survey (RAMOS)

Joseph Adamako, Anthony Ofori, Gloria Asare, Tiffany Anthony, Judy Idrovo, Bradley Iott, Andrea Momoh, Rachael Ward, Elisa Warner and Frank Anderson

Abstract

Objective: To develop a process for community based maternal mortality surveillance in low resource settings.

Methods: District health workers adapted the reproductive age mortality survey (RAMOS) to conduct maternal mortality surveillance among women of reproductive age (WRA) who died between June 2008 and June 2013. The survey was comprised of four simple yes or no questions with two follow up questions. A trained community health nurse conducted verbal autopsy to those women who answered positively to one of four questions. Maternal mortality review committees established the cause of death and contributing factors.

Findings: 359 WRA died in the district during the specified time period. A “yes” answer to any of the 4 RAMOS questions identified 132 women who experienced either a maternal death, late maternal death or who died while pregnant or within one year of termination of pregnancy. In the resultant 108 available verbal autopsies, 59 died a maternal or late maternal deaths and 49 died a non-maternal death. The most common causes of maternal death, were hemorrhage (24%) and abortion (17%).

Conclusions : The 4+2 RAMOS is a practical method for improving maternal mortality surveillance at the community level, increasing the maternal mortality ratio 158% (from 128 to 359). This study demonstrates that community based surveillance for maternal mortality amongst deaths to WRA is feasible in low resource settings. Increased ascertainment can uncover critical areas for intervention. Scale up to national community health training programs will provide accurate information for national efforts to reduce preventable maternal mortality.

Introduction:

Accurate ascertainment of cases of maternal mortality is dependent on a health information system that accurately identifies and records cause of death. Because these systems are not available in some low income countries, estimates of maternal mortality based on survey methods, hospital records and fertility rates provide the data for decision making()

The reproductive age mortality survey (RAMOS) has been used in a number of settings to increase ascertainment of maternal mortality (2,3). The RAMOS survey contains 39 questions and spans the many possible causes of mortality to women of reproductive age, some of which pertain to maternal death (4 who ramos instrument). The Ghana Maternal Mortality Survey, which utilized a RAMOS methodology in Accra at health facilities and morgues, found 44% under-reporting of maternal mortality (5).

Community based surveillance for maternal mortality using a modified RAMOS survey was conducted in the Sene district of Ghana in 2010 (6). Ten questions were chosen from the RAMOS survey

that were most likely related to maternal mortality and could be asked by community health workers to a family member where a woman of reproductive age (WRA) had died. A maternal mortality review committee investigated all cases with a positive answer to one of the 10 questions, and using the committee's determination of maternal death as the gold standard, 4 questions emerged as the most predictive: was she pregnant when she died?; was she recently pregnant?; did she have a child less than one year old when she died?; and did she die from miscarriage or abortion? (6)

These 4 simple questions were found to have a high predictive value for detecting a maternal mortality. Additionally, in the year that community based surveillance for maternal mortality occurred, the number of maternal deaths almost doubled. A similar study in Eritrea showed similar results (3).

Methods:

This observational study was approved by the Ghana Health Service Ethical Review board and was reviewed by the University of Michigan Institutional Review Board and found to be exempt. Community-based health volunteers and sub-district nursing staff were trained by the Kuntanase Government Health Department in the RAMOS protocol and survey administration. The review of data took place between May 2013-August 2014.

In May of 2013, trainers and community health workers discussed the most effective ways to ask the four central questions: if the deceased was pregnant at the time of death, if she was recently pregnant when she died, if she had a child less than one year of age, and if she had a miscarriage or abortion. District staff also added 2 additional questions: did she die in a healthcare facility or at home, and do you know why she died? (RAMOS 4+2).

Between May and August 2013, the community based surveillance volunteers and health nurses conducted the interviews in the local language, Twi, and elaborated on any questions that needed further explanations to get the final answer. The community health workers, also called Community Based Surveillance (CBS) workers, assisted in surveillance by identifying all WRA who died in the last five years. Small incentives were given for identifying the women's families and debriefing them ahead of time as to the details of the RAMOS 4+2 methodology. In addition, the CBS workers attended a training meeting at the Kuntanase District Hospital for a full debriefing of the survey, project training, and a chance to pose questions regarding the material.

Permission was asked of each family member whether or not they would participate, and no incentive was given to any interviewee. RAMOS results were available for 357 WRA who died during the period of review. 225 WRA were confirmed as non-maternal deaths as determined by RAMOS. 132 WRA were confirmed as possible maternal deaths by answering one of the first four questions positively. These deaths include maternal deaths, late maternal deaths, pregnancy-associated deaths up to one year. (Table 1) Thirteen families of WRA could not be located for interview or declined interview.

Verbal Autopsy

Following the administration of RAMOS surveys, community health nurses and midwives conducted verbal autopsies at households where positive answers to one of four indicative questions of the

RAMOS survey was found. The verbal autopsy reviews the deceased woman's regional demographics, obstetric history, hospital attendance, pregnancy preparedness, socio-cultural factors and a written conclusion (7).

Upon completion of verbal autopsies, two maternal mortality review committees (MMRC) took place to evaluate and discuss the factors contributing to each death and to determine if the death was the result of a pregnancy complication, or issues that pertained to the pregnancy (maternal deaths or late maternal deaths). MMRCs are group of health professionals that come together and examine medical and technical aspects of care for women who have died. They then identified patterns of adverse outcomes related to non-medical and system related factors.

MMRCs consisted of 10-11 participants; an OB/GYN, a pharmacist, midwives, and senior and entry level community health nurses. During the meeting, the RAMOS survey results and verbal autopsy interviews for each woman were analyzed. Definitions of maternal death, pregnancy related death, and late maternal death provided by the World Health Organization and the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) were utilized in determining whether the WRA's death was of maternal causes (Table 1). Additional follow-up was sometimes required for those cases in which a conclusion could not be drawn. At the facility level, hospitals and clinics where the death occurred were visited to obtain more information and cross check data. At the community level, family members of the deceased were asked for further details pertaining to the cause of death.

The maternal mortality ratio was calculated using the formula in Table 2. Twenty three hospital ascertained deaths were recorded for the period between 2008 and 2013. Using the average number of live births for this period (17,913), the maternal mortality ratio was calculated as 128.4. These numbers were obtained from public record and will be used as a point of reference for data collected moving forward.

The positive predictive values (PPV's) for RAMOS questions one through four were calculated by dividing the number of positive responses among the maternal deaths by the number of positive response answers for all true positive RAMOS (Maternal deaths/ [Maternal deaths +Non-maternal deaths]). In addition, the sensitivity of question six (What do you think was the cause of her death?) was calculated by dividing the number of responses which indicated possible cause of death as a likely maternal death by all determined maternal deaths.

In addition, the PPV, NPV, sensitivity, and specificity were calculated for a maternal death-related response to question six (What do you think was the cause of her death?). PPV was calculated by dividing the number of confirmed maternal death cases that gave a maternal death related response to question six by all cases in which gave a maternal death related response to question six. NPV was calculated by dividing the number of confirmed non-maternal cases that gave non-maternal related response to question six by all cases in which gave a non-maternal related response to question six. Sensitivity was calculated by dividing the number of confirmed maternal death cases that gave a maternal death related response to question six by all confirmed maternal death cases. The specificity was calculated by dividing the number of confirmed non-maternal cases that gave non-maternal relat-

ed response to question six by all confirmed non-maternal cases.

Results

The average age of the women at the time of death was 30.9 years (range 18-42 years). 18% of the women died within the community, while 78% died in a healthcare facility. The average gravidity among these 59 deaths was 3.4, and the average parity was 2.6. RAMOS survey respondents were most often the mother (24/59), sister (11/59) or grandmother (8/59). The remaining survey respondents were husbands, brothers, or other close family members.

Community health workers identified 369 women of reproductive age in the Bosomtwe district who had died during the review period (Chart 1). 13 families were either unable to be located or declined interview. The 4+2 question RAMOS was administered to the 357 remaining families. In 132 cases a family members answered “Yes” to one or more survey questions, while 225 had family members that answered “No” to all four.

Of the 132 positive surveys, verbal autopsies were conducted with 118 families to gain information and identify cause of death. 14 of the cases were lost to follow up. 10 verbal autopsies were found to have been performed erroneously (ie a positive RAMOS that was not accurate). The remaining 108 cases were reviewed by the maternal mortality review committee, which found 59 maternal deaths (maternal deaths and late maternal deaths) and 41 non-maternal deaths. 8 cases were undetermined. The most common causes of maternal death, were hemorrhage (24%), abortion (17%), infection (0.05%), hypertensive diseases such eclampsia and preeclampsia (0.03%). Of these 59 cases deemed maternal deaths, 32% of known maternal deaths had an unknown cause of death. The causes of non-maternal deaths varied widely; ranging from malaria to sickle cell. The corrected maternal mortality ratio for the entire district increased to 329/100,000 live births.

The positive predictive values for questions 1-4 are listed in Table 3. The questions that yielded the highest PPV were Q1: “Was she pregnant when she died?” (86.36% PPV), and Q3: “Was she pregnant within the year before she died?” (67.12% PPV). The overall PPV of questions 1-4 was 59%. Question 6, when taken alone, had a PPV of 85%, a negative predictive value (NPV) of 55%, and sensitivity and specificity at 50% and 87%, respectively.

Discussion

The current study suggests that community based surveillance among deaths to women of reproductive age is feasible and useful in the identification of cases of maternal mortality. The large discrepancy in hospital-based maternal mortality ratios (128) and those in the entire area (329) suggest many maternal deaths remain unreported. The RAMOS 4+2 survey instrument serves as an effective and efficient means to improve surveillance within the Bosomtwe region and has implications for other rural areas. District staff noted that the survey was easy to use and distribute amongst the community health workers. They were able to understand the questions and obtain clear answers from the interviewees. Incorporation into existing community health workers training on a national level would be the most ideal implementation strategy. In addition, the brevity of the survey is important, as interviewing

families regarding the loss of a loved one can be difficult.

When coupled with a verbal autopsy, this process provides communities with information on the main factors contributing to maternal death. Identifying these causes can serve as a helpful tool in ascertaining improvements that need to be made in medical care, medical outreach, and possible public health interventions. An accurate surveillance system allows public health professionals and government agencies to be aware of common illnesses and causes of death to better serve each population affected. In the absence of a comprehensive health information system that includes birth and death certificates, incorporation of the RAMOS 4+2 methodology into routine surveillance . Positive answers should be followed up with a verbal autopsy to identify cause of death and associated factors.

No single RAMOS question identified all maternal deaths. Positive answers to any of the four dichotomous questions provided the base group for verbal autopsies. We sought to determine the value of the open ended question about cause of death. If families accurately could identify material causes, perhaps the other 4 questions would not be necessary. In this group, however, family members identified only 50% of the maternal deaths accurately. However, we feel that an open-ended question has value as it allows for expanded discussion beyond the 4 yes/no questions. It is also useful in eliminating the need for verbal autopsies if the death occurred during pregnancy but was clearly not related to the pregnancy (such as accident or homicide).

During data analysis, it was determined that Question 4, “Did she have a miscarriage or an abortion?” did not specify whether the miscarriage/abortion happened during the most recent pregnancy or during a previous pregnancy. Although this did not affect data analysis, this question should indicate whether an abortion or miscarriage took place during the current pregnancy.

Although 6 simple questions were utilized, translation of the survey instrument into the local language required input from community health nurses and CHWs. Tailoring of the questions was needed to adapt of question to the local language idioms that would most accurately reflect the questions’ intent. Such adaptation will be necessary for implementation of RAMOS 4+2 in other communities.

By incorporating RAMOS 4+2 as an active maternal death surveillance program, potential maternal mortality cases that are otherwise unknown to public health officials will be identified and allow for interventions to be targeted to reduce maternal mortality and to improve maternal health. In areas where community workers already collect surveillance data, the RAMOS 4+2 could be easily incorporated into monthly activities in rural communities.

The WHO consensus statement on preventable maternal mortality calls for significant reductions in maternal mortality ratios by 2030 (ref). The use of community-based surveillance systems will be critical to knowing if we have completely achieved this goal.

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Box 1

RAMOS 4+2 Questions
Q1: Was she pregnant when she died?
Q2: Did she have a child less than 1 year old when she died?
Q3: Was she pregnant within the year before she died?
Q4: Did she have a miscarriage/abortion?
Q5: Did she die at home or in a health care facility?
Q5a: If she died in a health care facility, which facility was it?
Q5b: If she died at her own home? If not her own home, where? Was it her own home or someone else's?
Q6: What do you think was the cause of her death?

Tables and Figures

Table 1 Definitions of Maternal Death per ICD-10

Maternal death The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
Pregnancy-related death The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death.
Late maternal death The death of a woman from direct or indirect obstetric causes, more than 42 days, but less than one year after termination of pregnancy.

Presentation Slides

Improvement of District-Level Maternal Mortality Reporting with modified Reproductive Age Mortality Survey (RAMOS)

Joseph Adamako, Anthony Ofori, Gloria Asare, Tiffany Anthony, Judy Idrovo, Bradley Iott, Andrea Momoh, Rachael Ward, Elisa Warner and Frank Anderson

Introduction-1

- In Ghana not all deliveries occur in health facilities(70%).
- Ascertaining Total maternal deaths in the country is therefore only possible through surveys.

Introduction -2

- The reproductive age mortality survey (RAMOS) has been used in a number of settings to increase ascertainment of maternal mortality.
- It is however cumbersome to administer, takes a long time to complete.(39 questions)
- Attempt was made in Ghana to find out the most sensitive questions for maternal deaths and produce shorter RAMOS that will be easier to administer.

Background

Full RAMOS (Reproductive Age Mortality Survey) was carried out in the Sene District in Brong Ahafo Region in Ghana.

RAMOS is designed specifically to find maternal deaths through a series of questions regarding a woman's health before her death.

•Frank Anderson of the University of Michigan and Anthony Ofori of the Ghana Health Service, coauthors of the Sene paper, from the study found that:

4 questions emerged as the most predictive: Was she pregnant when she died?; Was she recently pregnant?; Did she have a child less than one year old when she died?; and did she die from miscarriage or abortion? (6)

Geynisman J, Latimer A, Ofori A, et al. Improving maternal mortality reporting at the community level with a 4-question modified reproductive age mortality survey (RAMOS). International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics. 2011;114(1):29.



Objective of the study

To use the four questions RAMOS to develop a process for community based maternal mortality surveillance in low resource settings.

Study site

Bosomtwe District
Ashanti Region of
Ghana



Method

- Trained community health workers, also called Community Based Surveillance (CBS) workers, assisted in surveillance by identifying all WRA who died in the last five years. Small incentives were given for identifying the women's families and debriefing them ahead of time for the interview

Methodology

- District health workers used the adapted reproductive age mortality survey (RAMOS) tool to conduct maternal mortality surveillance for women of reproductive age (WRA) who died between June 2008 and June 2013 in Bosomtwe District in Ashanti Region.
- The survey was comprised of four simple yes or no questions with two follow up questions.
- The questions were posed to a close relative of the woman who was with her before she died.

RAMOS 4+2 Questions

Q1: Was she pregnant when she died?

Q2: Did she have a child less than 1 year old when she died?

Q3: Was she pregnant within the year before she died?

Q4: Did she have a miscarriage/abortion?

Q5: Did she die at home or in a health care facility?

Q5a: If she died in a health care facility, which facility was it?

Method

- A trained community health nurse conducted verbal autopsy to those women who answered positively to one of four questions.
- An adapted WHO verbal autopsy tool was used
- Maternal mortality review committees established the cause of death and contributing factors.

Methodology

- MMRCs consisted of 10-11 participants; an OB/GYN, a pharmacist, midwives, and senior and entry level community health nurses. During the meeting, the RAMOS survey results and verbal autopsy interviews for each woman were analyzed.

Method

- Definitions of maternal death, pregnancy related death, and late maternal death provided by the World Health Organization and the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) were utilized in determining whether the WRA's death was a maternal death.

Findings

- Community health workers identified 369 women of reproductive age in the Bosomtwe district who had died during the review period.
- 13 families were either unable to be located or declined interview.
- The 4+2 question RAMOS was administered to the 357 remaining families.

Findings

- In 132 cases a family members answered “Yes” to one or more survey questions, while 225 had family members that answered “No” to all four.
- Of the 132 positive surveys, verbal autopsies were conducted with 118 families to gain information and identify cause of death.
- 14 of the 132 cases were lost to follow up.
- 10 verbal autopsies were found to have been performed erroneously (ie a positive RAMOS that was not accurate).

Findings

- The remaining 108 cases were reviewed by the maternal mortality review committee.
- They confirmed 59 maternal deaths (maternal deaths and late maternal deaths)
- 41 non-maternal deaths.

Finding

- 8 cases were undetermined. The most common causes of maternal death, were
1. Hemorrhage (24%),
 2. Abortion (17%),
 3. Infection (0.05%),
 4. Hypertensive diseases such eclampsia and preeclampsia (0.03%).
- Of these 59 cases deemed maternal deaths, 32% of known maternal deaths had an unknown cause of death.

Findings

- The causes of non-maternal deaths varied widely; ranging from malaria to sickle cell. The corrected maternal mortality ratio for the entire district increased to 329/100.000 live births.

Findings

- The questions that yielded the highest PPV were Q1: “Was she pregnant when she died?” (86.36% PPV), and Q3: “Was she pregnant within the year before she died?” (67.12% PPV). The overall PPV of questions 1-4 was 59%.
-

Conclusion

- The 4+2 RAMOS is a practical method for improving maternal mortality surveillance at the community level, increasing the maternal mortality ratio 158% (from 128 to 359).
- This study demonstrates that community based surveillance for maternal mortality amongst deaths to WRA is feasible in low resource settings.

Conclusion

- Increased ascertainment can uncover critical areas for intervention.
- Active surveillance of maternal deaths using the modified RAMOS tool can be used to improve reporting on maternal deaths in resource constraints environment.

Death Certificate**MINISTRY OF HEALTH****MEDICAL CAUSE OF DEATH CERTIFICATE**

I hereby certify that I have medically attended.....

of....., that I last saw on.....(DD/MM/YY)

Administrative Data																																			
Sex				<input type="checkbox"/> Female				<input type="checkbox"/> Male				<input type="checkbox"/> Unknown																							
Date of birth				D	D	M	M	Y	Y	Y	Y	Date of death				D	D	M	M	Y	Y	Y	Y												
Frame A: Medical data: Part 1 and 2																																			
1																																			
Report disease or condition directly leading to death on line a				Cause of death																Time interval from onset to death															
Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line				a																															
				b				Due to:																											
				c				Due to:																											
				d				Due to:																											
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)																																			
Frame B: Other medical data																																			
Was surgery performed within the last 4 weeks?												<input type="checkbox"/> Yes				<input type="checkbox"/> No				<input type="checkbox"/> Unknown															
If yes please specify date of surgery												D	D	M	M	Y	Y	Y	Y																
If yes please specify reason for surgery (disease or condition)																																			
Was an autopsy requested?												<input type="checkbox"/> Yes				<input type="checkbox"/> No				<input type="checkbox"/> Unknown															
If yes were the findings used in the certification?												<input type="checkbox"/> Yes				<input type="checkbox"/> No				<input type="checkbox"/> Unknown															
Manner of death:																																			
<input type="checkbox"/> Disease				<input type="checkbox"/> Assault				<input type="checkbox"/> Could not be determined																											
<input type="checkbox"/> Accident				<input type="checkbox"/> Legal intervention				<input type="checkbox"/> Pending investigation																											
<input type="checkbox"/> Intentional self harm				<input type="checkbox"/> War				<input type="checkbox"/> Unknown																											
If external cause or poisoning:												Date of injury				D	D	M	M	Y	Y	Y	Y												
Please describe how external cause occurred (If poisoning please specify poisoning agent)																																			

Place of occurrence of the external cause:											
<input type="checkbox"/> At home			<input type="checkbox"/> Residential institution			<input type="checkbox"/> School, other institution, public administrative area			<input type="checkbox"/> Sports and athletics area		
<input type="checkbox"/> Street and highway			<input type="checkbox"/> Trade and service area			<input type="checkbox"/> Industrial and construction area			<input type="checkbox"/> Farm		
<input type="checkbox"/> Other place (please specify):									<input type="checkbox"/> Unknown		
Fetal or infant Death											
Multiple pregnancy						<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown	
Stillborn?						<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown	
If death within 24h specify number of hours survived											
D						M		M		Y	
Number of completed weeks of pregnancy											
If death was perinatal, please state conditions of mother that affected the fetus and newborn											
For women, was the deceased pregnant?						<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown	
<input type="checkbox"/> At time of death						<input type="checkbox"/> Within 42 days before the death					
<input type="checkbox"/> Between 43 days up to 1 year before death						<input type="checkbox"/> Unknown					
Did the pregnancy contribute to the death?						<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown	

Witness by my hand this day

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Signature:

Medical Qualification:

Address

.....

Why are Medical Documentation & Death Certification Important for Mortality Statistics

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Objectives

1. Provide an overview of death processing procedures in Barbados.
2. Discuss Medical Documentation
 - Outline the physician's steps for certifying and completing a death certificate
 - Highlight current challenges medical records staff face in death records processing.
3. Outline Steps for Release of the body to the funeral home.
4. Discuss Mortality Statistics in Barbados.
 - Data Flow
 - Overview Of Medical Mortality Data System (MMDS)
 - Capture and collection
 - Uses of health information
 - Challenges and Limitations

Content

The presentation will provide an overview of the Medical Records Department staff roles in the Death Processing and the compilation of Mortality Statistics in Barbados.

It will provide a detailed overview on physician's documentation when certifying and completing a death certificate at our local hospital. In addition we will provide samples of current death processing documents (death certificate, release of body form etc.).

The presentation will also discuss the importance of the Ministry of Health's role in death certification and the steps involved for completion of mortality statistics. The presentation will discuss the application of Medical Mortality Data System (MMDS) which is an automated mortality coding system, developed by the National Centre for Health Statistics. The presentation will also discuss MMDS how it is incorporated into a mortality surveillance system in Barbados.

Finally the presentation will identify the benefits of death data to Barbados, some challenges and discuss some best practices and recommendations for the future.

Overview of Barbados

Barbados is the easternmost of the Caribbean countries and has a land area of 430 km². The terrain is flat, with Mount Hillaby being the highest point at some 340 m above sea level. Bridgetown is the capital, and the country is divided into 11 parishes. According to the 2000 census, the population was

268,792. Data from the Barbados Statistical Service show that the population as of December 31, 2010, was estimated at 276,300 persons, an increase of approximately 7,500 over the 2000 figure. In 2010, there were an estimated 133,700 males and 142,600 females (Pan American Health Organization, 2012).

According to the Pan American Health Organization (2012) the Barbados Ministry of Health reported that general mortality rate per 1,000 population was 8.8 in 2009. Provisional data for 2009 revealed that the leading causes of death were ischemic heart disease, diabetes mellitus, cerebrovascular disease, acute respiratory infections, hypertensive disease, and malignant neoplasm of the prostate, in that order (see Table 1). It was highlighted in 2001, the leading causes were cerebrovascular disease, diabetes mellitus, ischemic heart disease, and malignant neoplasm of the prostate (Pan American Health Organization, 2012).

TABLE 1. Ten leading causes of death, by rank order, Barbados, 2009.

Disease	Number of deaths
Ischemic heart disease	205
Diabetes mellitus	202
Cerebrovascular disease	195
Acute respiratory infections	121
Hypertensive disease	120
Malignant neoplasm of the prostate	114
Septicemia	94
Diseases of the urinary system	82
Pulmonary heart disease	76
Malignant neoplasms of digestive organs	69

Source Barbados, Records Department, Ministry of Health, 2011

Organizational Structure of Health Services in Barbados (Slide 3)

The Barbados Ministry of Health (MOH) is the executing agency for the delivery of health care in the public sector and has responsibility for planning, regulation and evaluation across the public, private and NGO sectors. It is headed by a Minister of Health who has overall responsibility for policy-making and political direction.

The Permanent Secretary is the administrative head, functioning chief executive and accounting officer; and reports to the Minister on the proper functioning of all sections of the Ministry. The Chief Medical Officer is responsible for all technical and professional aspects of the health service (Barbados Ministry of Health, 2011).

Primary Health Services

A network of polyclinics and general practitioners provide full primary care coverage of the population. The Ministry of Health has eight polyclinics and four satellite clinics. Polyclinics provide a broad

range of preventive, curative and rehabilitative services including maternal and child health, immunizations, oral health, general practice clinics, nutrition education, physiotherapy, provision of pharmaceuticals, environmental health and a limited range of mental health services.

Catchment areas vary in size from 17,000 to 50,000 persons, and are sub-divided into districts to facilitate the work of Public Health Nurses and Environmental Health Officers, who visit patients in their homes and work places to monitor and follow up their health situation.

Approximately over 100 private practitioners' clinics are situated throughout the country. However, most of them are concentrated in the urban St. Michael area. General practitioners, dentists, rehabilitation therapists and practitioners of complementary and alternative medicine working in the private sector, provide ambulatory care to the population on a fee-for-service basis (The Health of the Nation, 2003)

Secondary and Tertiary care Services

In the public health sector Secondary and Tertiary care are provided at the Queen Elizabeth Hospital, the Psychiatric Hospital, the Geriatric Hospital, three District Hospitals, and specialized institutions that provide care for persons with disabilities.

The Queen Elizabeth Hospital (QEH) is the country's primary acute care medical facility. The QEH is also an accredited teaching hospital affiliated with the University of the West Indies, Cave Hill campus. To date Queen Elizabeth Hospital (QEH) is licensed to operate 600-beds and provides acute, secondary, and tertiary care. (QEH, Hospital 2016).

The private sector comprises of a renal dialysis provider, a halfway house providing mental health services, two substances abuse treatment providers, as well as approximately 45 nursing and senior citizens homes, which provide long term care for older persons and a 24-bed hospital. The private sector operates on a fee for service basis. (The Health of the Nation, 2003)

The Importance of Medical Documentation (Slide 4)

The medical record is considered the core of the hospital's health care information, the health information management personnel have the ultimate responsibility to ensure that the quality and utility of the health information generated are optimal. HIM personnel have to enforce that documentation practices are of high standards. HIM personnel have to collaborate with health care providers to ensure quality data is captured and quality of statistics are generated. One must be assured that the medical record truly reflects the quality of care provided by the facility. The medical record (paper-based or electronic) serves as a communication tool which document investigations, diagnoses, operations, treatments and the causes of death. During a patient's episode of care it is crucial that all health care providers document accurately, timely and in a concise manner. Comprehensive medical documentation supports first and foremost effective continuity of care, accurate coding of morbidity data and in unfortunate cases the causes of death for mortality data collection. Ultimately once comprehensive, accurate and clean data are captured reliable morbidity and mortality statistics can be generated.

Current Medical Documentation Challenges in Death Certification

Examples of current challenges

- Insufficient data
- Missing/ Vague diagnoses
- Inaccurate Documentation
- Misuse of abbreviations
- Incorrect medical terms
- Omissions
- Missing signatures
- Timeliness of documentation
- Late entries in patient's notes
- Incomplete notes
- Lack of awareness by Medical Practitioners to the importance of death certification and its impact on mortality coding and statistical compilation

Classifications for medical certificate death completion (Slide 5)

The Classifications for medical certificate death completion are:

1. Natural death
2. Coroners case
3. Hospital post-mortem

Verification of Medical Death Certificates

According to Barbados Vital Statistics Registration Act Cap 192. A registered medical practitioner who has been in attendance during the last illness of the deceased person or who has sufficient knowledge of the last illness shall, immediately after the death, complete and sign a medical certificate of death stating the cause of death and shall deliver that certificate to the funeral director in charge of the body. Where an inquest is held or a post-mortem examination performed on a body, the coroner shall cause the district medical officer or the medical practitioner respectively to complete a medical certificate stating the cause of death and shall deliver that certificate to the funeral director in charge of the body.

Death Certification Process (Slides 6 & 7)

Accurate death certification is vital, it supports various functions. The medical death certificate serves a permanent legal document which allows the family to; register the death of the deceased, prepare arrangements for burying the body; settle the deceased estate. From a health care perspective the medical death certificate allows for collection of statistical information on deaths by the capture of the **underlying cause of death**. This inevitably supports priority areas for medical research and health care services, monitoring the health of the population, designing and evaluating public health interventions, planning health services, and quality improvement & assessment of health services.

Death Certification Steps

1. Death is certified in the patient's medical record and a death card is filled out by the attending physician. Both the time in the medical record and on the death card should be identical and signed by the attending physician.

2. Orderly collects the patient's medical record and death card then takes them to the HIM department.
3. The process of releasing the body begins in the HIM department.

Steps for Processing Deaths & Release of the body to funeral home.

Providing that there is no need for a Hospital Postmortem or Coroner's Postmortem the steps for processing deaths are as follows:

1. Body is 'cleared' for release by physician.
2. Next of Kin authorize the release of body and indicates the funeral home.
3. The release of body documentation is collected by the Funeral Director and taken to the mortuary for removal of the body.

Ministry of Health (MOH): Mortality Statistics in Barbados (Slides 8-13)

The objectives of the Ministry of Health are to promote health, provide comprehensive health care to ensure that environmental concerns are considered in all aspects of national development. The Planning and Resource Unit (PRU) is responsible for the development of programmes and initiatives to effectively assess and improve the health of the population.

In addition, some examples of responsibilities of the PRU include the following:

- The generation of health statistics and the publication of reports for national /international audiences.
- Research and analysis of the health situation; design of health policy, programmes and plans; establishment of health care institutions.
- Project planning, including conceptualization, appraisal and design.
- Monitoring and evaluation of policies, programmes and projects
- Coordination of technical cooperation programmes with external agencies.
- Authority for the prevention, treatment and surveillance
- Provides an idea of disease profile of citizens.
- Coding and Classification of Mortality data.

Ministry of Health: Why is the Death Certificate Important?

- Permanent record of the fact of death
- Provides important information about the circumstances and causes of death
- It is an important secondary source of health data
- The information generated from local mortality statistics are used to:
 - Conduct research
 - Set public health goals
 - Measure health status

MOH: Mortality Data-Flow-Capture- Collection

The Death Certificate is registered at The Records Branch of the Registration Department which falls under the overall responsibility of the Registrar of the Supreme Court. After the deaths are registered a list of the registered deaths and copies of supporting documentation are sent to the Ministry of Health. The Mortality Coders in the Planning and Research Unit are responsible for ICD-10 coding and the compilation of Mortality data for statistical purposes.

The Mortality Coders currently:

- Manually code using ICD-10
- Utilize the Medical Mortality Data System (MMDS)
 - Mortbase, a Database System
- Compile health data in a spreadsheet application (Excel)
- Complete by age- and sex-specific analysis to 67 specific causes of death
 - Providing a screenshot of the country's disease profile

Manual & Automated Mortality Coding

This involves the application of a set of complex rules disseminated via ICD, to assign codes to specified causes of death and to select from among these the Underlying Cause (UC). The Medical Mortality Data System (MMDS) was developed by the National Centre for Health Statistics (NCHS), a department of the Centers for Disease Control and Prevention (CDC). Automated coding of cause of death (C.O.D) allows for better internal consistency and international comparability compared to manual coding. MMDS will generate codes for the conditions leading to death and ultimately determine the underlying cause of death code. Key benefits of MMDS are: Standardize coding, Simplification of the data entry process and improve data retrieval. However a few limitations of MMDS are its inability to capture an individual's demographic information and the data must be exported to mortbase/excel applications. Nevertheless it is the Mortality Coders' responsibility to special pay attention to detail and exercise due diligence when selecting the ICD-10 Code for underlying cause of death.

MOH Primary Role in Data Capture & Collection

- Capture all deaths reported in Barbados.
- Compare the line listing created and the death register from the Local Hospital (QEH).
- Identify missing certificates
- Request from the Registry copies of missing certificates
- Generate annual statistical reports and submit to Caribbean Public Health Agency (CARPHA) for further reporting.

Uses of Health Information Reporting (Mortality Statistics)

The MOH is responsible for reporting Surveillance both locally, regionally and internationally in accordance to the World Health Organization (WHO) reporting standards.

Examples of Local Surveillance Reporting Obligations:

- Control of Communicable Diseases Regulations
- Ministry of Health Epidemiological Surveillance Unit
- Barbados National Registry for Non-communicable Diseases (heart, stroke, and cancer)
- Public awareness on outbreaks
- Chief Medical Officer's Report
- Budgeting & Strategic Planning

Examples of International Surveillance Reporting Obligations

- Caribbean Public Health Agency (CARPHA)
- PAHO/ WHO Health Indicators
 - Examples: Mortality Indicators, Mental health indicators, NCD Indicators
- United Nations- health related Millennium Development Goals
- World Bank- HIV Project

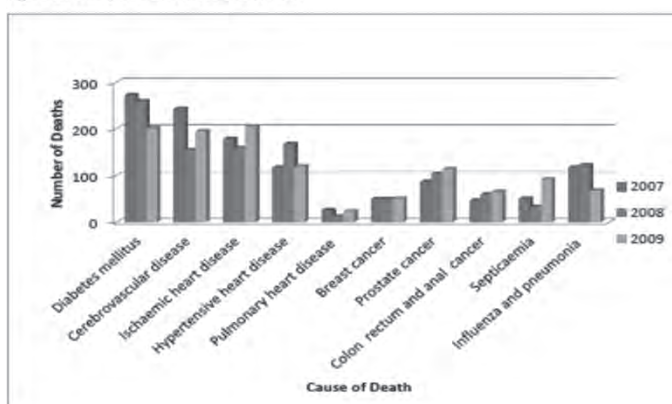
Synopsis of Mortality Data Collection Challenges & Limitations

- Reporting late registration of deaths by funeral directors
- Late quarterly delivery of death certificates to the ministry
- Lack of accurate reporting information from certifiers of death
- Limited Human Resources Personnel

An Example of a Statistical Report Generated 2007-2009

Barbados is a small country with a population of approximately 300,000 and as a result even small changes in the number of deaths (or in the reporting of them) can result in changes in rates as shown in the graph below. Chronic non-communicable diseases accounted for the top 3 causes of death in Barbadians for the period 2007-2009 with Diabetes Mellitus noted to be #1 in 2007 and 2008.

Figure 12: Principal Causes of Death 2007-2009



Source: Ministry of Health

Diabetes Mellitus accounted for the highest proportion of deaths amongst women for 2007, 2008 and 2009; while in men, it accounted for the highest proportion of deaths in 2007; shared the top ranking with ischaemic heart disease in 2008, and was third to ischaemic heart disease and stroke in 2009. Together diabetes mellitus, ischaemic heart disease, hypertensive heart disease and cerebrovascular disease accounted for more than one quarter of all deaths in men -31.3%, 28.1%

Benefits of Good Medical Documentation

Continuum of care is efficient and effective with accurate, timely and comprehensive medical documentation. Good medical documentation supports:

- The high priority accorded to promotion of health
- Prevention of disease
- The development of equitable, efficient and accessible healthcare system contributing to overall national development
- Technical assistance based on areas highlighted in statistics
- The development of targets and indicators to facilitate planning, monitoring and the evaluation of health programs locally, regionally and internationally

Recommendations

- HIM professionals need to foster better working relationships with medical practitioners to ensure timely documentation of medical death certificates.
- Establish specific medical documentation/ death certification training programs for doctors.
- Increase international professional development programs to support medical coders.
- Provide access to current Medical Coding resources and technology; e.g. develop an International HIM Community of Practice Network for Medical Coders.
- Continued collaborative initiatives with organizations such as IFHIMA, WHO, PAHO and CARICOM can improve HIM training programs in developing countries.

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Presentation Slides

Why are Medical Documentation & Death Certification Important for Mortality Statistics

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Tracy Bancroft, BHIMA VP & Medical Records Officer
Audrey Lovell-Wickham Chief Medical Records Officer (Ag)



Objectives

- Discuss the importance of Medical Documentation
 - Identify common deficiencies found in the medical record
- Provide an overview of death processing procedures in Barbados.
- Discuss Mortality Statistics in Barbados
- Provide recommendations for the future

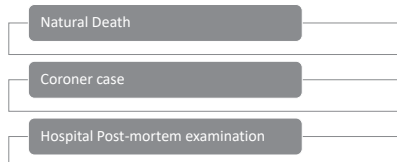
Organizational Structure of Health Services in Barbados

- Ministry of Health
- Primary Health Care Services- Eight Polyclinics and four satellite
- Over 100 physicians in the private sector in single or group practice
- Diagnostics Service (Labs, radiological service providers)
- Secondary and tertiary care services
 - Queen Elizabeth Hospital (The QEH is also an accredited teaching hospital affiliated with the University of the West Indies)
 - Bayview Hospital
 - Psychiatric Hospital
- Long term Care Services
 - Geriatric and District Hospitals

Current Medical Documentation Challenges in Death Certification

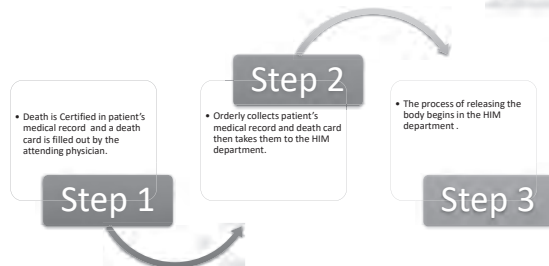
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- Incomplete notes
- Lack of awareness by Medical Practitioners to the importance of death certification and its impact on mortality coding and statistical compilation.

Classifications for medical certificate death completion.



VITAL STATISTICS REGISTRATION ACT CAP 192

Death Certification Process



Sample of Local Hospital's Death Card

Death Card

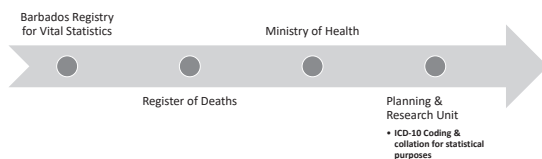
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The Ministry of Health (MOH): Why is the Death Certificate Important?

- Permanent record of the fact of death
- Provides important information about the circumstances and causes of death
- Important source of health data
- Local mortality statistics are used to :
 - Conduct Research
 - Set public health goals
 - Measure health status

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MOH: Mortality Data-Flow-Capture-Collection



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MOH Role in Data Capture & Collection

- Capture all deaths reported in Barbados.
- Compare the line listing created from the Local Hospital (QEH) to the Registered Deaths listing from the Barbados Registry for Vital Statistics
 - Identify missing certificates
- Request from the Registry copies of missing certificates
- Generate annual statistical reports and submit to Caribbean Public Health Agency (CARPHA) for further reporting.
- ICD-10 Coding & collation of data for statistical purposes

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HOW ARE THESE STATISTICS DERIVED

Mortality Coders:

- Manually code using ICD-10
- Utilize the Medical Mortality Data System (MMDS)
 - Mortbase, a Database System
- Compile health data in a spreadsheet application (Excel)
- Complete by age- and sex-specific analysis to 67 specific causes of death
 - Providing a screenshot of the country's disease profile

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Uses of Health Information Reporting (Mortality Statistics)

Local Surveillance Reporting Purposes/Obligations :

- Control of Communicable Diseases Regulations
- Ministry of Health Epidemiological Surveillance Unit
- Barbados National Registry for Non-communicable Diseases (heart, stroke, and cancer)
- Public awareness on outbreaks
- Chief Medical Officer's Report
- Strategic Planning /Budgeting

International Surveillance Reporting Purposes/ Obligations :

- Caribbean Public Health Agency (CARPHA)
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 - Examples: Mental health indicators; NCD Indicators
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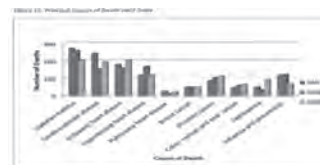
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Synopsis of Mortality Data Collection Challenges & Limitations

- Late registration of deaths by funeral directors
- Late quarterly delivery of death certificates to the ministry
- Inaccurate reporting from certifiers of death
- Limited Human Resource Personnel.

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An Example of Statistical Report Generated 2007-2009



Source: Ministry of Health

Diabetes Mellitus accounted for the highest proportion of deaths amongst women for 2007, 2008 and 2009; while in men, it accounted for the highest proportion of deaths in 2007, shared the top ranking with ischaemic heart disease in 2008, and was third to ischaemic heart disease and stroke in 2009. Together diabetes, mellitus, ischaemic heart disease, hypertensive heart disease and cerebrovascular disease accounted for more than one quarter of all deaths in men - 31.3%, 28.1%

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Recommendations

- HIM professionals need to foster better working relationship with medical practitioners to ensure timely and accurate documentation of medical death certificates.
- Establish specific medical documentation and death certification training programs for doctors/ certifiers of death.
- Increase international professional development programs to support medical coders.
- Provide access to current Medical Coding resources and technology; e.g. Develop an International HIM Community of Practice Network for Medical Coders.

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Thank You



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Shared Vision! Global Teamwork!



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17

Death Certificate

THE QUEEN ELIZABETH HOSPITAL – BARBADOS		A61: 201
DEATH CARD		
NAME OF PATIENT		Reg. No.
Next of Kin		Address
Ward	Age	Sex
Date of Admission		Date & Time of Death
Diagnosis.....		
.....		
Coroner's Case	<div style="text-align: center;">Yes</div> <div style="text-align: center;">No</div>	Post Mortem <div style="text-align: center;">Yes</div> <div style="text-align: center;">No</div>
<div style="text-align: center;">Relatives Notified</div> <div style="text-align: center;">Yes</div> <div style="text-align: center;">No</div>		
Anaesthesia/Operation	<div style="text-align: center;">Yes</div> <div style="text-align: center;">No</div>	
Death	Signed <div style="text-align: right;"><i>Medical Officer.</i></div>	
<p>N.B. This form shall be completed immediately after death and sent to the Medical Records Department.</p>		

**FORM J**

(Section 22 (1))

Vital Statistics Registration Act, Cap. 192A
MEDICAL CERTIFICATE OF DEATH

Name of deceased person:

Address:

Sex: Age:

Duration of Illness:

I hereby certify that the abovementioned deceased who was attended by me and was last seen alive by me on the
 day of , 20 , died on the day of
 20 , and that to the best of my knowledge and belief the cause of death is stated hereunder.

CAUSE OF DEATH		APPROXIMATE INTERVAL BE- TWEEN ONSET AND DEATH
PART I		
Disease or condition directly leading to death*	(a)	
	due to (or as a consequence of)	
Antecedent Causes	(b)	
Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last.	due to (or as a consequence of)	
	(c)	
	due to (or as a consequence of)	
	(d)	
PART II		
Other significant conditions, contributing to the death, but not related to the disease or condition causing it.	(a)	
	(b)	
*This does not mean the mode of dying, e.g. heart failure, respiratory failure. It means the disease, injury or complication that caused death.		
Dated this day of, 20		
Name		
Signature and Qualifications		
Address		
Signature of District Registrar		

BARBADOS



A64:123

Form Q

*(Section 34 (1))***Vital Statistics Registration Act, 1980****DEATH CERTIFICATE**

Name	
Age	
Marital Status	
Date of Death	
Place of Death	
Sex	
Date of Registration	
Registration Number (if any)	
National Registration Number	

I hereby certify that the above particulars have been compiled from the registration of death of the person under reference.

Dated the day of 20

.....
Registrar of the Supreme Court.

A64:138

BARBADOS



REGISTRATION OFFICE

Vital Statistics Registration Act, 1980

Registration of Death

Number.	
When died.	
Name and Surname.	
Sex.	
Age.	
Rank or Profession and Country of Birth.	
Cause of Death.	
Certified by.	
Signature, Description and Residence of Informant.	
When Registered.	
Signature of Registrar.	
Street, House or Village and Parish where died.	

Mortality Statistics Report in Indonesia: The Procedure for Collecting Reliable Mortality Data in Yogyakarta City

**Dwi Margawati¹, Sis Wuryanto¹, Muhammad Hamdani²,
Sarimawar Djaja³**

Achmad Yani College of Health¹, Yogyakarta General Hospital², National Institute of Health Research and Development of the Ministry of Health of Indonesia³

ABSTRACT

Background: Indonesia is the fourth most populous country on earth with an estimated 257 million people in 2015. Hospitals and public Primary Health Care Centers owned by the government are distributed in all the provinces. There are 1,725 general hospitals, 503 Special Hospitals and 9,655 Public Primary Health Care Centers in 34 provinces. In 2015 Indonesia was ranked 116th in the world for life expectancy rate and 15th in Asia. This is due to a high amount of deaths caused by stroke and coronary heart disease of which Indonesia has the highest death rate in the world for. Did the Indonesian government report this accurately? With the sheer number of hospitals and public Primary Health Care Centers in the country how is mortality data collected on the regional and city level? Should improvements be made?

Methods: This research was conducted through interviews of workers in Indonesia's National Health Organization and Civil Registrar and analysis of causes of death was done through the mortality statistics report obtained from the National Health Organization. The first set of data was collected from the interview results, and the second set of data was collected from the mortality statistics report from Indonesia's National Health Organization and Civil Registrar in Yogyakarta City, Yogyakarta, Indonesia.

Results: Mortality data results which were collected in the National Health Organization of Yogyakarta City in 2015 reported that 36.62% of all deaths are recorded as unknown. The result of the interview of the National Health Organization of Yogyakarta City workers indicated that most of the data concerning unknown causes of death came from the Primary Health Care Centers, specifically, those who died in their homes or other locations outside the Primary Health Care Centers.

Conclusion: Mortality statistics reporting among hospitals and Primary Health Care Centers in Indonesia require much improvement. Unknown causes of death skew the data gathered by hospitals, Primary Health Care Centers, and the National Health Organization thus causing inaccurate and sometimes incorrect results. A uniform system with proper accountability needs to be developed in order to provide accurate and relevant mortality statistics data across the country.

Keywords: Mortality, Statistics, Indonesia, Primary Health Care Centers, Hospitals

INTRODUCTION

Indonesia is the fourth most populous country on earth with an estimated 257 million people in 2015 [1]. Indonesia is known as an archipelago country with more than 17,000 islands. The administrative areas in Indonesia consist of 34 provinces, 416 regencies, 98 cities, 7,024 subdistricts, and 81,626 villages. [2] Hospitals and Primary Health Care Centers owned by the government are distributed in all the provinces. There are 1,725 General Hospitals, 503 Special Hospitals and 9,655 Primary Health Care Centers in 34 provinces [3].

In 2015, Indonesia was ranked 116th in the world for life expectancy rate and 15th in Asia. Average life expectancy was listed at 68 years for men and 71 years for women contrasted to developed countries, such as the United States, whose life expectancy is 76 for men and 81 for women. This is due to a high amount of deaths caused by stroke and coronary heart disease of which Indonesia has the highest death rate in the world for. Coronary heart disease and stroke are the leading causes of death in the world as a whole. [4] How accurate is that report? Did the Indonesian government report this accurately?

One of the most important sources for collecting information concerning mortality rates is Death Certificates. The procedures for collecting mortality data vary depending on which country. However, the World Health Organization (WHO) has an international standard form for causes of death. The purpose of this is to ensure that all relevant information is recorded [5].

Out of all the provinces in Indonesia, Yogyakarta is where Medical Records and Health Information is most improved. This is because Yogyakarta has the highest amount of Medical Records and Health Information institutions and active members of National Medical Records and Health Information Professionals. Yogyakarta has held numerous national workshops and seminars, as well as, two international conferences in Health Information Management. Yogyakarta city is also one of the regions in Indonesia selected to document cause of death. This program is not applied in all areas in Indonesia. Based on these facts, Yogyakarta was chosen as the sample area for this research with the assumption that Medical Records and Health Information Management is of the highest quality in the area. This research examines the condition of mortality statistics reports in Indonesia and the procedures for collecting mortality data from Primary Health Care Centers, hospitals, the National Health Organization, and the Civil Registrar.

METHODS

This research will be conducted through interviews of workers in Indonesia's National Health Organization and Civil Registrar and analysis of causes of death was done through the mortality statistics report obtained from the National Health Organization. The first set of data will be collected from the interview results, and the second set of data will be collected from the mortality statistics report from Indonesia's National Health Organization and Civil Registrar in Yogyakarta City, Yogyakarta, Indonesia.

This research was conducted from January 20, 2016 until March 2, 2016.

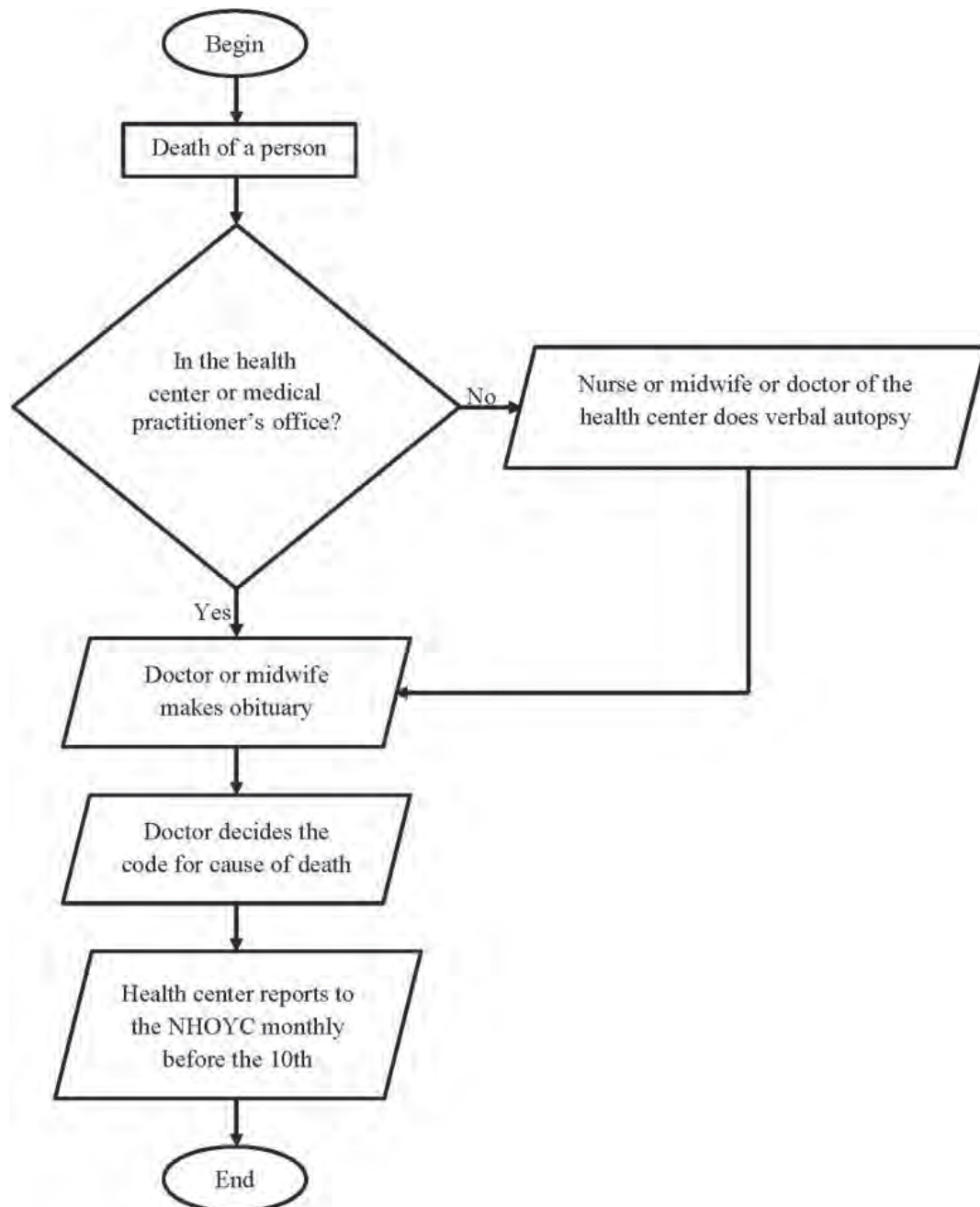
RESULTS

Primary Health Care Centers

Primary Health Care Centers are the first level of health services that have been provided by the Indonesian Government. There are 9,655 Primary Health Care Centers in 34 provinces in Indonesia [3]. Yogyakarta City has 18 Primary Health Care Centers in 45 villages which has a large area of 32.5 km² [6]. The functions of a Primary Health Care Center are to be a center for healthcare development, community improvement, and primary healthcare [7]. That is why Primary Health Care Centers have a big role in collecting mortality data, because they are in direct contact with the community. But the mortality data results which were collected in the National Health Organization of Yogyakarta City (NHOYC) in 2015 reported that 36.62% of all deaths are recorded as unknown. This can be seen in picture 4. The result of the interview of the NHOYC workers indicated that most of the data concerning unknown causes of death came from the Primary Health Care Centers. Other data concerning unknown causes of death came from individuals who died in their homes.

In the case of individuals who died in their homes, the government came up with a solution, however, the solution did not work out as intended. The solution is the result of government health research and development, and the minister of health implemented it as a project. However, the government is still uncertain whether or not to use this solution as a permanent guideline or solely for that project. The solution was to do a verbal autopsy conducted by a Primary Health Care Center worker. There are special forms that are filled out for the verbal autopsy. The verbal autopsy is divided into three categories. First is neonatal mortality which is from birth to twenty eight days old. Second is under five mortality which is children between twenty nine days until five years old. Last is over five mortality, which is people over five years old. After the verbal autopsy was conducted, the doctor would then deduce a cause of death. Prior to deducing the cause of death the doctor would create an obituary and fill out the data on a special form that was provided by the government.

A problem that occurs with verbal autopsies is the lack of expertise among those doing the procedure. Another problem is that doctors still have difficulty in choosing the underlying cause of death. As a result, the verbal autopsy form is not filled out correctly. There are many diagnoses which are uncoded, including the final underlying cause of death. However, they are still sent to the National Health Organization. This creates a burden for the NHOYC officers as they have to code the final underlying cause of death. Below is the procedure on how to collect data for the Primary Health Care Center.



Picture 1. The procedure for collecting Mortality Data in the Primary Health Care Center

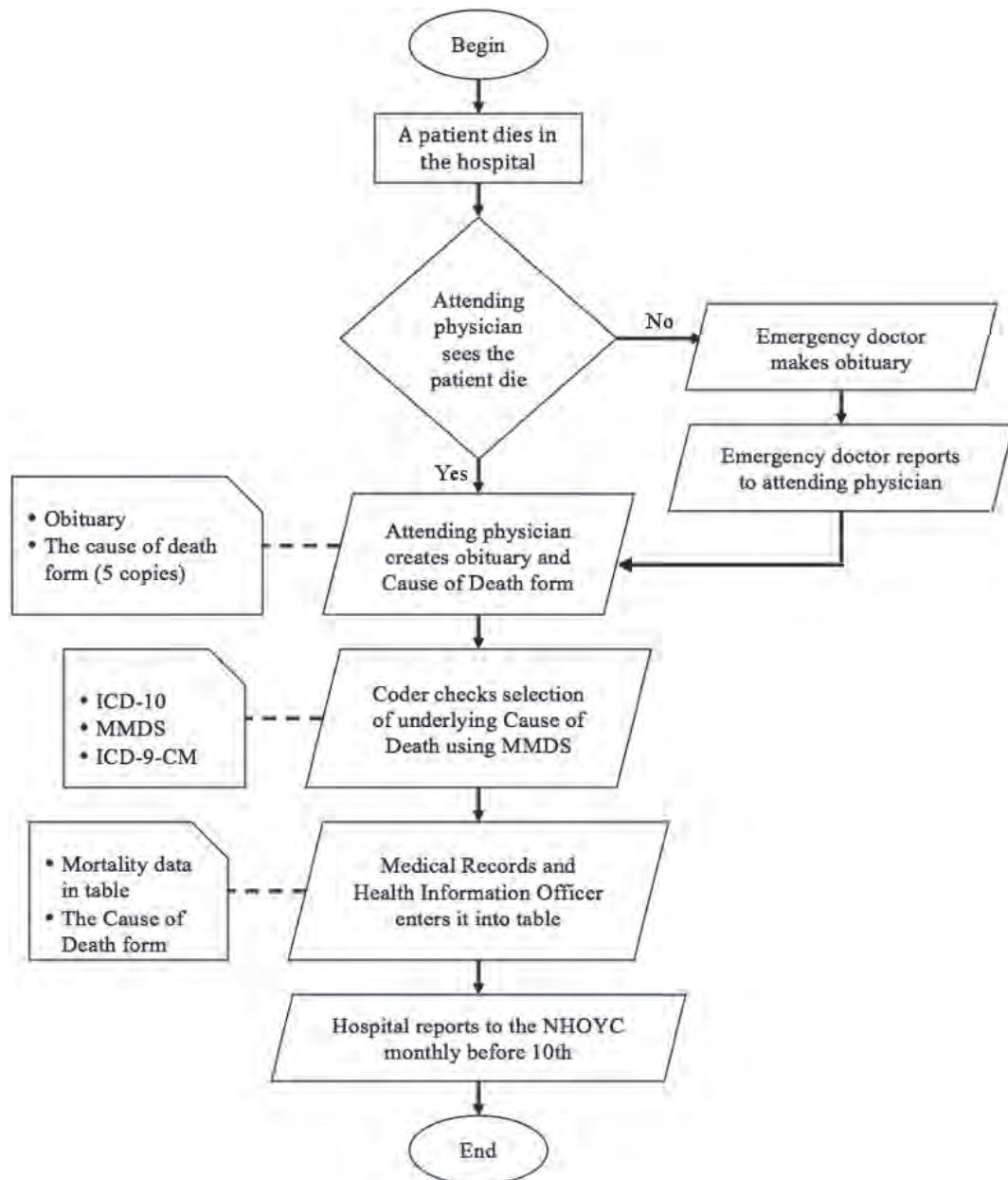
Hospitals

The procedure for collecting mortality data in the hospital is similar to the Primary Health Care Center. There is no verbal autopsy conducted by the hospital. Every patient who dies in the hospital is recorded in the obituary by the doctor on duty. However, a problem occurs when a doctor who is not the attending physician also records the patient's death. There will be two obituaries each with different sets of data, sometimes conflicting. This is very inefficient.

Another problem which occurs at the hospital level is concerning the procedure for recording the cause of death according international standards. Inpatient diagnosis is still being used to determine

some of the underlying causes of death. This confuses the Medical Records and Health Information (MRHI) professional who works in coding and reporting mortality in the hospital. Sometimes the MRHI professional does a reselection of the underlying cause of death and confirms again with the doctor. In related to this issue, in 2014 the government conducted a special workshop for the doctors and a few of the MRHI professionals. They discussed the Mortality Medical Data System (MMDS). The government adopted MMDS in order to ascertain the code for the underlying cause of death. There are problems which occur during the process. First, the audience should have had MRHI professionals instead of doctors, because the MMDS table of contents is full of ICD-10 codes. Doctors do not learn to code, therefore, it is not efficient. Second, the workshop should not be conducted only one time, because this system was still new, and hospitals needed to adjust and needed to be monitored so that the system would run well.

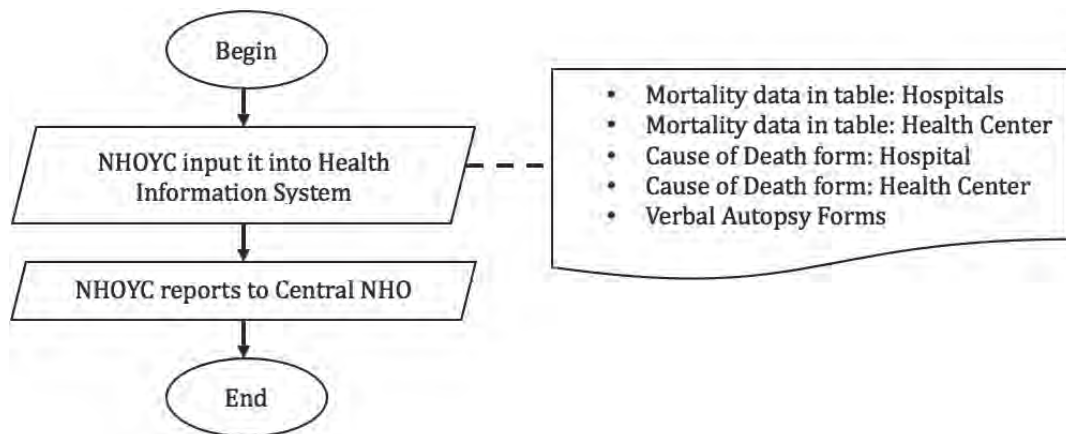
However, even though there were problems in the process for reporting mortality data, the hospital is still diligently reporting their monthly mortality data to the NHOYC. They recorded the data on a special table consisting of a Medical Records Number, Name, Gender, Age, Address, the cause of death a, b, c, d, and the final underlying cause of death code. They provide it to the NHOYC along with a copy of the cause of death form for each patient. Below is the procedure on how to collect data for the hospital.



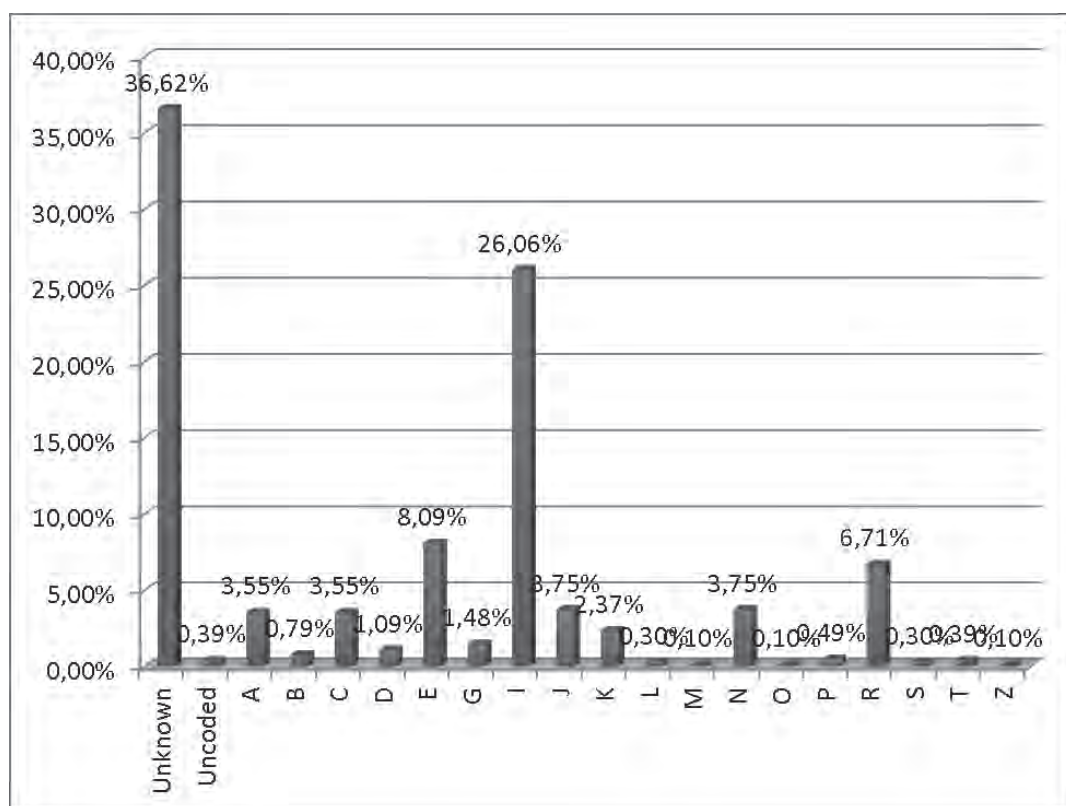
Picture 2. The procedure for collecting Mortality Data in the Hospital

National Health Organization

The National Health Organization in Yogyakarta City is responsible for reporting mortality data on the city level. The main sources for collecting mortality statistics data are divided into two. First is from hospitals which are made by the hospital and the international cause of death forms for every patient. Second is from Primary Health Care Centers which are the records done after the verbal autopsy. Below is the procedure on how to collect data for the National Health Organization.



Picture 3. The procedure for collecting Mortality Data in the National Health Organization



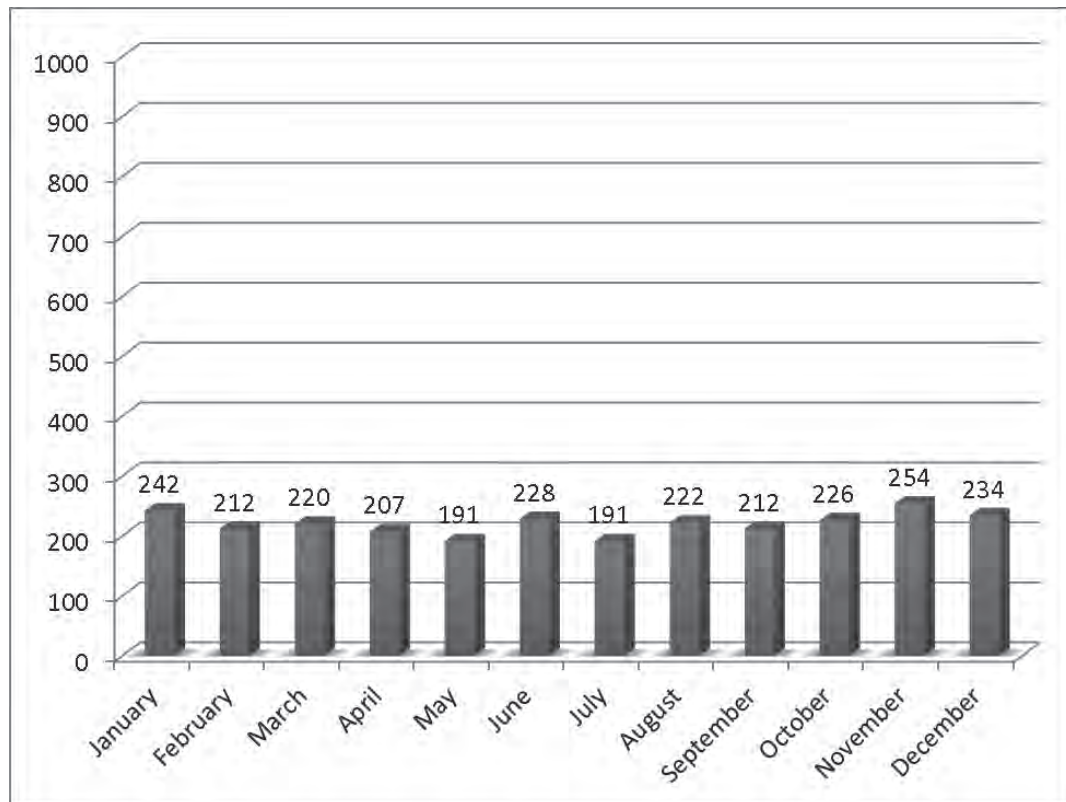
Picture 4. Final Underlying Cause of Death In Yogyakarta City (2015)

From the table we know that the highest percentage of the Final Underlying Cause of Death codes are unknown. This is because most of the verbal autopsy forms have not been completed. Also, causes of death for individuals who die outside hospitals and Primary Health Care Centers are not recorded. Even though the verbal autopsy forms are incomplete, they are still marked complete and submitted to the National Health Organization. Following unknown codes, the I code is the second highest code used. And for some reason the R code is relatively high even though R should not be used for Cause of Death. This indicates, along with unknown codes, that the reporting quality is still not good and needs much improvement. Together, the unknown codes combined with the R code make up

almost 50% of all underlying cause of death codes in Yogyakarta City. As Yogyakarta is one of the main areas chosen by the government for mortality statistics reporting in Indonesia, this is a worrying trend for the whole of the country.

Civil Registrar

The data of the mortality report in the Civil Registrar.



Picture 5. Mortality Report (2015) by the Civil Registrar

Unlike the more developed countries of the world, Indonesia does not mention causes of death on death certificates. Because of this, there is a problem. Mortality statistics reports vary between the National Health Organization and the Civil Registrar. According to the Civil Registrar, the total number deaths in Yogyakarta in 2015 were 2,639. However, the National Health organization reported only about 1,000 deaths. This is because the data submitted to the National Health Organization is incomplete. Conflicting data such as this, negatively impacts mortality statistics reporting.

CONCLUSION

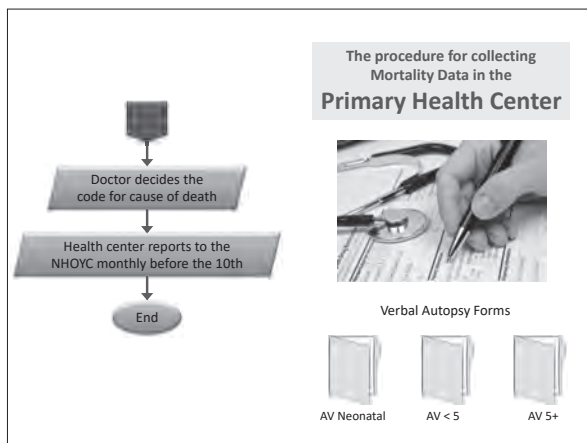
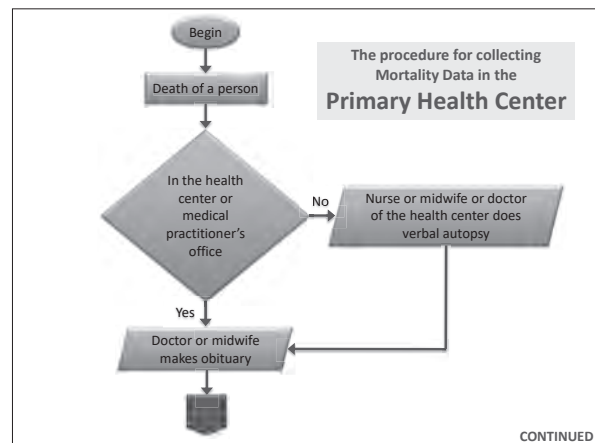
Mortality statistics reporting needs improvement. Unknown causes of death skew the data gathered by hospitals, health centers, and the National Health Organization. There needs to be qualified coders or HIM professionals who work in National Health Organization, especially in the morbidity and mortality reports department. A uniform system with proper accountability needs to be developed in order to provide accurate and relevant mortality statistics data across the country.

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RESULTS AND DISCUSSION

- **Mortality Report in Health Center Level**
- **Mortality Report in Hospital Level**
- **Mortality Report in National Health Organization Level**
- **Mortality Report in Civil Registrar**



VERBAL AUTOPSY

Penyakit kematian menurut dokter

1. Penyakit langsung

a) _____

b) _____

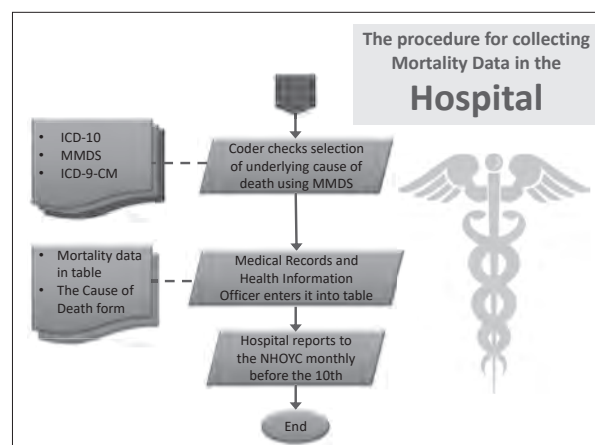
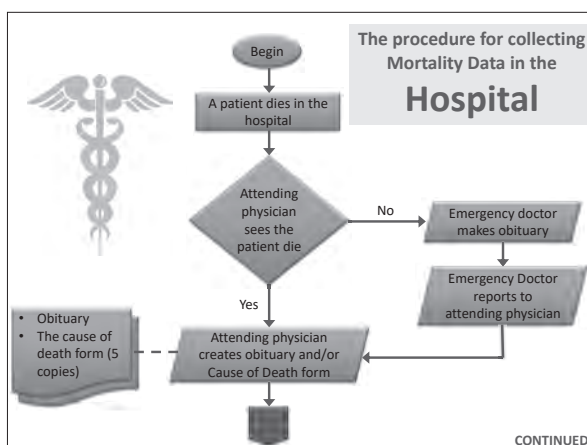
c) _____

Penyakit dasar

d) _____


2. Penyakit kondisi/ lain yang berkontribusi namun tidak berhubungan dgn 1a-d

Cause of Death on Verbal Autopsy Form



Death Certificate

	PEMERINTAH DAERAH KABUPATEN/KOTA DINAS KESEHATAN	Prov/Kab: <input type="text"/> / <input type="text"/>
SURAT KETERANGAN KEMATIAN		
No. Surat :		
Bulan/Tahun Kematian : <input type="text"/> / <input type="text"/> Nama RS/PKM : Kode RS/PKM : <input type="text"/>		
No.Urut Pencatatan Kematian Tiap Bulan : <input type="text"/> No Rekam Medis : <input type="text"/>		
Identitas Jenazah		
1. Nama Lengkap : (INITIAL:.....)		
2. No Induk Kependudukan (NIK) :		
3. Jenis Kelamin : 1. Laki-laki 2. Perempuan		
4. Tempat/ Tanggal Lahir : Tanggal..... Bulan..... Tahun..... Umur..... (tahun)		
5. Pendidikan almarhum/ah : 1. Tdk Sekolah/Tdk Tamat SD 2. SD 3. SLTP 4. SLTA 5. Akademi/Diploma 6. Sarjana		
6. Pekerjaan almarhum/ah : 1. Bim/Tdk bekerja 2. Sekolah 3. TNI/POLRI 4. PNS 5. Petani 6. Wiraswasta/jasa		
7. Alamat Sesuai KTP/KK : Jalan/ Gang..... No..... RT/RW..... Kelurahan/ Desa Kecamatan..... Kota/Kab..... Kode Pos..... Telp.....		
8. Status Kependudukan : 1. Penduduk tetap 2. Bukan Penduduk tetap		
YANG BERSANGKUTAN DINYATAKAN TELAH MENINGGAL DUNIA		
9. Waktu Meninggal :/...../..... (Tgl/ Bln /Thn), Pukul.....		
10. Umur saat meninggal : Hari (< 29 hari) Lahir mati (1.Ya 2. Tidak) Bulan (29 hari s.d < 5 tahun) Tahun (≥ 5 tahun)		
11. Bila yang meninggal wanita umur 10-54 tahun, Almarhumah dalam keadaan : 1. Hamil 3. Nifas (2 bulan setelah melahirkan/abortus) 2. Bersalin 4. Lainnya		
12. Tempat Meninggal : 1. Rumah Sakit; lama dirawat jam (<1 hr) / hari 2. Rumah 3. DoA 4. Lainnya.....		
13. Dasar Diagnosis : 1. Rekam medis 2. Autopsi verbal 3. Autopsi forensik		
14. Rencana Pemulasaran : 1. Dikubur :/...../..... (Tgl/ Bln /Thn) 2. Dikremasi :/...../..... (Tgl/ Bln /Thn) 3. Transportasi keluar kota :/...../..... (Tgl/ Bln /Thn) 4. Transportasi keluar negeri :/...../..... (Tgl/ Bln /Thn)		
Pihak Yang Menerima,	 / / 20..... Dokter Yang Menerangkan,
Nama Jelas : Hub. dg Almarhum/ah		Nama Jelas : Jabatan & Cap Instansi

Nomor Induk Kependudukan <i>Personnel Registration Number</i>	No. AM. 691. 0007865
	
PENCATATAN SIPIL REGISTRY OFFICE	
WARGA NEGARA NATIONALITY	
KUTIPAN AKTA KEMATIAN EXCERPT OF DEATH CERTIFICATE	
Berdasarkan Akta Kematian Nomor <i>By virtue of Death Certificate Number</i>	
menurut stbld <i>in accordance with state gazette</i>	bahwa di <i>that in</i>
pada tanggal <i>on date</i>	
tahun <i>on year</i>	
telah meninggal dunia seorang bernama Tn/Ny/Nn <i>a person has deceased by name of Mr/Mrs/Miss</i>	
lahir di <i>born in</i>	pada tanggal <i>on date</i>
	tahun <i>on year</i>
Kutipan ini dikeluarkan <i>The excerpt is issued</i>	
pada tanggal <i>on date</i>	
Kepala <i>Head of</i>	

F-2.3471.8



PEMERINTAH KOTA YOGYAKARTA
DINAS KEPENDUDUKAN DAN PENCATATAN SIPIL
 Jalan Kenari No. 56 Yogyakarta Kode Pos : 55165 Tlp. 563925, 557062

FORMULIR PELAPORAN KEMATIAN

NO KK :

Nama Kepala Keluarga :

1. Yang Meninggal :

a. Nama :

b. Nik :

c. Laki-laki/perempuan : Laki-laki / Perempuan *)

d. Lahir di :Tgl Lahir:.....

e. Tanggal Meninggal :Jam:.....

f. Nama Istri/Suami :

g. Tempat Meninggal :

h. Alamat :

2. Nama Ibu :

a. Nama :

b. Nik :

c. Tgl lahir :

d. Pekerjaan :

e. Alamat :

f. Warga negara :

3. AYAH :

a. Nama :

b. Nik :

c. Tgl lahir :

d. Pekerjaan :

e. Alamat :

f. Warga negara :

4. PELAPOR : Ahli Waris / Kuasa *)

a. Nama :Umur :

b. Nik :

c. Pekerjaan :

d. Alamat :

e. NO Telp / HP :/.....

5. SAKSI I :

Nama :Umur :

NIK :

7 SAKSI II :

Nama :Umur :

NIK :

*) Coret yang tidak perlu.

Yogyakarta,.....
 Pelapor

(.....)

Saksi I

Saksi II

**Title of Presentation: Improving Death Registry Recording And Coding System
Recording and Reporting of 'Cause of Deaths', Using (ICD-10)**

Geofrey Semu

*Muhimbili National Hospital, Health Records & Information Department, Dar es salaam,
Tanzania.*

Overview

Review of data elements in the death registry system reveals difficulties in understanding whether the “*probable cause of death*” captured in the tool falls under immediate, underlying or other related causes of death. This poses challenges related to effective programming and interventions. For instance, it becomes difficult to establish the number of deaths for which HIV/AIDS is the underlying cause. Therefore, the death registry data collection tool was reviewed regarding the capture of all necessary data elements to facilitate the use of the ICD-10 classification for accurate and complete data capture.

Objective:

Harmonize death record administration implementation initiatives among health care providers, implementing partners and donors to achieve International standard for all-causes death and mortality statistics management practices.

Methods:

Review of Health Management Information system (HMIS) for death registration and reporting through a series of meetings, stakeholder consultations and workshops between Ministry of Health (Tanzania) and partners.

The national death registry and reporting database was evaluated to reveal whether cause-specific mortalities are well-captured to identify strengths and weaknesses of the system as well as establishing whether the system complies with WHO guidelines for Recording and reporting cause of death.

Findings and recommendations:

- The paper-based death recording form used by the Ministry of Health has no “Age Type” variable (Years, Months, Days and Hours). This variable appears on the electronic version of the form in DHIS-2

Required: Review the deaths registry tool to incorporate the missing variable

- The “Probable causes of death” in the DHIS-2 database are possibly “immediate/direct”, mak-

ing it difficult to identify deaths attributable to HIV/AIDS.

Required: Revise the death registry tool to standardize the reporting format into immediate/direct and underlying/indirect causes of death.

- The existing ICD 10 coding system incorrectly presents some illnesses/diseases e.g. different forms of malaria are all represented by Code B54, which represents unspecified malaria and B53 represents confirmed malaria. Does this mean that all malaria cause-specific mortalities are unspecified in all health facility settings?

Required: Revise the existing code list in the death registry tool to correctly code all locally customized conditions/diagnoses and probable causes of death.

- The existing ICD 10 coding system can only code a few diseases and some leading causes of disease are omitted.

Required: Add more diseases and codes to the ICD 10 coding system to comprehensively cover all leading causes of death.

Presentation Slides

MUHIMBILI NATIONAL HOSPITAL
&
TANZANIA HEALTH RECORDS AND
INFORMATION ASSOCIATION (THERIA)
12th OCTOBER 2016.

Recording and Reporting of Cause of Deaths,
Using (ICD-10)

Overview

- Review of data elements in the death registry system (Tanzania) reveal difficulties in understanding whether the “probable cause of death” captured in the tool falls under immediate, underlying or other related causes of death. This poses challenges related to effective programming and interventions. For instance, it becomes difficult to establish the number of deaths for which HIV/AIDS is the underlying cause.

Overview

Therefore, the death registry data collection tool was reviewed to ensure the capture of all necessary data elements to facilitate the use of the ICD-10 coding system for accurate and complete data capture.

Objective

Harmonize deaths record administration implementation initiatives among health service providers, implementing partners and donors to achieve enact national standardized all-causes mortality management practices.

Methods

Review of HIMS system for death registration and reporting through a series of meetings, stakeholders consultations and workshops between the Ministry of Health (TZ) and partners;

The national death registry and reporting database was evaluated to find out if cause-specific mortalities are well-captured to identify the strengths and weaknesses of the system to establish whether the system complies with WHO guidelines for death registration.

Findings and recommendations.

The paper-based death recording form used by the Ministry of Health and Social Welfare has no “Age Type” variable (Years, Months, Days and Hours). This variable appears on the electronic version of the form in DHIS-2

Required

Review the deaths registry tool to incorporate the missing variable

Hints

The “Probable causes of death” appearing in the DHIS-2 database are possibly “immediate/direct”, making it difficult to identify deaths attributable to HIV/AIDS.

Required

• Revise the death registry tool to standardize the reporting format into immediate/direct and underlying/indirect causes of death.

- The existing ICD coding system incorrectly presents some illnesses/diseases e.g. different forms of malaria are all represented by Code B54 Code B54 represents unspecified malaria, B53 represents confirmed malaria. Does this mean that all malaria cause-specific mortalities are unspecified in all health facility settings?

Required

- Revise the existing code list in the death registry tool to correctly code all locally customized conditions/diagnoses and probable causes of death.

Cont

- The existing ICD coding system can only code a few diseases and some leading causes of disease are omitted.

Required

- Add more diseases and codes in the system to comprehensively cover all leading causes of death.

THE END!!

Thank you for listening

G. SEMU 2016

Death Certificate

BD
0538801

JAMHURI YA MUUNGANO WA TANZANIA
IDARA YA MSAJILI WA VIZAZI NA VIFO
KIBALI CHA MAZISHI

Namba ya Kituo cha Tiba

1. JINA LA MAREHEMU: In kwanza In pili In ukoo 2. TAREHE YA KIFO: Siku Mwezi Mwaka

3. WAKU/MI/WAKIKE* Wakume ☐ Wakike ☐ 4. UMRI: mtaka au mizizi au siku

6. MAHALI ALIPOISHI/MASKANI: Kiji na Kata au Mtaa Kata na Mji Wilaya

8. Baada ya kuchunguza na kuthibitisha sababu ya kifo cha marehemu, natoa kibali cha mazishi:

9. SABABU ZA KIFO: 15. TAREHE: Siku Mwezi Mwaka 16. MSAMDIZI USAJILI WA: (Uaji au Juu la Kituo cha Tiba) 17. SAHIBU: SAHIBU

Form: D-1

BD
0538801

JAMHURI YA MUUNGANO WA TANZANIA
IDARA YA MSAJILI MKUU WA VIZAZI NA VIFO
DAFTARI LA KIFO
(Kwa matumizi ya Madaktari na Vituo vya Tiba)

Namba ya Kituo cha Tiba

1. JINA LA MAREHEMU: In kwanza In pili In ukoo 2. TAREHE YA KIFO: Siku Mwezi Mwaka

3. WAKU/MI/WAKIKE* Wakume ☐ Wakike ☐ 4. UMRI: mtaka au mizizi au siku

6. MAHALI ALIPOISHI/MASKANI: Kiji na Kata au Mtaa Kata na Mji Wilaya

7. KAZI YA MAREHEMU: Uraia mwingine au taja

9. CAUSE OF DEATH*
IMMEDIATE CAUSE: Disease or condition directly leading to death (a)
DUE TO
ANTECEDENT CAUSES: Morbid condition, if any, which gave rise to the immediate cause (a) (b)
DUE TO
stating the underlying condition last (c)
OTHER SIGNIFICANT CONDITIONS: Contributing to the death but not related to (a)

10. CERTIFICATION: To the best of my knowledge, the information given above is correct.

11. NASI 12. DATE 13. SIGNATURE 14. TITLE

15. TAREHE: Siku Mwezi Mwaka 16. MSAMDIZI USAJILI WA: (Uaji au Juu la Kituo cha Tiba) 17. SAHIBU: SAHIBU

18. WILAYA 19. NAMBIA YA UNABE: 20. TAREHE: Siku Mwezi Mwaka 21. SAHIBU: SAHIBU

* Weka alama "X" katika chumba kinachohusika

Downloaded X1 Selfie

Form: D1

BD

0538801

JAMHURI YA MUUNGANO WA TANZANIA

IDARA YA MSAJILI MKUU WA VIZAZI NA VIFO

DAFTARI LA KIFO

(Kwa matumizi ya Madaktari na Vituo vya Tiba)

NAKALA YA MIWANZO

Namba ya Kituo cha Tiba

Masanduku ya apande wa kulia
ni kwa matumizi ya ofisi tu.

1. JINA LA MAREHEMU			2. TARIEHE YA KIFO			40	41	42	43	44	45		
Isiyoanwa la pili la ukoo			Siku Mwezi mwaka			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
MAREHEMU	3. WAKUWE WAKIJI*		4. UMRI			46							
	Wakume <input type="checkbox"/>	Wakike <input type="checkbox"/>	miaka au mwezi au siku			47	48	49	<input type="checkbox"/>				
BABA	5. MAHALI ALIPOITA			Kituo na Kituo au Mkoa Kituo au Mji au Kituo cha Tiba			50						
	6. MAHALI ALIPOSHIMASKANI			7. URAIA Mwanzaa			51	52	53	54	55	56	57
8. KAZI YA MAREHEMU			Uraia mwingine taja			59 60							
9. CAUSE OF DEATH*													
IMMEDIATE CAUSE: Disease or condition directly leading to death (a)													
DUE TO													
ANTECEDENT CAUSES: Morbid condition, if any, which gave rise to the immediate cause (a) (b)													
DUE TO													
stating the underlying condition last (c)													
OTHER SIGNIFICANT CONDITIONS: Contributing to the death but not related to (d)													
61 62 63 64													
10. CERTIFICATION: To the best of my knowledge, the information given above is correct.													
11. NAME 12. DATE 65													
13. SIGNATURE 14. TITLE													
15. KAPITE			16. MSAJILI USABILI WA			17. SAHIMI							
Siku mwezi mwaka			(Kamari au Jina la Kituo cha Tiba)										
18. WILAYA			19. NAMBA YA USABILI			74 76 77 78 79 80 81							
20. TARIEHE			21. SAHIMI			<input type="checkbox"/>							
Siku mwezi mwaka													

* Weka alama "X" katika chumba kinachohusika

MPP-195M

THE UNITED REPUBLIC OF TANZANIA
CERTIFICATE OF DEATH

C No: 1000030425

No of Entry (1)	Name and Surname of Deceased (2)	Age (3)	Sex (4)	Residence (5)	Occupation (6)	Nationality (7)	Date of Death (8)	Place of Death (9)	Cause of Death (10)	Signature, description and residence of informant (11)	Date of Registration (12)	Signature of Registering Officer (13)
		88 YEARS	MALE	GONGOLAMBOTO ILALA, DAR ES SALAAM, TANZANIA	PEASANT	TANZANIA	TENTH JUNE 2015	AMANA HOSPITAL ILALA, DAR ES SALAAM TANZANIA	A) STATUS ASTHMATICUS B) RESPIRATORY FAILURE C) HYPOGLAECAMIA AS CERTIFIED BY DOCTOR TUNGANIJA OF AMANA HOSPITAL ILALA, DAR ES SALAAM TANZANIA	AMANA HOSPITAL ILALA DAR ES SALAAM TANZANIA	TENTH JUNE 2015	

1002-874-391

Certified under the Births and Deaths Registration Act (Cap. 108 R.E 2002), to be a true Copy of an entry in the register in my custody of Deaths for the District of ILALA in Tanzania

Dated this 10TH SEPTEMBER, 2015

MAA

Upload

C No: 1000029682

**THE UNITED REPUBLIC OF TANZANIA
CERTIFICATE OF DEATH**

Uploaded X1 Selfie

1002-854-148	Name and Surname of Deceased	(2)	Age	(3)	Sex	(4)	Residence	(5)	Occupation	(6)	Nationality	(7)	Date of Death	(8)	Place of Death	(9)	Cause of Death	(10)	Signature, description and residence of Informant	(11)	Date of Registration	(12)	Signature of Registering Officer	(13)
			59 YEARS		MALE		KIGAMBONI TEMEKE, DAR ES SALAAM, TANZANIA		BUSINESSMAN		TANZANIA		EIGHTEENTH MARCH 2015		MUHIMBILI NATIONAL HOSPITAL ILALA, DAR ES SALAAM TANZANIA		A) UREMIC ENCEPHALOPATHY B) RENAL INSUFFICIENCY BPH AS CERTIFIED BY DOCTOR BRYSON ALBERT OF MUHIMBILI NATIONAL HOSPITAL ILALA, DAR ES SALAAM		MUHIMBILI NATIONAL HOSPITAL ILALA DAR ES SALAAM TANZANIA		EIGHTEENTH MARCH 2015			

Certified under the Births and Deaths Registration Act (Cap. 108 R.E 2002), to be a true Copy of an entry in the register in my custody of Deaths for the District of ILALA in Tanzania

Dated this 30TH JULY, 2015

Mortality Statistics of India

Prof. DR. G. D. Mogli

*PH.D., MBA. FHRIM (UK), FAHIMA (USA) VISITING PROFESSOR, MEDICAL INFORMATICS,
MGM SCIENCES, MAHARASHTRA, INDIA*

EX. WOLRD HEALTH ORGANIZATION CONSULTANT

ASSOCIATE PRFESSOR HIM PROGRM KING FAISAL UNIVERSITY, SAUDI ARABIA

DEAN OF HIM PROGRAM, MOH, SULTANATE OF OMAN

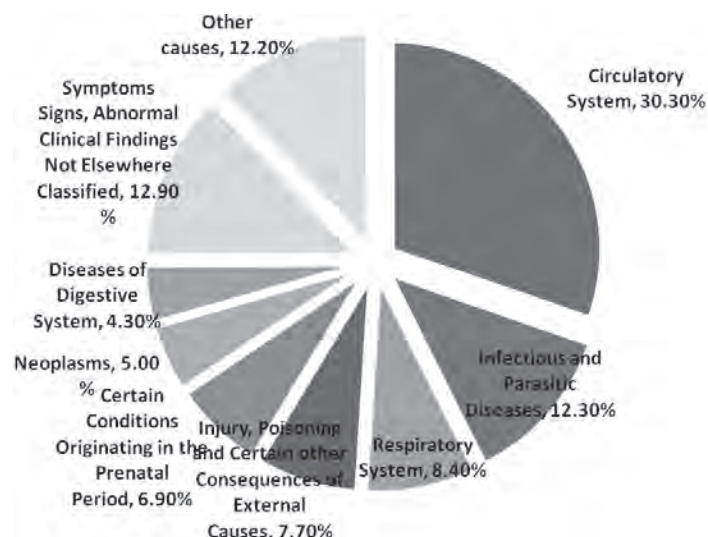
ABSTRACT

Introduction: India with 29 states and 7 union territories is the second most populous country in the world, with over 1.277 billion people 2015, more than a sixth of the world's population, density 383 people per sq. km 2011, growth rate 1.25 percent per1000 population 2013 est., birth rate 20.22 births per 1,000 population 2013 est. death rate 7.4 deaths per 1,000 population 2013 est. and life expectancy is 68.89 years 2009 est. male: 67.46 years while female 72.61 years 2009 est., fertility rate 2.3 children born per women SRS 2013, and mortality rate of neonatal 29.20, infant 40, less than 5 years 52.70, and adult female 155.85 & male 236.43. Deaths per1, 000 live births 2013 est.,

Following leading cause-groups of deaths constitutes 88 percent of total deaths:

- Diseases of Circulatory System 30.3.
- Certain Infectious and Parasitic Diseases 12.3.
- Diseases of Respiratory System 8.4.
- Injury, Poisoning and Certain other Consequences of External Causes 7.7.
- Certain Conditions Originating in the Prenatal Period 6.9.
- Neoplasms 5.0
- Diseases of Digestive System 4.3.
- Symptoms Signs, Abnormal Clinical Findings Not Elsewhere Classified 12.9.

CAUSE OF DEATH



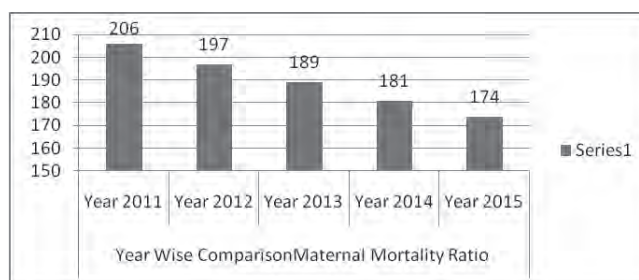
Methodology: In India it is mandatory under the law as per the Registration of Births & Deaths Act, 1969 to register every birth or stillbirth and death with the concerned state and UT Government within 21 days of its occurrence. The necessary data on medical certificate of cause of death Form No. 8 for Institutional deaths and Form No. 8A for Non-Institutional deaths is collected in the prescribed forms -Form 4 for Hospital deaths and Form 4A for Non-institutional deaths. Both these forms designed by World Health Organization. Forms are completed by attending physicians at the time of terminal illness, and form is sent to the concerned Registrars of Births and Deaths for onward transmission to the Chief Registrar office for tabulation as per national list of cause of death based on ICD-10. Forms will be presented in the conference.

Need for mortality statistics: Reliable cause-specific mortality statistics is required on a regular basis by Administrators, Policy Planners, Researchers and other Professionals for evidence-based decision-making with regard to resource allocation, monitoring of indicators, identifying the priorities for programs and other related activities in the area of Public Health.

Maternal Mortality Ratio (Modeled estimates per 100,000 live-births):

Maternal Mortality ratio is the number of women who die from pregnancy related causes while pregnant within 42 days of pregnancy termination per 100,000 live births. The data estimated with a regression model using information on the population of maternal deaths among non-AIDS deaths in women ages 15-49, fertility, birth attendants and GDP. (Source: WHO, UNECIF, UNFPA, World Bank and United Nations Population Division- Trends in Maternal Mortality 1990-2015- Geneva-WHO, 2015.

Year 2011	Year 2012	Year 2013	Year 2014	Year 2015
206	197	189	181	174



Child Mortality in India: New report shows child mortality rate in India is three times higher among the poor than the rich. Children from the poorest communities are three times more likely to die before they reach the age of 5 than those from high income groups. In a new global report titled A Fair Chance at Life, the organization said reductions in child mortality in India and elsewhere in the world appeared to focus on children from better-off communities leaving children from the most disadvan-

tagged backgrounds behind. India's mortality rate per 1000 live birth as of year 2013; Neonatal 29.20, Infant 41.40, <5 years 52.70, Adult: female 155.85 and male 236.43.

Neonatal death rate in India: UNICEF Report- alarmingly high: Pointing out that one-third of all neonatal deaths occur on the first day of life (almost half within three days and nearly three-fourths within the first week), the report underlines the need for early and immediate care during and after childbirth. Almost one in every three babies in the world who die before they are four weeks old is in India. Of these, over one-fourth happen in Uttar Pradesh alone, reveals 'State of India's Newborns', a report prepared by UNICEF in association with the WHO, World Bank, department of health and family welfare, Government of India, and the National Neonatology Forum.

Of the 26 million children born in India every year, approximately 1.83 million children die before their fifth birthday in India. "There are the huge inequities in mortality rates across the country, within States and between them, as well as between children in urban and rural areas". The Under 5 mortality rate in Kerala is 14 deaths per 1000 live births. This stands at a sharp contrast to Madhya Pradesh at 92 per 1000 or 91 per 1000 for Uttar Pradesh.

India's Mortality Rate of Infant's

Year	Mortality rate
2011	44
2012	43
2013	41
2014	39
2015	38



India has made little progress in controlling child mortality, according to international child right group Save the Children. Its new report to be released says two million children die below the age of five in India annually.

India has serious cause for concern. Two million children below the age of five die every year in India, giving it the dubious distinction of being the country with the highest number of such deaths.

The shocking statistics have been compiled by Save the Children, a child rights group, in a report says over 400,000 of our newborns die within 24 hours of birth, again the highest figure in the world.

Globally, this figure is two million. India accounts for one-fifth of newborn deaths, those dying within a month of birth, and also has one-third of the world's undernourished children.

In short, despite its commendable economic growth in the past decade, the country has made little progress in controlling child mortality.

“Nearly a decade of high economic growth has not translated into improved healthcare and nutrition for the majority of children,” the report says.

This is when these deaths could be easily prevented with low-cost interventions.

The child mortality rate – the number of deaths in every 1,000 children below five years of age – in India was 117 in 1990.

In 2007, this number had gone down to 72. The country’s Millennium Development Goals (MDG) target for 2015 is 38.

While our average annual rate of reduction in child mortality is only 2.9, it has to be 7.6 if the MDG is to be attained.

According to the report, India’s child mortality rate is worse than that of its less developed neighbors – Bangladesh’s rate is 61 while Sri Lanka’s is 21.

Not surprisingly, these rates are not the same within India. There are huge differences among various states, income groups, tribal groups and castes.

For example, the under-five mortality rate in Kerala is 16 per 1,000 live births. It is 20 in Goa; 96 in Uttar Pradesh; 94 in Madhya Pradesh; and 85 in Rajasthan.

Across the country, the under-five mortality rate for those earning the lowest is 92, while it is 33 among the highest earners.

According to a paper published in the Institute of Development Studies Bulletin, child mortality rates among the Scheduled Castes, Scheduled Tribes and Other Backward Classes are 33 to 100% higher than in other categories.

While the mortality rate of children under five years of age is 88.1 for SCs, 95.7 for STs and 72.8 for OBCs, it is 59.2 for other castes.

Fortunately, these deaths are not random events beyond control. “To a great extent, they are the outcome of policy and political choices,” the report says.

The fact that India ranks 171 out of 175 countries in the world in public health spending speaks for itself.

Poor countries such as Nepal, Bangladesh, Peru and the Philippines that are on track to meet the MDG target explode the myth that the costs of reducing newborn and child mortality are high. In India, Maharashtra has shown low-cost home-based childcare could reduce neonatal mortality by up to 70%.

The global economic and food crises are also affecting children’s survival.

A.M. Khan, professor of social sciences at the National Institute of Health and Family Welfare, said India was far behind in almost all health indices such as maternal mortality and total fertility rate. But within the country, there is a North-South divide. Two-three states in the North are polluting the entire statistics, he said.

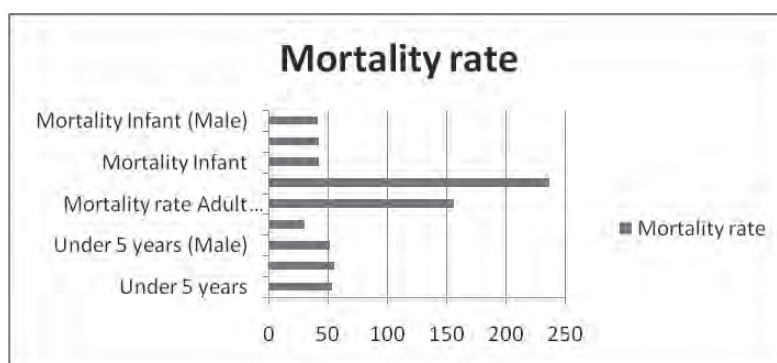
Importance of Mortality Information: Mortality is one of the basic components of population change and related data is essential for demographic studies and public health administration. It is the principal ingredient for population projections and life tables. Information on death events recorded in SRS

(sample registration system) is used to estimate mortality indicators. The various measures of mortality published under SRS are Crude Death Rate (CDR), under-five Mortality Rate (U5MR), Infant Mortality Rate (IMR) and its components, Age Specific Mortality Rates (ASMR), Still Birth Rate (SBR) and Peri-Natal Mortality Rate (PMR).

SRS has continued to provide data for estimating various mortality measures since its inception. The crude death rate at all India level has declined significantly from 14.9 to 12.5 during 1971 to 1981 and thereafter from 9.8 to 7.2 during 1991 to 2010. The decline has been steeper in rural areas as compared to urban areas. The infant mortality rate, which plays an important role in health planning, has shown a considerable decline from 129 per 1000 live births in 1971 to 110 in 1981 and from 80 in 1991 to 47 in 2010. The child mortality rate has depicted a perceptible decline from 51.9 in 1971 to 41.2 in 1981 and from 26.5 in 1991 to 13.3 in 2010. In 2010, about 34 percent of the deaths were institutional and 66 percent received medical attention other than institution.

India's Mortality Rate (Per 1000 live births) as of year 2013

S. No	Subject	Mortality rate
1	Under 5 years	52.70
2	Under 5 years (Female)	54.70
3	Under 5 years (Male)	50.80
4	Neonatal	29.20
5	Mortality rate Adult (Female)	155.85
6	Mortality rate Adult (Male)	236.43
7	Mortality Infant	41.40
8	Mortality Infant (Female)	41.70
9	Mortality Infant (Male)	41.10



“The current Infant Mortality Rate (IMR) of India, as per the Sample Registration System (SRS) 2013, is 40 per 1,000 live births while the Under-5 Mortality Rate (U5MR) as per SRS 2012 is 52 per 1,000 live births. Going by the current pace of decline, India is unlikely to achieve its target of reducing the infant mortality rate to less than 39 per 1,000 live births by end of 2015.

Medical attention before death: The type of medical attention received before death is also collected in the SRS. In the new sample from 2004, the options on types of medical attention received before death have been modified to capture the deaths occurred specifically at private hospital /nursing homes. The options include 'Government Hospital', 'Private Hospital', 'Qualified professional', 'un-trained functionary' and 'others'. The options for the sample based on 1991 sample were 'Institutional'; 'Medical attentions other than institution'; and 'No medical attention'. Statement 58 given below presents the percentage distribution of deaths by type of medical attention received before death for India and bigger States separately for rural and urban areas for the year 2010. At the National level, 21.5 per cent of the deaths occurred at Government Hospital and varies from 19.3 per cent in rural areas to 29.4 per cent in urban areas. Among the bigger States, Himachal Pradesh (47.9) has the highest percentage of deaths in Government Hospital and Jharkhand (12.5) the lowest. Deaths in private hospitals account for 12.4 per cent and it varies from 3.5 per cent in Odisha to 33.5 per cent in Kerala. About 28.2 per cent deaths were attended by untrained functionaries and others.

"At this current rate of decline it seems it will be difficult for India to reach the target of less than 39 per 1,000 live births by the end of 2015," UNICEF's Health Specialist in India, Dr Gagan Gupta told PTI. Though India accounts for the highest burden of Under-5 deaths in the world, there has been a faster decline in its reduction as compared to the global fall, he added.

"Neo-natal deaths account for 56% of Under-5 deaths in India which is much higher than the global average of 44%. The progress in reduction of neo-natal mortality has been slow," he noted. In fact, four states - Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan - account for half of the Under-5 deaths in India, Dr Gupta said. Assam with 75 per 1,000 live births tops the chart among states having Under-5 mortality above.

"The 41 percentage decline in child mortality over the last nearly two decades' masks a dangerous expansion of the child mortality gap between the richest and poorest families in India". The child mortality is often described as the best barometer of social and economic progress. Despite being one of the fastest growing economies, there has been no visible pattern between per capita income growth and the rate of reduction of child mortality rates. In 2008, 5.3 hundred thousand children under 5 died in the lowest income quintile in comparison to 1.78 hundred thousand among the highest wealth quintile. The rate of decline between 2005-06 and 1997-98 among the lowest income quintile is 22.69 per cent compared to 34.37 per cent among the high income quintile for the same period.


The Millennium Developing Goals (MDGS): The MDGS include eight goals were population of India 2015. As of 1 January 2016, the population of India was estimated to be 1 304 162 999 people. This is an increase of 1.34 % (17 206 607 people) compared to population of 1 286 956 392 the year before. In 2015 the natural increase was positive, as the number of births exceeded the number of deaths by 17 361 042. Due to external migration, the population declined by 154 435. The sex ratio of the total population was 1.068 (1 068 males per 1 000 females) which is higher than global sex ratio. The global sex ratio in the world was approximately 1 016 males to 1 000 females as of 2015.

Conclusion: Despite the existence and launch of various programs and policies to address the major areas of concern under the MDGs, the progress toward achieving these goals appears to be rather slow in most of the areas, with the exception of education and global economic progress. It has been observed that the utilization of services offered by different programs is rather low. The only way to do so would be to further intensify our efforts in reaching out to the unreached populations and ensuring uniform distribution of resources. India has been making tremendous efforts in all the fields and health is a priority to control mortality and morbidity rates. To combat these health challenges, intensification and redesigning of outreach strategies is needed to give momentum to the progress toward achievement of the Millennium Development Goals, at least immediately after few years of prescribed period.

Presentation Slides


ifhima-Pap-0008

MORTALITY STATISTICS OF INDIA



Prof. DR. G. D. MOGLI
 PH.D., MBA, FHRIM (UK), FAHIMA (USA)
 VISITING PROFESSOR, MEDICAL INFORMATICS,
 MGM SCIENCES, MAHARASHTRA, INDIA
 EX. WORLD HEALTH ORGANIZATION CONSULTANT
 ASSOCIATE PROFESSOR HIM PROGRAM KING FAISAL UNIVERSITY, SAUDI ARABIA
 DEAN OF HIM PROGRAM, MOH, SULTANATE OF OMAN

India's Demography



Over 1.277 Billion People in 2015


2nd most populous country in world

Density : 383 Persons / Sq Km in 2011

More Than 6th of the worlds population

29 States & 7 Union Territories

India's Health Indicators



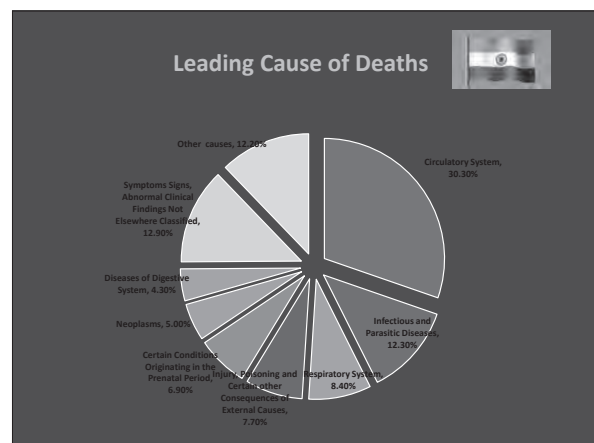
Birth Rate : 20.22 per 1000population #2013

Death Rate : 7.4 per 1000 population #2013

Fertility rate 2.3 children born per women


Mortality rate of neonatal 29.20, infant 40

Life Expectancy is 68.89 years 2009



Registration of Births & Deaths Act-1969

birth & death registration



- Medical certificate of cause of death
 - Form No. 8 for Institutional deaths.
 - Form No. 4 for institutional deaths
 - Form No. 8A for Non-institutional deaths
 - Form No. 4A for Non-institutional deaths.
- Both these forms designed by WHO.
- Forms are completed by attending physicians and sent to
- Registrars of Births and Deaths for onward transmission to the
- Chief Registrar office for tabulation as per ICD-10.
- Birth/ Stillbirth & death are notified within 21 days of occurrence.

World Health Organization

FORM NO.8 (SEE RULE 8)

Medical Certificate of cause of Death

(Hospital in patients not to be used for still births)

To be sent to Registrar along with form No.4 (Death Report)

I, hereby certify that the person whose particulars are given below died in the hospital in ward No. on at A.M./P.M. for use by State office. Name of Deceased (Type of print)

Address of normal residence Sex Date of birth Marital Status Religion Occupation Date of birth Last birth day If under 1 year Days Hours Minutes If under 24 hours Minutes

Interval between onset and death approx.

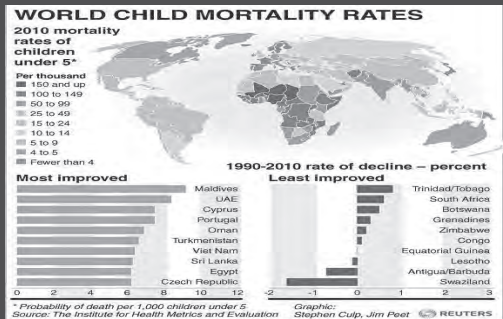
Immediate cause State the disease, injury or complication (a) Which caused death, not the mode of dying due to or as consequences of such as heart failure, asphyxia, etc. Antecedent cause. Morbid conditions if any giving rise to the above causing, stating the - underlying condition last II

Other significant conditions contributing to the death, but not related To the disease or condition causing it. Accident suicide, homicide (specify) How did injury occur? If deceased was a female: Was there a delivery (Yes or No) (Yes or No) Name of practitioner (Rubber stamp) of institution or Medical Allopathic Ayurvedic-homoeopathic - Yuzani Serial Number of Institution Signature and address Of medical attendant. Date of report

See Reverse for instructions

World Child Mortality Rate

(Per 1000 live birth as of year 2013)



Mortality Rate

S. No	Classification	Mortality Per 1000 Births
1	Under 5 Years	52.7
2	Under 5 Years (Female)	54.7
3	Under 5 Years (Male)	50.8
4	Neonatal	29.2
5	Mortality (Adults- Female)	155.85
6	Mortality (Adults- Male)	236.43
7	Mortality Infant	41.4
8	Mortality (Infant-Female)	41.7
9	Mortality (Infant-Male)	41.1

* As per 2013 Statistics

Neonatal death rate in India

(UNICEF Report)

- ❖ 1/3rd ND occur on first day of life
- ❖ ½ within 3 days and
- ❖ 3/4th within 1st week
- ❖ One in every 3 babies who die <4 weeks in the world is in India
- ❖ Of these, over 1/4th happen in Northern India (UP)



Importance of Mortality Information

SRS (sample registration system) is used to estimate mortality indicators.

- Mortality is one of the basic components of
 - population change
 - population projections and life tables.

The measures of mortality published under SRS are

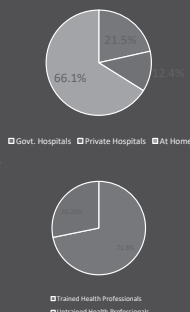
- Crude Death Rate (CDR),
- Under-five Mortality Rate (U5MR),
- Infant Mortality Rate (IMR) and

➢ its components,

- Age Specific Mortality Rates (ASMR),
- Still Birth Rate (SBR) and
- Peri-Natal Mortality Rate (PMR).

Death rate at Govt. and private hospitals at National level

- 21.5% of deaths occurred at Govt. Hospitals
 - ✓ 19.3% in rural areas
 - ✓ 29.4% in urban areas
- Among the bigger States,
 - ✓ Himachal Pradesh (47.9) has the highest
 - ✓ Jharkhand (12.5) has the lowest percentage
- 12.4% Deaths in private hospitals
 - ✓ 3.5% in Odisha
 - ✓ 33.5% in Kerala
- 28.2% deaths were attended by untrained functionaries and others.



HCD is slow despite fast Economical Growth of India in 2008

- No visible pattern between per capita income & the rate of reduction of child mortality rates
- 5.3 hundred thousand children, <5 died in the lowest income
- 1.78 hundred thousand among the highest wealth income

Inequities in mortality rate across country & Neighbor nations

- Within states
- Rural and Urban
- Income groups (Poor and Rich)
- Tribal groups
- Different Castes
- Variance between India Bangladesh & Sri Lanka



Conclusion

India making serious efforts in HCD

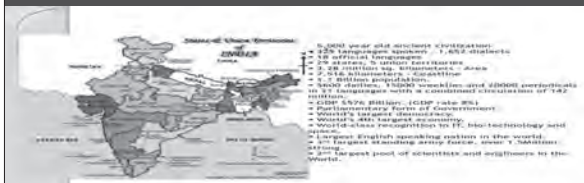
- Despite launching of various programs
- the progress is slow
- Under utilization of services offered by different programs



Conclusion

India making serious efforts in HCD

- Intensification of efforts are needed
- Reaching out unreached population
- Ensuring uniform distribution of resources
- To combat vigorously health challenges,
- To achieve the set goal, intensification and redesigning of outreach strategies is a priority

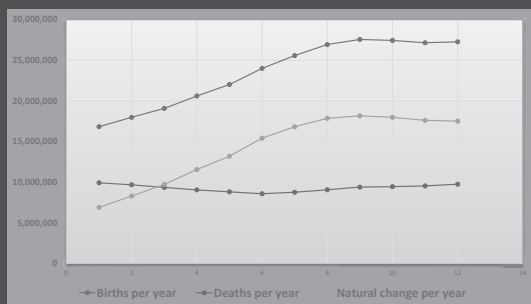


Theme
"Better HIM For Better
Care, Cost & Quality assurance"
(HIMeQ)

in the future
HIM professionals should be known as
him expert on care, cost & quality assurance



Natural Change



https://en.wikipedia.org/wiki/Demography_of_India

Estimated Vs Registered Events

Sl. No.	States	Estimated Births	Registered Births	Estimated Deaths	Registered Deaths
1.	Andhra Pradesh	1507663	1319721	641426	415263
2.	Assam	708154	732748	348588	111943
3.	Bihar	2221401	1268560	638492	188705
4.	Chhattisgarh	608217	315082	192320	155544
5.	Gujarat	1273300	1327304	391950	326079
6.	Haryana	561155	544620	166076	147113
7.	Jammu & Kashmir	212646	145885	66384	85860
8.	Jharkhand	788955	841182	218788	107916
9.	Karnataka	1133090	1071516	418862	181743
10.	Kerala	509164	346964	240821	238864
11.	Madhya Pradesh	1950235	1605729	592944	325118
12.	Maharashtra	1901130	1917727	725693	663383
13.	Odisha	130498	707060	348403	278710
14.	Punjab	456085	507685	192325	186519
15.	Rajasthan	1292231	1245057	440731	270460
16.	Tamil Nadu	1267860	1263771	510434	472450
17.	Uttar Pradesh	3636277	3906734	1607486	311822
18.	Uttarakhand	190096	136194	62049	31127
19.	West Bengal	3494326	2295324	530688	318581

India's Child mortality

- Rate is worse than that of its less developed neighbors – Bangladesh and Sri Lanka.
- India ranks 171 out of 175 countries in the world in public health spending.



The Millennium Developing Goals

(MDGs) (Year 2015)

- Estimated population as on 1 January 2016, to be 1.3Billion
 - This is an increase of 1.34 % (17 Million people) compared to population of 1.28 Billion the Year before.
- In 2015 the natural increase was positive, as the
 - Number of births exceeded the number of deaths by 17 361 042.
 - Population declined by 154 435 due to external migration
- Sex ratio of the total population
 - 1.068 (1,068 males per 1 000 females) is higher than global sex ratio.
 - The global sex ratio approx. 1 016 males to 1 000 females as of 2015.



Death Certificate**Mortality Statistics of India- Death Certificate Forms**

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In India It is mandatory under the law as per the Registration of Births & Deaths Act, 1969 to register every birth or stillbirth and death with the concerned state and UT Government within 21 days of its occurrence. The necessary data on medical certificate of cause of death Form No. 8 for Institutional deaths and Form No. 8A for Non-institutional deaths is collected in the prescribed forms -Form 4 for Hospital deaths and Form 4A for Non-institutional deaths. Both these forms designed by World Health Organization. Attending physicians at the time of terminal illness completes forms, and form is sent to the concerned Registrars of Births and Deaths for onward transmission to the Chief Registrar office for tabulation as per national list of cause of death based on ICD-10. Forms will be presented in the conference.

Appx A

FORM NO.8**(SEE RULE 8)****Medical Certificate of cause of Death****(Hospital in patients not to be used for still births)**

To be sent to Registrar along with form No.4 (Death Report)

I, hereby certify that the person whose particulars are given below died in the hospital in ward No.
 on at A.M./P.M. for use by State office. Name of Deceased (Type of print)

Address of normal residence

Sex	Age in Years	Date of birth	Marital Status	Religion	Occupation	Date of birth
	Last birth day		S, M, W, or D			
	If under 1 year				If under 24 hours	
Month		Days		Hours		Minutes

Interval between onset and death approx.

Immediate cause

State the disease, injury or complication (a)

Which caused death, not the mode of dying due to or as consequences of such as heart failure, anesthesia, etc.. Antecedent cause.

Morbid conditions if any giving rise to the above causing, stating the - underlying condition last

II

Other significant conditions contributing to the death, but not related

To the disease or condition causing it

Accident suicide, homicide (specify)

How did injury occur?

If deceased was a female:

Was there a delivery

Was the death associated with pregnancy

(Yes or No)

(Yes or No)

Name of
practitioner(Rubber stamp) of
institution or Medical
Allopathic Ayurvedic-
homeopathic – YunaniSerial Number of
Institution
Signature and address
Of medical attendant

Date of report

See Reverse for instructions

Instructions to complete the Medical Certification of Cause of Death

The Medical Certificate of Cause of Death is of two types Form No. 8 -For deaths occurring in the hospitals. 2. Form No. 8A-For non-institutional deaths. They differ only in that Form 8 has the details of the hospital where death occurred, while Form 8A has the details of the attending doctor. Technically the Medical Certificate of Cause of Death (Form 8/ 8A) has two parts Upper part: Particulars of the Deceased are filled along with Medical data in respect to the disease causing death. 2. Lower part: Particulars of the deceased along with the date time place of occurrence of death. It is handed over to the relatives.

3. The personal particulars of the deceased should be filled as under:

a. Name: Write in full, initials not to be used. Father's name/ husband's name (in case of married female) to be written after the name of the deceased, For Infants not yet named, write son/daughter followed by the name of Mother and Father.

b. Age: For more than 1 year, write age in years. For age less than 1 year, write in months and days, and for less than 1 day, write in hours and minutes. The Medical data to be filled is designed as per the WHO norms and has two parts

Part I mentions the events which lead to death and Part II mentions the conditions which contributed to the death.

Part I Cause of Death—One cause is to be entered on each line.

Underlying cause is to be filled on the lowest line. It is the condition that started the sequence of events, which lead to immediate cause of death from normal health to immediate cause of death.

(a)

Immediate cause of Death:

Disease or injury or complication that precedes death

Mode of dying e.g., heart failure, or respiratory failure should not be entered.

(b)

Due to (or as a consequence of)

If immediate cause occurred as a consequence of another condition it should be entered here. Antecedent condition might have just prepared the ground for immediate cause of death, even after a long interval.

(c)

Morbid condition leading to the underlying condition

Part II

All diseases or conditions, which were not directly related to the disease directly causing death, though might have unfavorably influenced the morbid process.

Interval between Onset and Death:

Exact period from onset of morbid condition and the date of death is to be mentioned. In cases where period is not known, approximate period "from birth", "several years" or "Unknown" is to be filled.

Accident, Suicide, Homicide:

Explain briefly the circumstances or cause of accident. In case of medico legal cases

Pending Investigations should be mentioned there. Female death: If women are of childbearing age group (15-49 yrs), information on pregnancy and delivery is to be given even though the pregnancy may have nothing to do with occurrence of death.

Name of the Practitioner: The name with rubber stamp mentioning the registration number of the Medical practitioner should be mentioned. The below part with the perforations should be filled by the Medical practitioner mentioning that the deceased was under his care or was admitted at the hospital and died on the date and time. Doctor will endorse the form no. 8. The form 8A will endorse by Medical Superintendent of the hospital.

Appx B

FORM NO.8-A**(SEE RULE 8)****Medical Certificate of cause of Death****(For non-institutional death. No to be used for still births)**

To be sent to Registrar along with form No.4 (Death Report)

I, hereby certify that the deceased Shri./Smt./Kum .

..... Son of/

Wife of / daughter of

was under my treatment from to

For use by state office

and he / she died on at A.M./P.M.

Name of Deceased (Type of print)

Address of normal residence

Sex	Age in Years	Date of birth	Marital Status	Religion	Occupation	Date of birth
	Last birth day		S.M.W. or D			
	If under 1 year				If under 24 hours	
Month		Days		Hours		Minutes

Interval between onset and death approx.

Immediate cause

State the disease, injury or complication (a)

Which caused death, not the mode of dying due to (or as consequences of) Det. List code

incident cause (b).

Morbid conditions if any giving rise to the above causing, stating the - underlying condition last

(c) due to (or as a consequence of) N code.

II

Other significant conditions contributing to the death, but not related

To the disease or condition causing it.

Accident suicide, homicide (specify)

How did injury occur?

If deceased was a female:

Was there a delivery

Was the death associated with pregnancy

(Yes or No)

(Yes or No)

Name of
practitioner(Rubber stamp) of
institution or Medical
Allopathic Ayurvedic-
homeopathic - Yunani

Registration Sl. No. of Date of report

Medical

Practitioner/Attendant

Signature and address

Of medical attendant.

See Reverse for instructions

Instructions for completion of the Medical Certification of Cause of Death

The Medical Certificate of Cause of Death is of two types Form No. 8 -For deaths occurring in the hospitals. 2. Form No. 8A-For non-institutional deaths. They differ only in that Form 8 has the details of the hospital where death occurred, while Form 8A has the details of the attending doctor. Technically the Medical Certificate of Cause of Death (Form 8/ 8A) has two parts Upper part: Particulars of the Deceased are filled along with Medical data in respect to the disease causing death. 2. Lower part: Particulars of the deceased along with the date time place of occurrence of death. It is handed over to the relatives.

3.The personal particulars of the deceased should be filled as under:

a. Name: Write in full. Initials not to be used. Father's name/ husband's name (in case of married female) to be written after the name of the deceased. For infants not yet named, write son/daughter followed by the name of Mother and Father.

b. Age: For more than 1 year, write age in years. For age less than 1 year, write in months and days, and for less than 1 day, write in hours and minutes. The Medical data to be filled is designed as per the WHO norms and has two parts.

Part I mentions the events which lead to death and Part II mentions the conditions which contributed to the death.

Part I Cause of Death—One cause is to be entered on each line.

Underlying cause is to be filled on the lowest line. It is the condition that started the sequence of events, which lead to immediate cause of death from normal health to immediate cause of death.

(c)

Immediate cause of Death:

Disease or injury or complication that precedes death

Mode of dying e.g., heart failure, or respiratory failure should not be entered.

(d)

Due to (or as a consequence of)

If immediate cause occurred as a consequence of another condition it should be entered here. Antecedent condition might have just prepared the ground for immediate cause of death, even after a long interval.

(c)

Morbid condition leading to the underlying condition

Part II

All diseases or conditions, which were not directly related to the disease directly causing death, though might have unfavorably influenced the morbid process.

Interval between Onset and Death:

Exact period from onset of morbid condition and the date of death is to be mentioned. In cases where period is not known, approximate period "from birth", "several years" or "Unknown" is to be filled.

Accident, Suicide, Homicide:

Explain briefly the circumstances or cause of accident. In case of medico legal cases

Pending Investigations should be mentioned there. Female death: If women are of childbearing age group (15-49 yrs), information on pregnancy and delivery is to be give even though the pregnancy may have nothing to do with occurrence of death.

Name of the Practitioner: The name with rubber stamp mentioning the registration number of the Medical practitioner should be mentioned. The below part with the perforations should be filled by the Medical practitioner mentioning that the deceased was under his care or was admitted at the hospital and died on the date and time. Doctor will endorse the form no. 8. The form 8A will endorse by Medical Superintendent of the hospital.

Appx C

FORM NO. 4
(See Rule 7)
MEDICAL CERTIFICATE OF CAUSE OF DEATH
(Hospital in-patients. Not to be used for still births)
To be sent to Registrar along with Form No. 2 (Death Report)

Name of the Hospital
I hereby certify that the person whose particulars are given below died in the hospital in Ward No. on
at AM/PM

NAME OF DECEASED				For use of Statistical Office	
Sex	Age at Death				
	If 1 year or more, age in years	If less than 1 year, age in month	If less than one month, age in days	If less than one day, age in hours	
1. Male 2. Female					
CAUSE OF DEATH I. Immediate cause (a) State the disease, injury or complication which caused death, not the mode of dying such as heart failure, asphyxia, etc. Antecedent cause (b) Morbid conditions, if any, giving rise to the above cause, stating underlying conditions last (c) II. Other significant conditions contributing to the death but not related to the disease or condition causing it					Interval between onset and death approx

Manner of Death How did the injury occur?
 1. Natural 2. Accident 3. Suicide 4. Homicide
 5. Pending Investigation

If deceased was a female, was pregnancy the death associated with? 1. Yes 2. No
 If yes, was there a delivery? 1. Yes 2. No

Name and signature of the Medical Attendant certifying the cause of death

Date of verification

(To be declared and handed over to the relative of the deceased)

Certified that Shri/Smt/Kum..... S/W/D OF Shri

R/O was admitted to this hospital on

and expired on

Doctor
(Medical Supd.
Name of Hospital)

5

Appx 2

FORM NO. 4A
(See Rule 7)
MEDICAL CERTIFICATE OF CAUSE OF DEATH
 (For non-institutional deaths. Not to be used for still births)
 To be sent to Registrar along with Form No. 2 (Death Report)

I hereby certify that the person Shri/Smt/Km son/wife/daughter of
 resident of was under my treatment from to
 and he/she died on at A.M./P.M.

NAME OF DECEASED					For use of Statistical Office
Sex	Age at Death				
	If 1 year or more, age in years	If less than 1 year, age in month	If less than one month, age in days	If less than one day, age in hours	
1. Male 2. Female					
CAUSE OF DEATH I Immediate cause State the disease, injury or complication which caused death, not the mode of dying such as heart failure, asphyxia, etc. Antecedent cause Morbid conditions, if any, giving rise to the above cause, stating underlying conditions last II Other significant conditions contributing to the death but not related to the disease or condition causing I					Interval between onset and death approx

If deceased was a female, was pregnancy the death associated with? 1. Yes 2. No
 If yes, was there a delivery? 1. Yes 2. No

Name and signature of the Medical Attendant certifying the cause of death

Date of verification

(To be declared and handed over to the relative of the deceased)

Certified that Shri/Smt/Km S/W/D OF Shri

R/O was under my treatment from

to and he/she expired on at A.M./P.M.

Doctor
 (Medical Supdt.
 Name of Hospital)

E

Appx E

6. CERTIFICATE OF CAUSE OF PERINATAL DEATH		
To be completed for still births and live born infants dying within 168 hours (1 week) from birth		
<i>Identifying particulars of mother</i> <div style="float: right;"> <input type="checkbox"/> This child was born live on _____ at _____ hours and died on _____ at _____ hours <input type="checkbox"/> This child was still born on _____ at _____ hours and died before labour <input type="checkbox"/> during labour <input type="checkbox"/> not known <input type="checkbox"/> </div>		
Name W/D Rank Name of		
Mother		Child
Date of Birth [][][][][][] or, if unknown, age (years) [][] Number of previous Pregnancies: Live births [][] Still births [][] Abortions [][] Outcome of last previous pregnancy: <input type="checkbox"/> Live births: <input type="checkbox"/> Still births: <input type="checkbox"/> Abortions: Date: [][][][][][]	1 st day of last [][][][][] menstrual period or, if unknown, estimated duration of pregnancy (completed weeks) Antenatal care, two or more visits <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not known Delivery : <input type="checkbox"/> Normal spontaneous vertex Other (specify)	Birth weight: grams Sex: <input type="checkbox"/> Boy <input type="checkbox"/> Girl <input type="checkbox"/> Indeterminate <input type="checkbox"/> Single Birth <input type="checkbox"/> First twin <input type="checkbox"/> Second twin <input type="checkbox"/> Other multiples Attendant at birth <input type="checkbox"/> Physician <input type="checkbox"/> Trained midwife Other trained person (specify) Other(specify)
Causes of death		
a. Main disease or condition in fetus or infant		
b. Other diseases or conditions in fetus or infant		
c. Main maternal disease or condition affecting fetus or infant		
d. Other maternal disease or condition affecting fetus or infant		
e. Other relevant circumstances		
<input type="checkbox"/> The certified cause of death has been confirmed by autopsy <input type="checkbox"/> Autopsy information may be made available later <input type="checkbox"/> Autopsy not being held		I certify..... Signature and qualification

Improving Cause of Death Statistics in Thailand

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Abstract

Cause of death (COD) data are one of the important vital statistics (VS). Mortality information is used by many stakeholders especially policy makers for resource planning and also for improving people health in country. Ministry of Public Health (MOPH) Thailand started publishing routine national vital statistics in circa 1920. In 1996, VS was significantly improve when Ministry of Interior (MOI) computerized civil registration system provided electronic mortality and birth data directly to the MOPH vital statistics management. By transition from paper-base to electronic-base data, it allows the data from civil registration system to be transferred rapidly, accurately and be ready to use. Although the co-operative work between MOI and MOPH lead to the up-to-date and completeness of birth and death counts, the COD data are still suffer from poor quality, because 60% of death occur outside hospitals where COD is registered by non-health professional at district office or municipality. One of WHO criteria for good COD data quality is that the “ill-defined and unknown causes of mortality” should be less than 10%. In 2010s, Thailand vital statistics contained 35-40% of ill-define COD. In order to improve COD data quality, MOPH, in-collaboration with MOI, has implemented Verbal Autopsy (VA) project. MOPH trains health professionals at the sub-district level and MOI’s CR registrars at district office to conduct VA interview. The WHO’s VA tool was piloted and the tool was modified to fit with Thailand healthcare context. The VA project started in 2007 in five provinces and the results from a pilot province had shown the decreasing of ill-define COD from 47% in 2007 to 25% in 2009. In 2015, the project has been expanded to all 76 provinces.

Keyword: Cause of Death (COD), ill-define, unknown causes of mortality

1. Background

Death and mortality statistics are one of vital statistics (VS) which informs country’s demographic changes. It is an index describes the health status of population. VS consists of birth, illness and death. The WHO, working with the University of Queensland in Australia, developed a comprehensive guide to support countries who wish to improve their civil registration and vital statistics systems. The guide also include Civil Registration and Vital Statistics (CRVS) rapid and comprehensive tools for evaluating country CRVS systems. Thailand used the WHO assessment tools which consist of 25 questions about how the civil registration and vital statistics systems function. The questions are grouped into 11 areas. Thailand’s assessment processes had been done by The Thai Health Information Standards Development Center (THIS), an affiliated agency of the Health System Research Insti-

tute (HSRI) in collaborated with other CRVS stakeholders in Thailand including The Bureau of Policy and Strategies (BPS) of the Ministry of Public Health (MOPH), The Bureau of Registration Administration (BORA) of the Ministry of Interior (MOI), The National Statistical Office (NSO) of Ministry of Information Communication and Technology (MICT), The International Health Policy Program (IHPP), and the National Health Security Office (NHSO). The stakeholders discussed and scored all questions with an ordinal scale range where zero represent the worst CRVS system scenario and three represent the best scenario. Table [1] shows average scores from the Rapid Assessment (RA) by 11 main areas.

Table 1 Assessment result of Thailand CRVS using WHO CRVS rapid assessment tool

Rapid assessment grouping areas	Average Scores
1.) Legal framework for civil registration and vital statistics (3 questions)	2.67
2.) Registration infrastructure and resources (3 questions)	3
3.) Organization and functioning of the vital statistics system (2 questions)	2.5
4.) Completeness of registration of births and deaths (2 questions)	3
5.) Data storage and transmission (2 questions)	3
6.) ICD-compliant practices and certification within and outside hospitals (2 questions)	2
7.) Practices affecting the quality of cause-of-death data (2 questions)	1.5
8.) ICD coding practices (1 question)	3
9.) Coder qualification and training, and quality of coding (2 questions)	2.5
10.) Data quality and plausibility checks (2 questions)	2
11.) Data access, dissemination and use (4 questions)	3
Total Scores (Full score equal 75 point)	65
Average scores	2.56
Score (%)	86.67

Source: Boonchai, et al., 2013

The results show that five of eleven areas got full score (3). The average scores of “Practices affecting the quality of cause-of-death data” was the lowest, at 1.5 out of 3.00. The overall assessment score was 65 out of 75 (86.67%). The score range fall in to the category of “Satisfactory” which means “Minor adjustments may be required in an otherwise well-functioning system.” The assessment revealed the challenges of the Thai CRVS system is in the area of the quality of cause-of-death data. According to the guideline, the best practice for quality of cause of death (COD) information is that COD coded using WHO ICD-10 code of symptoms or signs class (R00 – R99) of the WHO ICD-10 code) should less than 10%, from the total COD codes.. However Thailand’s Health Statistics reported the COD codes using R00-R99 codes were 38.23% in 2007 and 34.50% in 2011^[3]. There was high proportion of ill-defined and misclassified causes of death. Therefore, the improvement of the quality of cause-of-death data needs to be developed.

2. Objectives

1. Explore and analyze the current situation, process, function of ill-defined cause of death in Thailand CRVS system

2. Identify gaps and explore in functioning and the quality of the cause of death and develop recommendations for policymakers.

3. Methods and process

1. Review related literature and study the process and concept of giving cause of death information especially; issuing process of medical certificate of death and death certificate.
2. In-depth interview the stakeholders whose work associate with compiling VS and cause of death issuing process.
3. Analyze the current situation of ill-defined cause of death in Thailand VS.

4. Results

4.1 The literature review the vital statistic system and process of defining cause of death in Thailand

The mortality statistic related history of vital statistics system in Thailand

Cause of death is used to analyze the problems of health in country. Death caused by preventable diseases and premature death can be used as information for planning and making health system policy. Cause of death is one of the important elements of vital statistics.

In 1920, the compilation of vital statistics was initiated in Thailand. A Vital Statistics Division was established in the ministry of public health (MOPH) in 1942. Before 1996, MOPH officers compiled birth and death statistics with paper form which reported by hospitals and provincial health offices. MOPH also manually retrieved information from death certificate which issued by the MOI registration offices. The process created discrepancies of birth and death information between reports from provincial health offices and the MOI's Bureau of Registration Administration. Moreover, the MOPH was unable to produce timely national vital statistics. There was two to three years delayed in producing national VS. Improvement of the country VS system started in 1996 when MOPH signed an agreement with MOI, regarding electronically sharing vital registration data from the MOI central registration database. Individual death records from vital registrations were transferred electronically to the MOPH on a monthly basis. At the MOPH, the cause of death records are coded using the International Classification of Disease, version 10 (ICD-10). The MOPH main responsibility is compilation, statistical processing, and publication of vital statistics. The coded data were analyzed and reported for health planning and policymaking at both ministry and provincial level.

The process of death registration and generate cause of death in Thailand

According to Thai law, human death must be registered within 24 hours. Death can be classified into two types; death occur in hospital, and deaths outside hospital. Death in hospital is identified and announced by physician-in-duty in hospitals. After the patient died, the doctor records medical conditions which leading to death in the medical death certificate. The medical death certificate form follows WHO recommended death record form [Figure 2]. For death occurs outside hospital, head of the household or the person who finds the body must report the event to MOI officers (registrar) at the

nearest village or sub district office. The registrar investigates and gives the cause of death. They record death information in the death notification form [Figure 3]. Finally, family member or head of household bring the medical death certificate or death notification to register death at district within 24 days. At the time of death registration at the district office, the MOI death certificate [Figure 4] is issued, the household registration booklet is updated and the MOI centralized civil registration is electronically updated. The MOPH's BPS receives cause of death data from two sources: one from medical death certificate reported by hospitals and one from data in MOI death certificate electronically sharing with MOPH. Then, the BPS codes cause of death using WHO ICD10 code, analyze data and produce vital statistics. Figure 1 shows Thailand death registration process.

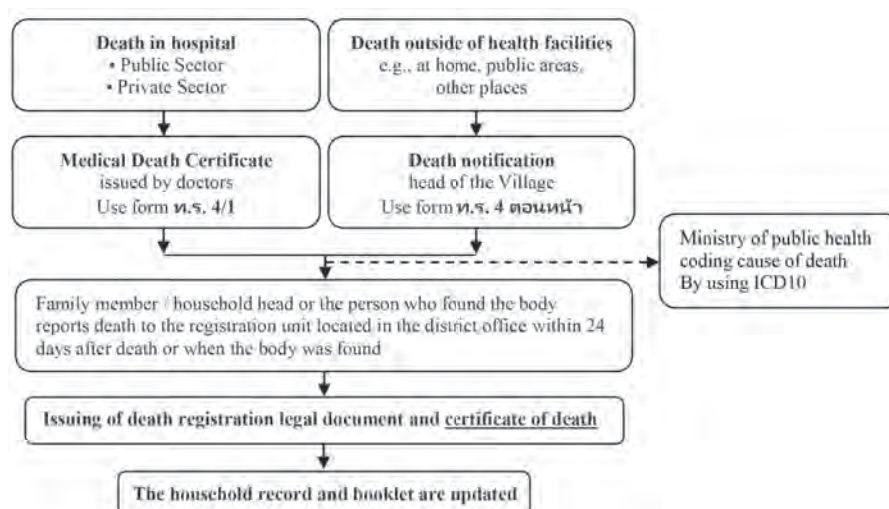


Figure 1: The process of death registration in Thailand

Table 2 shows total number of death and place of death reported by the BPS. It is found that the trend are likely to be increased From 2009 to 2014. Total reported death are 393,916 to 435,624, for death in hospital are 168,562 to 195,665 and for death outside hospital are 225,354 to 239,959. The proportion between death in and outside hospital is approximately 43% to 57%. The detail data is shown in Table 2 below;

Table 2: the number of case and percentage of death in Thailand, 2009 - 2014

Death category	2009	2010	2011	2012	2013	2014
Number of case death in country	393,916.00	411,331.00	414,670.00	415,141.00	426,065.00	435,624.00
Number of case death in hospital	168,562.00	160,734.00	180,794.00	183,262.00	187,674.00	195,665.00
Number of case death out hospital	225,354.00	250,597.00	233,876.00	231,879.00	238,391.00	239,959.00
percentage case death in Hospital	42.79%	39.08%	43.60%	44.14%	44.05%	44.92%
percentage case death out hospital	57.21%	60.92%	56.40%	55.86%	55.95%	55.08%

Ill-defined cause of death and misclassified causes of death

The percentage of ill-defined cause of death in country is one of the key measures to evaluate country vital statistics quality. According to WHO CRVS assessment tool, Ill-defined COD is the COD that is coded with R00-R99 (Chapter XVIII of ICD10) and it should not more than 10% of total COD.

Although, the records of death in Thailand are accurately collected with these above mentioned collaborative systems, Statistics from BPS shows that the percentage of ill-defined COD is decreasing from 38.00 % in 2001 to 27.20% in 2014, it is still relatively high. Thai MOPH is challenged with the quality of cause of death (COD) Table 3 details the ill-defined COD data.

Table 3: The number of death and percentage of death coded as ill-defined between 2009 - 2014

R00-R99	2009	2010	2011	2012	2013	2014
Number of ill-defined	149,702.00	154,703.00	143,042.00	135,053.00	126,407.00	118,510.00
Total death	393,916.00	411,331.00	414,670.00	415,141.00	426,065.00	435,624.00
% ill-defined	38.00%	37.61%	34.50%	32.53%	29.67%	27.20%

Source: Thai health statistics, 2014

The accuracy of the cause of death is compromised because 60% of the deaths occurred outside hospitals and be classified as natural cause of death by non-health professional (civil registration officers) at district office or municipality, who do not have health and medical background.

4.2 The development and road map to improve cause of death information

Several measures have been implement to improve the quality of the COD information. Projects related to the training course about COD for health professional and using verbal autopsy (VA) have been implemented. One of poor quality COD data is due to the miss-understanding among medical doctors that mode of death, for instance cardiovascular failure condition, should be filled in the medical death certificate form as the leading cause of death instead of the disease that leading to the death. Therefore, training workshops for medical doctors to understand the correct way to fill out medical death certificate were provided by MOPH.

The MOPH started COD improvement project using Verbal Autopsy (VA) in 2007. The BPS, MOPH trained health professionals at the sub-district level and MOI registrars at district office to conduct VA interview. The WHO's VA tool was piloted and the tool was modified to Thailand healthcare context. The project started in five provinces. The results from a pilot provinces had shown the decrease of ill-define COD from 47% in 2007 to 25% in 2009. The project was expanded to implement to all 76 provinces in 2015.

5. Policy Recommendations to improve VS by the country CRVS stakeholders

- 1) Set a goal to reduce Ill-defined COD to less than 10% within 10 year by facilitating the stakeholders' collaboration.
- 2) Establish network of collaboration between stakeholders in CRVS systems, e.g., MOI, MOPH,


MICT, the National Health Security Office (NHSO) and National Statistic Office.

- 2) Use electronic in-patient morbidity records from insurance reimbursement information system (administrative data) to complement identification of COD outside hospitals. This can be done by matching death outside hospital information with recent hospitalization information of the death using the citizen identifier (13 digit number).
- 3) Create training modules/curriculum and train in-service health professionals and health professional students especially medical students.
- 4) Use a customized VA tool by rural health personnel to interview the deceased's relative before registering to civil registration system in order to reconfirm cause of death at the district office
- 5) Establish routine mechanism to evaluate data quality and feedback for continuous improvement.

6. Reference

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Figure 2 : Thailand's medical death certificate form for death in hospital (ท.ร. 4/1)



กระทรวงสาธารณสุข

Hospital Identification.....

Hospital name and address.....

Report date.....

1. Deceased Person Information	1.1 Firstname, Lastname		1.2 Personal ID □-□-□-□-□-□-□-□-□-□-□		1.3 Gender
	1.4 Age	1.5 Nationality	1.6 Occupation		1.7 Married Status
	1.8 Address				1.9 Religion
2.Death information	2.1 Date and Time of Death			2.2 Attending Doctor	
	2.3 Cause of death in English, Capital letter a) b) (due to) c) (due to) d) (due to)			Length of time from diagnosis to death. 	
	2.4 Other supported symptom or disease cause of death.....				
	2.5 Thai descriptive language for registra to record				
2.6 For woman, if pregnant please identify gestational ages or after delivery within 6 weeks.					
3. Place of Death	3.1 Name and address of the place			3.2 Length of stay at this place	
4.Parents of Deceased	4.1 Mother: Firstname, Lastname		4.2 Nationality	4.3 Personal ID □-□-□-□-□-□-□-□-□-□-□	
	4.4 Father: Firstname, Lastname		4.5 Nationality	4.6 Personal ID □-□-□-□-□-□-□-□-□-□-□	
5.Certified person	5.1 Father: Firstname, Lastname			5.2 Personal ID □-□-□-□-□-□-□-□-□-□-□	
	Type of health personal: doctor, nurse, other (identify)				

.....

Signed by certified person

International form of medical certificate of cause of death used for death in hospital

<p>Cause of death</p> <p>I</p> <p>Disease or condition directly (a) </p> <p>Leading to death* due to (or as a consequence of) Antecedent causes (b)</p> <p>Morbid conditions, if any, due to (or as a consequence of) Giving rise to the above cause. </p> <p>Stating the underlying Condition last(c) due to (or as a consequence of) (d)</p>	<p>Approximate interval between onset and death</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
<p>II</p> <p>Other significant conditions </p> <p>Contributing to the death, but Not related to the disease or Condition causing it</p> <p>*this does not mean the mode of dying, e.g. heart failure, respiratory failure. It means the disease, injury, or complication that caused death.</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

Figure 3 : Thailand's death notification form for death outside hospital (ท.ร. 4 ตอนหน้า)

At...../...../.....

Reported
Place.....
Date.....

1. Deceased Person Information	1.1 Firstname, Lastname		1.2 Personal ID □ □ □ □ □ □ □ □ □ □ □ □		1.3 Gender
	1.4 Age	1.5 Nationality	1.6 Occupation		1.7 Married Status
	1.8 Address				1.9 Religion
	1.10 Date and Time of Death			1.11 Attending Doctor	
	1.12 Cause of Death Informed by Informant				
2.Place of Death	2.1 Last Hospital visit before death, provide hospital name and address				
	2.2 Address of place of death			2.3 Length of Stay at place of death	
3.Legal Document	<input type="checkbox"/> Personal Identification of informant..... <input type="checkbox"/> Authorized paper for head of household..... <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> House registration document and detail address..... <input type="checkbox"/> Personal identification of deceased person (optional)..... <input type="checkbox"/> Other Document.....				
4. Parents of Deceased	4.1 Mother: Firstname, Lastname		4.2 Nationality	4.3 Personal ID □ □ □ □ □ □ □ □ □ □ □ □	
	4.4 Father: Firstname, Lastname		4.5 Nationality	4.6 Personal ID □ □ □ □ □ □ □ □ □ □ □ □	
5. Informant	5.1 Firstname, Lastname			5.2 Personal ID □ □ □ □ □ □ □ □ □ □ □ □	
	5.3 Address			5.4 Relation to the	
6, Dead body	How to cremation		Place		

Signed by informant and authorized death certificate report person

.....Informant

(.....)

.....Registrar

(.....)

Evidence has been notified of the death.

.....Informant

(.....)

Figure 4 : Thailand's Certificate of death



Death certificate

At...../...../.....

Reported

Place.....

Date.....

1. Deceased Person Information	1.1 Firstname, Lastname		1.2 Personal ID □-□□□□□□ □□□□□□□□		1.3 Gender
	1.4 Age	1.5 Nationality	1.6 Occupation		1.7 Married Status
	1.8 Address				
2. Date of death	2.1 Date and Time of Death		2.2 Attending Doctor		
	2.3 No. medical or notification death.....		2.4 Cause of Death Informed by Informant.....		
3. Place of Death	3.1 Address of place of death		3.2 Last place which stay longest, provide name and length of stay		
4. Parents of Deceased	4.1 Mother: Firstname, Lastname		4.3 Personal ID □-□□□□□□ □□□□□□□□		
	4.4 Father: Firstname, Lastname		4.6 Personal ID □-□□□□□□ □□□□□□□□		
5. Informant	5.1 Firstname, Lastname		5.2 Personal ID □-□□□□□□ □□□□□□□□		
	5.3 Address		5.4 Relation to the		
6. Dead body	6.1 How to cremation Morgue, Cremation, Bury,		6.2 Place		
7. Detail of medical or notification death			8. Date report to process medical or notification death		
Signed by informant		Signed by the notified staff		Signed by the registrar	

Presentation Slides

Improving Cause of Death Statistics in Thailand

the 18th Congress of the International of Health Information
At Tokyo International Forum, Japan
October 12-14, 2016

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Outline

- Background and rational
- Objective
- Method and process
- Result
- Policy recommendations to improve CRVS system in Thailand

Background and rational

- 💡 Death and mortality statistics are one of vital statistics (VS) which informs country's demographic changes.
- 💡 The WHO, working with the University of Queensland in Australia, developed a comprehensive guide to support countries who wish to improve their civil registration and vital statistics systems



CRVS evaluation in Thailand

- 💡 Thailand used the WHO assessment tools which consist of 25 questions about how the civil registration and vital statistics systems function. The questions are grouped into 11 areas.
- 💡 Thailand's assessment processes had been done by The Thai Health Information Standards Development Center (THIS), an affiliated agency of the Health System Research Institute (HSRI) in collaborated with other CRVS stakeholders in Thailand.
- 💡 The stakeholders discussed and scored all questions with an ordinal scale range where zero represent the worst CRVS system scenario and three represent the best scenario. shows average scores from the Rapid Assessment (RA) by 11 main areas.

Legal basis and resources for civil registration	
■ A1 – National legal framework for civil registration and vital statistics systems	
■ A2 – Registration infrastructure and resources	
Registration practices, coverage and completeness	
■ B1 – Organization and functioning of the civil registration and vital statistics systems	
■ B2 – Review of forms used for birth and death registration	
■ B3 – Coverage and completeness of registration	
■ B4 – Data storage and transmission	
Death certification and cause of death	
■ C1 – ICD-compliant practices for death certification (2/4)	
■ C2 – Hospital death certification	
■ C3 – Deaths occurring outside hospitals	
■ C4 – Practices affecting the quality of cause-of-death data	
ICD mortality coding practices	
■ D1 – Mortality coding practices	
■ D2 – Mortality code completeness and timing	
■ D3 – Quality of mortality coding	
Data access, use and quality checks	
■ E1 – Data quality and plausibility checks	
■ E2 – Data timeliness	
■ E3 – Data access and dissemination	

The result from assessment CRVS

Rapid assessment grouping areas : 11 area and 25 questions	Scores
1.) Legal framework for civil registration and vital statistics (3 questions)	2.67
2.) Registration infrastructure and resources (3 questions)	3
3.) Organization and functioning of the vital statistics system (2 questions)	2.5
4.) Completeness of registration of births and deaths (2 questions)	3
5.) Data storage and transmission (2 questions)	3
6.) ICD-compliant practices and certification within and outside hospitals (2 questions)	2
7.) Practices affecting the quality of cause-of-death data (2 questions)	1.5
8.) ICD coding practices (1 question)	3
9.) Coder qualification and training, and quality of coding (2 questions)	2.5
10.) Data quality and plausibility checks (2 questions)	2
11.) Data access, dissemination and use (4 questions)	3
Total Scores (Full score equal 75 point)	65
Average scores	2.56
Score (%)	86.67

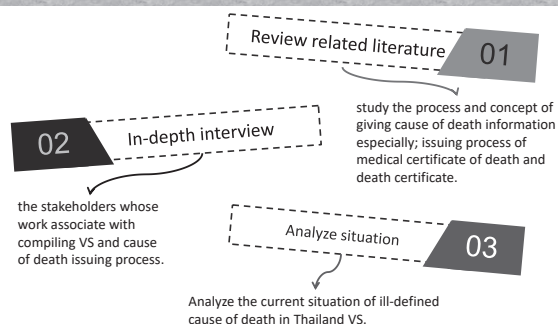
Gap of CRVS development in Thailand

- 💡 The average scores of "Practices affecting the quality of cause-of-death data" was the lowest, at 1.5 out of 3.00. The overall assessment score was 65 out of 75 (86.67%). The score range fall in to the category of "Satisfactory" which means "Minor adjustments may be required in an otherwise well-functioning system."
- 💡 The challenges of the Thai CRVS system is in the area of the quality of cause-of-death data. According to the guideline. It should ill-defined (R00 – R99) less than 10%, from the total COD codes.
- 💡 The major gap of this system is the remaining high proportion about 38.00% in 2009 of ill-defined and misclassified causes of death.

The objective of this research

1. Explore and analyze the current situation, process, function of ill-defined cause of death in Thailand CRVS system
2. Identify gaps and explore in functioning and the quality of the cause of death and develop recommendations for policymakers.

Methods and process



4. The result

Part 1: The literature review the vital statistic system and process of defining cause of death in Thailand

Part 2 : The development and road map to improve cause of death information

The mortality statistic related history of vital statistics system in Thailand

Part 1

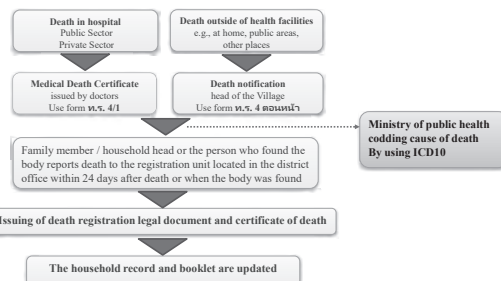
Cause of death is used to analyze the problems of health in country. Death caused by preventable diseases and premature death can be used as information for planning and making health system policy. Cause of death is one of the important elements of vital statistics

1920	1942	Before 1996	After 1996
the compilation of vital statistics was initiated in Thailand	A Vital Statistics Division was established in the ministry of public health (MOPH)	MOPH officers compiled birth and death statistics with paper form which reported by hospitals and provincial health offices	MOPH signed an agreement with MOI, regarding electronically sharing vital registration data from the MOI central registration database

The process of death registration and generate cause of death in Thailand

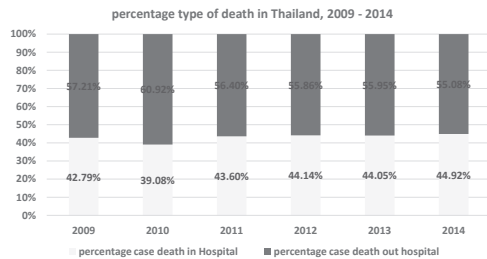
Part 1

- According to Thai law, human death must be registered within 24 hours. Death can be classified into two types; death occur in hospital, and deaths outside hospital.



Process at district office, ministry of interior

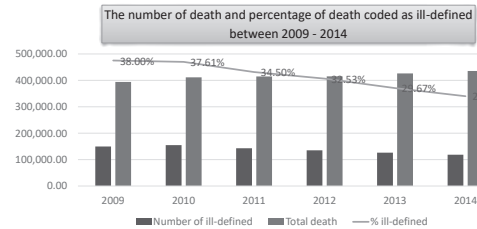
Percentage death in hospital and outside hospital



ill-defined cause of death and misclassified causes of death

Part 1

The percentage of ill-defined cause of death in country is one of the key measures to evaluate country vital statistics quality. According to WHO CRVS assessment tool, ill-defined COD is the COD that is coded with R00-R99 and it should not more than 10% of total COD.



Source: Thai health statistics, 2014

ill-defined cause of death and misclassified causes of death

- The accuracy of the cause of death is compromised because 60% of the deaths occurred outside hospitals and be classified as natural cause of death by non-health professional (civil registration officers) at district office or municipality, who do not have health and medical background.

The development and road map to improve cause of death information

Part 2

- Projects related to the training course about COD for health professional and using verbal autopsy (VA) have been implemented. One of poor quality COD data is due to the miss-understanding among medical doctors that mode of death, training workshops for medical doctors to understand the correct way to fill out medical death certificate were provided by MOPH.
- The MOPH started COD improvement project using Verbal Autopsy (VA) in 2007. The BPS, MOPH trained health professionals at the sub-district level and MOI registrars at district office to conduct VA interview. The WHO's VA tool was piloted and the tool was modified to Thailand healthcare context.
- The project started in five provinces. The results from a pilot provinces had shown the decrease of ill-define COD from 47% in 2007 to 25% in 2009. The project was expanded to implement to all 76 provinces in 2015.

Policy recommendations to improve CRVS system in Thailand

- Set a goal to reduce ill-defined COD to less than 10% within 10 year by facilitating the stakeholders' collaboration.
- Establish network of collaboration between stakeholders in VS systems.
- Use electronic in-patient morbidity records to complement identification of COD outside hospitals between outside hospital information with recent hospitalization.
- Create training modules/curriculums.
- Use a customized VA tool by rural health personal to interview the deceased's relative before registering to civil registration system in order to reconfirm cause of death at the district office
- Establish routine mechanism to evaluate data quality and feedback

Q & A

Death Certificate

FIGURE 3: THAILAND'S MEDICAL CERTIFICATE FORM FOR DEATH OUTSIDE HOSPITAL

ใบรับแจ้งการตายสำหรับการตายนอกโรงพยาบาล (ท.ร. 4 ตอนหน้า)

At...../...../.....

Reported Place.....

Reported Date.....

1. Deceased Person Information	1.1 Firstname, Lastname		1.2 Personal ID □ □ □ □ □ □ □ □ □ □ □ □		1.3 Gender
	1.4 Age	1.5 Nationality	1.6 Occupation		1.7 Married Status
	1.8 Address				1.9 Religion
	1.10 Date and Time of Death			1.11 Attending Doctor	
	1.12 Cause of Death Informed by Informant				
2. Place of Death	2.1 Last Hospital visit before death, provide hospital name and address				
	2.2 Address of place of death			2.3 Length of Stay	
3. Legal Document	<input type="checkbox"/> Personal Identification of informant..... <input type="checkbox"/> Authorized paper for head of household..... <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> House registration document				
4. Parents of Deceased	4.1 Mother: Firstname, Lastname		4.2 Nationality		4.3 Personal ID □ □ □ □ □ □ □ □ □ □ □ □
	4.4 Father: Firstname, Lastname		4.5 Nationality		4.6 Personal ID □ □ □ □ □ □ □ □ □ □ □ □
5. Informant	5.1 Father: Firstname, Lastname			5.2 Personal ID □ □ □ □ □ □ □ □ □ □ □ □	
	5.3 Address			5.4 Relation to the	
6. Dead Body	How to cremation		Place		

Signed by informant and authorized death certificate report person

.....

.....

(.....)

(.....)

FIGURE 4: THAILAND'S MEDICAL CERTIFICATE FORM FOR DEATH IN HOSPITAL



Hospital name and address
 Hospital Identification.....
 Report date.....

1. Deceased Person Information	1.1 Firstname, Lastname		1.2 Personal ID □-□-□-□-□ □-□-□-□-□		1.3 Gender
	1.4 Age	1.5 Nationality	1.6 Occupation		1.7 Married Status
	1.8 Address				1.9 Religion
2. Death information	2.1 Date and Time of Death		2.2 Attending Doctor		
	2.3 Cause of death in English, Capital letter a) b) (due to) c) (due to) d) (due to)			Length of time from diagnosis to death.	
	2.4 Other supported symptom or disease cause of death				
	2.5 Thai descriptive language for registra to record 2.6 For woman, if pregnant please identify gestational ages or after delivery within 6 weeks.				
3. Place of Death	3.1 Name and address of the place		3.2 Length of stay at this place		
4. Parents of Deceased	4.1 Mother: Firstname, Lastname		4.2 Nationality	4.3 Personal ID □-□-□-□-□ □-□-□-□-□	
	4.4 Father: Firstname, Lastname		4.5 Nationality	4.6 Personal ID □-□-□-□-□ □-□-□-□-□	
5. Certified person	5.1 Father: Firstname, Lastname			5.2 Personal ID □-□-□-□-□ □-□-□-□-□	
	Type of health personal: doctor, nurse, other (identify)				

.....
 Signed by certified person

FIGURE 5: INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF CAUSE OF DEATH USED FOR DEATH IN HOSPITAL

Cause of death	Approximate interval between onset and death
I	
Disease or condition directly (a)
Leading to death* due to (or as a consequence of) Antecedent causes (b)
Morbid conditions, if any, due to (or as a consequence of) Giving rise to the above cause.
Stating the underlying Condition last(c) due to (or as a consequence of) (d)
II	
Other significant conditions
Contributing to the death, but Not related to the disease or Condition causing it	
*this does not mean the mode of dying, e.g. heart failure, respiratory failure. It means the disease, injury, or complication that caused death.	

Birth and death registration has been routinely used as the main source of birth and mortality statistics since the establishment of the civil registration system. The vital statistics system has evolved along with the civil registration from paper-based to an electronic system. Through close collaboration between MOI and MOPH, timely information regarding the number and health status of the population at national and provincial level are available to be used by any agencies that need them. The history of the vital statistics system and responsible organizations are summarized in **Table 4** to **Table 5**.⁴

Title of Presentation: The challenges with the Current Status on Mortality Statistics in Saint Lucia
Current conditions on mortality statistics in Saint Lucia Challenges with the current status on mortality statistics in Saint Lucia

Margaret Henry-Samuel

St Jude Hospital, Vieux Fort, Saint Lucia

Introduction

Saint Lucia is one of the Caribbean islands that is located between Martinique, St. Vincent and on the northern side of Barbados. This beautiful island called the Helen of the West has many attractive natural heritage; like our drive-in volcano, lovely Chrystal clear waterfalls, sandy beaches, not to mention our lovely twin Pitons that distinguish us from the our neighboring islands. Not forgetting our pleasant, friendly and loving people. The island is blessed with so much.

The island's health system

The island is divided into eleven 11 administrative regions, or sometimes referred to as “quarters”. The Administrative regions are further subdivided into nineteen (19) districts, See Figure 1 (Rodriguez, M, O’Hanlon, B, et al. (2012 pg 3). However, within the health sector the island is divided into eight (8) health regions.

FIGURE 1: ADMINISTRATIVE DISTRICTS OF SAINT LUCIA



Key index for Number

Number	Quarter
1	Anse-la-Raye
2	Castries
3	Choiseul
4	Dauphin
5	Dennery
6	Gros Islet
7	Laborie
8	Micoud
9	Praslin
10	Soufriere
11	Vieux Fort

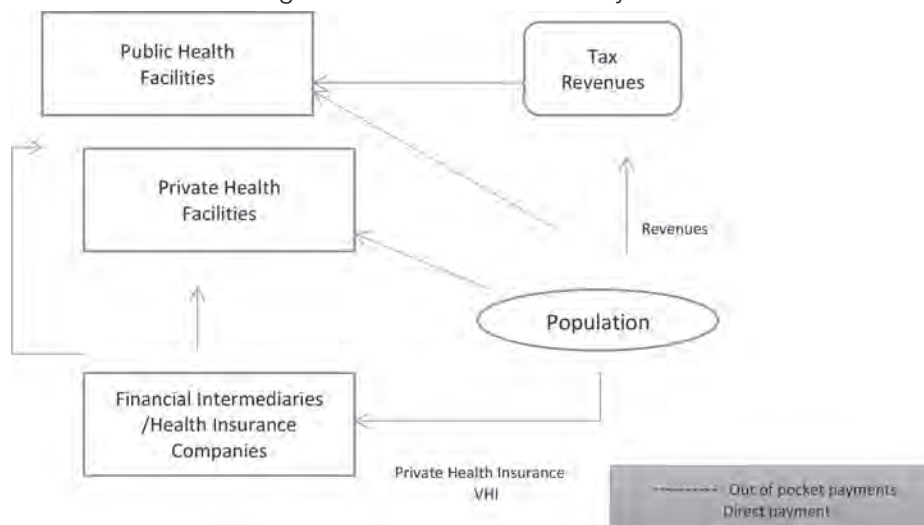
The Health sector is made up of 32 primary care facilities known as Wellness Centres, one Polyclinic and two community hospitals (figure 2). As part of the strengthening of Primary Health Care services, there is a health center located at each community to ensure access to primary health care services within five minutes of the citizenry. There are three hospitals two public facilities and one private, see figure 2. The Saint Lucian health care service is funded mainly by tax payer and local and foreign non-governmental organization (figure 3).

Figure 2. Districts and location of 32 primary care facilities (wellness centres)



Our health centers provides basic care to patients, any emergency or serious health condition are referred to the hospitals. Our two public hospitals are: St Jude Hospital in the south, and Victoria hospital in the north; Tapion hospital is private, located in the northern part of the island. These hospitals provide secondary and tertiary care to our population.

Figure 3: Saint Lucia Health System



Mortality data is collect at the hospital, home/districts or emergency rooms. The data is collected

from the medical cause of death certificate, see figure 4. The certificate is completed by a physician, either from the hospitals or the districts. Civil Status Registry in the northern part of the island, on a quarterly basis compiles the data from the death certificates into a log book. Epidemiology Unit of Ministry of Health collects the death certificates from Civil Status Registry to complete the processing for mortality statistics; which entails coding and entry into the automated mortbase system.

Figure 4: Death certificate

SAINT LUCIA.
FORM No. 5.
MEDICAL CERTIFICATE OF CAUSE OF DEATH.

District of

CERTIFICATE OF DEATH.

Particulars of Deceased.	CAUSE OF DEATH.	Approximate interval between onset and death.
Name:	I ▼ Disease or Conditions (a) directly leading to Death Due to (or as a consequence of)	
Residence:	Antecedent causes (b) Due to (or as a consequence of)	
Occupation:	Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last.	
Sex:	II Other significant conditions.	
Age:	contributing to the death, but not related to the disease or condition causing it.	
Date of Death:	▼ This does not mean the mode of dying, e.g., heart failure, asthma, &c. It means the disease, injury, or complication which caused death.	
Date of last Attendance:		

I do hereby certify that

I viewed the body of the

above-named during his last illness,

I attended during his last illness,

I performed a post mortem examination on,

and that the (above) particulars are true in every respect to the best of my knowledge and belief.

Dated this day of 20

(Signature, &c.)

The Medical Cause of Death certificate captures information on the deceased and includes;

- Demographics
 - Name
 - Age
 - Sex
 - Address
 - Employment status and occupation details
- Cause of death
 - Immediate
 - Contributory
 - Underlying
 - Information on the duration of the disease
- Details of the certifier

Challenges

Death Certification serves a number of core functions. It enables the deceased's family to register the death and provides a legal record of the death. In addition, and vital for the health sector, is the information that it provides for measuring the relative contributions of different diseases to mortality. Statistical information on deaths by underlying cause is important for monitoring the health of the population, designing and evaluating public health interventions, recognizing priorities for medical research and health services, planning health services, and assessing the effectiveness of those services. Therefore, it must be accurate, timely and collected in a format that can be understood. More importantly is the processes involved in data collection and how this data is mirrored by the collection cannot be undermined. The usefulness of the cause-of-death data is greatly determined by the quality of the data.

It is essential for any country to have the knowledge of its death rate as well as the causes of death. These reasons are why mortality statistics is vital to countries; assessing of the health status; the 'pre-requisite' used in monitoring health activities of countries to enable improving survival rates (Lywodraeth Cymru, Welsh Government, 2013).

In 2014 Saint Lucia's mortality rate was 7.32 deaths per 1,000 populations (IndexMundi, 2015). This report may indicate the island has a perfect system for collection of data. Not quite the case; collection for mortality statistics has faced multiple challenges. The island's Ministry of Health, epidemiology unit uses a database called "mortbase", which was developed by Caribbean Public Health Agency (CARPHA), to collect vital mortality data. However, still we find ourselves facing many challenges in the accurate collection of mortality data. Some of these challenges are;

- No structured system for data collection,
- Incorrect documentations of death certificates,
- Insufficiency of the information recorded by the certifying physician,
- Points from which data is extracted from,
- Data collection methods.

Mortality data is collected from nineteen districts registers, and the hospitals, which is entered into log books by Civil Status Registry in the northern part of the island, on a quarterly basis. Epidemiology Unit of Ministry of Health collects the death certificates from Civil Status Registry; and also from nineteen district registries to assess compatibility and completeness for the island's deaths. Data from the death certificates are entered into mortbase automated mortality coding systems to determine underlying causes of death, principle causes of death and comorbid conditions. Validation of the data is done by Epidemiology Unit with support from Caribbean Public Health Agency on a yearly basis.

International Statistical Classification of Diseases and Related Health Problems (ICD-10) is used for coding. "The underlying cause of death (UC): disease or injury that started the train of morbid events leading directly to death or the circumstances of the accident or violence that produced the (fatal) injury" (Atkins & Gaspard, 2015); is selected by mortality coders. Proper documentation by certifying physicians of the certificates for accurate data on medical cause of death and ensuring of patients' comorbid conditions can also be problematic. Thus, mortality coders have to also clarify with certifiers

if clarification is needed in the documentation of the death certificates. The data is entered into an “automated mortality coding: Mortality Medical Data System (MMDS)” (Quesnel-Crooks, 2014).

Method

Preliminary research was done to assess the status on mortality statistics. Workshops and trainings were conducted and experience drawn from other countries like Trinidad and Aruba who already had systems in progress, who receives support work from Caribbean Public Health Agency (CARPHA).

Training was provided by CARPHA in ‘ICD-10 mortality statistics coding and the underlying causes of death and the automated mortality coding database-mortality medical data system (MMDS)’ (Quesnel-Crooks, 2014). The training was conducted using various methods, instructional videos were one of the techniques used to train the trainers in the correct documentations of the death certificates (Quesnel-Crooks, 2014).

Monitoring and evaluation methods was also implemented to assess the progress for the island.

Results

Improving of mortality statistics is a necessity. An electronic data capture system is currently being used, however, training is needed in documentation of death certificate and systems must be implemented for capturing of evident-based and reliable data to make reliable decisions. Also, involving other vital stakeholders.

Conclusions

Results indicate improvement in mortality statistics with the support and integration of electronic information data system. In countries using the system, Ministry of Health Epidemiology units has the capability for yielding results.

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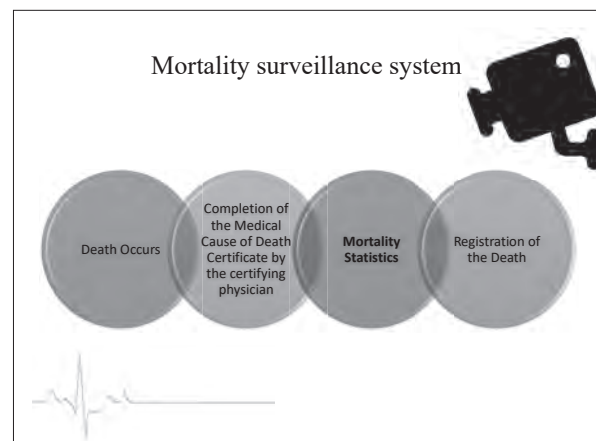
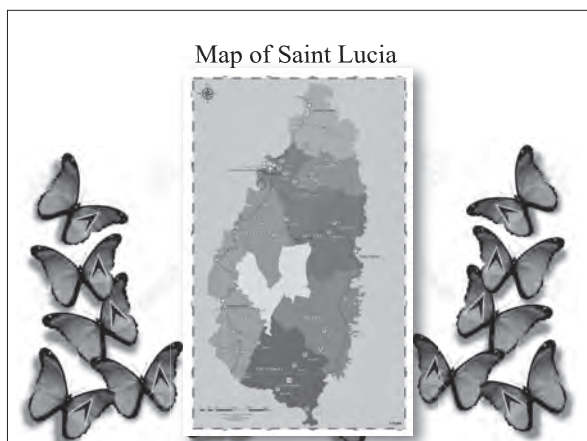
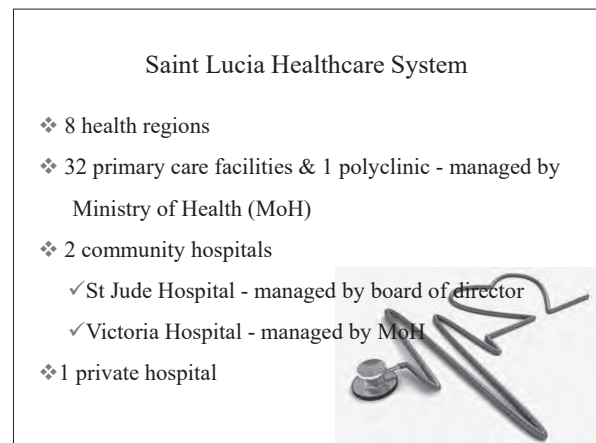
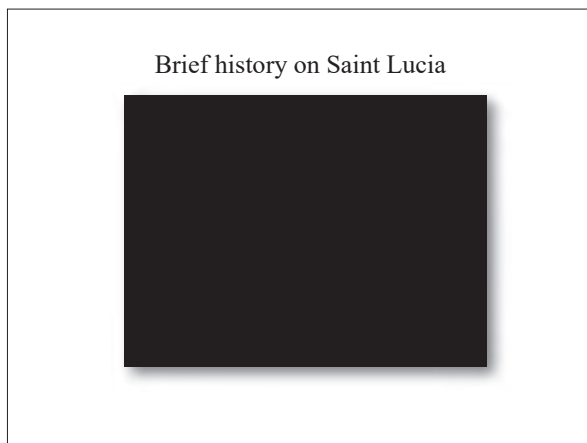
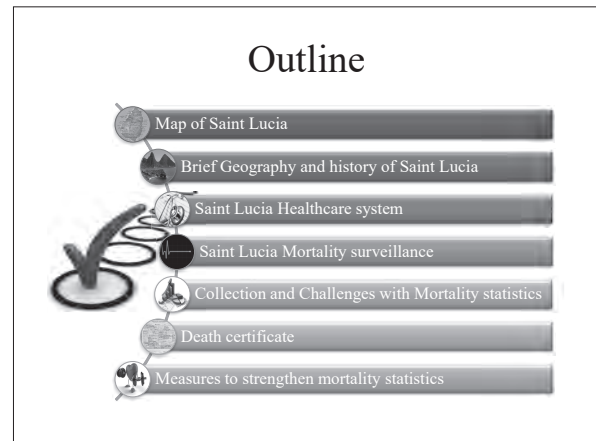
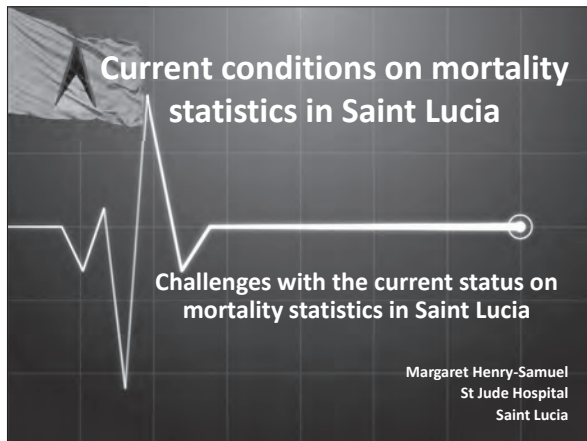
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Presentation Slides



Collection and Challenges with Mortality Statistics

- ❖ Data is collected from districts and homes, the hospitals and emergency rooms .
- ❖ Data is entered into log books by Civil Status registry.
- ❖ Epidemiology Unit collects all certificates from Civil Status registry.

Collection and Challenges with Mortality Statistics

- ❖ Data from the certificates are coded and entered into automated mortality systems.
- ❖ Validation of the data is done by Epidemiology Unit.

Collection and Challenges with Mortality Statistics

- ❖ Incomplete of the death certificates.
- ❖ Incorrect documentation by physicians.
- ❖ Insufficiency of the information recorded by the certifying physician.
- ❖ Points from which data is extracted from.
- ❖ Data Collection methods.

Death Certificate

Measures of strengthening mortality statistics

- ❖ Meeting with stakeholders.
- ❖ Updating of electronic database.
- ❖ Changing methods of collecting of mortality statistics.
- ❖ Training in methods of collecting mortality statistics
- ❖ Improving design the death certificate.
- ❖ Training in documentation of death certificate.

Thank you

Death Certificate

SAINT LUCIA.

FORM No. 5.

MEDICAL CERTIFICATE OF CAUSE OF DEATH.

District of

CERTIFICATE OF DEATH.

Particulars of Deceased.	CAUSE OF DEATH.	Approximate interval between onset and death.
Name:	<p>I</p> <p>* Disease or Conditions (a) directly leading to Death Due to (or as a consequence of)</p> <p>Antecedent causes (b) Due to (or as a consequence of)</p>	
Residence:	<p>Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last.</p>	
Occupation:		
Sex:	<p>II</p> <p>Other significant conditions.</p>	
Age:	<p>contributing to the death, but not related to the disease or condition causing it.</p>	
Date of Death:		
Date of last Attendance:	<p>* This does not mean the mode of dying, e.g., heart failure, asthenia. &c. It means the disease, injury, or complication which caused death.</p>	

I do hereby certify that
I viewed the body of the
above-named during his last illness,
her

I attended during his last illness,
her

I performed a post mortem examination on,
and that the (above) particulars are true in every respect to the best of my knowledge and belief.

Dated this day of, 20

(Signature, &c.)

Changing Trends in Mortality Patterns of Sri Lanka During the Past Decade

Dr. Palitha Gunawardena

Sri Lanka

History of Sri Lankan medicine

Sri Lanka is a small island (about 65,600 square kilometres) situated in adjacent to the southern tip of India with complete and confirmed evidence of the existence of Pre-historic human habitations at least from 34,000 BC onwards (Deraniyagala 1992). However, 'there is hardly any information on the state of medicine in pre-historic times' (Uragoda 1987: 5) because inscriptional evidence of medical interest is very scanty (*ibid*: 23). The history of medical tradition in the country goes back to over 2000 years and it is evident that early inhabitants had some knowledge of empirical use of a few drugs by experience to cure some of the ailments (*ibid*) and the great chronicle of the country, *the Mahavamsa*, the ancient chronicle of Sri Lankan history, mentions hospitals that are established and maintained by various kings of the country and some of the kings were medical practitioners. Meanwhile, the ancient Indian epic Ramayanaya mentions that Sri Lankan pre-historic *King Ravana* was the author of some medical books and he represented a medical conference in India (*ibid*).

It is evident that the history of medicine in Sri Lanka started with occult practices believing supernatural forces in the causation of diseases. Even today some of the people, non educated as well as educated, believing such practices and resort to some kind of these practices especially where the situations routine medical treatments are not acted fast. Moreover, in this Buddhist predominant country people use to practice chanting of *Pirith*, that are extracts from the Buddhist canon in the form of Pali stanzas, sung in rich sonorous tones by a single or several Buddhist monks.

Before introducing the Ayurveda system of medicine from North India, there was a system that called *desiya chikitsa* or *Sinhala vedakama*, which was handed down from generation to generation. However, due to secrecy maintained by the practitioners it was subjected to the decadence of the system even though this system was officially recognised when the Ayurveda Act of 1961 is adopted in the country.

The Ayurveda was introduced to Sri Lanka from North India, which dealt with both human and animal and emphasis on cure and prevention of diseases by various means, was flourished for over three thousand years until such time that subjected compete with the current Western Medicine especially in the British occupation of the country. However, ayurveda was not so threatened during the Portuguese and Dutch occupations because they were not interested in catering to the local people and they themselves impressed about herbal ayurveda medicine. Moreover, there are two system of medicine that was based on basic concepts of ayurveda. Siddha is a system of medicine practised by the Tamil speaking people and the Unani system that was introduced to the country by Arab seafarers in mediaeval times.

Mortality

Under the Births and Deaths Registration Act, the registration of both births and deaths was compulsory in Sri Lanka from 1897. According to the law, every live birth has to be registered within 42 days and a death within 5 days from the date of occurrence. However, due to higher percentage of deaths are registered by non-medical registrars, the cause of death given may not be accurate as expected.

Changing the mortality pattern of diseases, the epidemiologic transition, over the history is a phenomenon that occurred in somewhat parallel to the demographic transition, the transition from high birth and death rates to lower birth and death rates, mostly occurred with the socio-economic development throughout the world. With this transmission the proportion of deaths due to Communicable Diseases (CD) has been declined over the past decades dramatically that lead to proportional increase of deaths due to Non Communicable Diseases (NCD) and other causes.

In Sri Lanka it seems this decline has been started as earlier as 1940s and achieved much improvement in health indices during last several years. This is most probably due to its very effective health systems among developing nations. Moreover in this system, the government is providing cost effective healthcare free of direct cost to the patient. The indicators pertaining to maternal health, infant health and communicable diseases have shown considerable improvement. The maternal mortality ratio, neonatal mortality rate, life expectancy at birth and many more health indices are comparable with those of the developed world. However, with the rapid ageing of the population and the success in combating the major communicable diseases, the disease burden and mortality has started shifting rapidly towards non-communicable diseases, accidents and injuries. Hence, it seems that Non-Communicable Diseases (NCDs) in Sri Lanka has increasing trends for several years and accounted for an estimated 65 per cent of all mortality in 2008. The most prevalent NCDs in Sri Lanka are cardiovascular diseases, which accounted for 30 per cent of total deaths across all age groups in 2008. Cancers, non-communicable variants of respiratory diseases and diabetes contributed nine per cent, eight per cent and four per cent to total mortality respectively (2008).

'The decline mortality is a multifactorial process' (Gaimard 2013: 16) that involve the use of the techniques and processes developed with the advancement of the knowledge of medicine and health. The healthcare system in Sri Lanka was able eradicate some infectious diseases by effective using of techniques developed by the more economically developed countries without any major economic development in the country. As a result of compliance to the standard and techniques the Smallpox was eradicated at the beginning of the eradication programme and then the eradication of Poliomyelitis and almost entire eradication of Malaria resulting increase of life expectancy and reduction of mortality rate in Sri Lanka. Moreover, the strict implementation of the WHO adopted Alma-Ata convention of Primary Health Care led country to become healthier by improving the 'defusing a whole range of simple and effective medical techniques at a local level, but also the development of food-producing industries, the supply of drinking water, environmental sanitation, and, even more importantly, educational progress and the improvement of the status of women' (*ibid*). The application of the concept of Primary Health Care was one of the most important factors that led Sri Lanka to improve the life ex-

pectancy and reduce the mortality well beyond the level expected for its economic status and the country stood in the top rank in the South Asian region where the differences in life expectancy is widest.

Moreover, the countries gave much more concern about the maternal health by giving assistance by the professionally trained healthcare workers supported by hospital services were able to increase their maternal survival rates dramatically. However, those services should be readily available for all concerns to take advantage of those services. In the case of Sri Lanka the maternal mortality was remained high irrespective of services given by the trained midwifery professionals for 20 years that supported hospital services during the first half of the twentieth century where the access was limited. However, the maternal mortality was began to dramatically decreased when improvement to the access to care facilities by establishing the centres in the rural areas throughout the country in the second half of the twentieth century, from about 1500 death to 30 deaths per 100,000 population.

Conclusion

It seems the mortality pattern in Sri Lanka is being changed during the last decades towards the pattern seen in developed countries from the pattern seen in the developing countries by transforming the trends in mortality from a high infectious and parasitic diseases to cardiovascular, cerebral-vascular, respiratory and metabolic disorders. Social factors have played a major role in this high mortality due to such diseases.

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Presentation Slides

Changing Trends in Mortality Patterns in Sri Lanka



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Chairperson, Sri Lanka Health Information System
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Sri Lanka

Small island (about 65,600 square kilometres) situated in adjacent to the southern tip of India

Has confirmed evidence of the existence of Pre-historic human habitations at least from 34,000 BC onwards

Medical tradition in the country goes back to over 2000 years

Mahavamsa gives evidence of hospitals that are established and maintained by various kings of the country



Records of hospitals in the *Mahavamsa*

King Sena II (851-885 AD) built a hospital on the Cetiya mountain (current Mihintale)

Pandukabaya II and Kassapa V (913-923 AD) established medical institutions In Anuradhapura

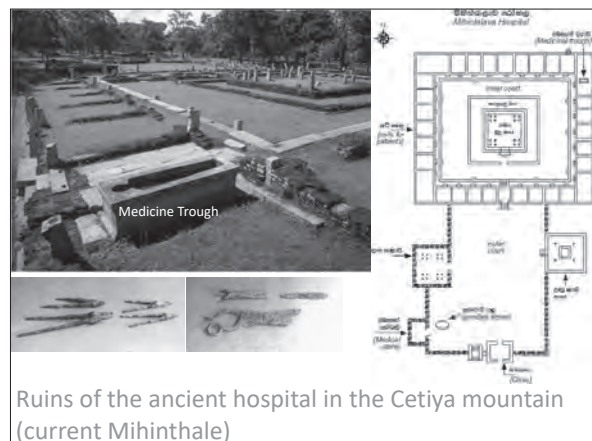
King Udaya I (792-797 AD) has built a large hall for the sick in Polonnaruwa

Specific hospitals

Institutions for cripples were built by Kings Buddhadasa (362-409 AD), Datusena (460-478 AD), Upatissa II (522-524 AD), and Udaya I (792-797 AD)

King Buddhadasa and Upatissa II also has built hospitals for the blinds

King Kassapa IV (896-913 AD) has built hospitals in Anuradhapura and Polonnaruwa for combating 'upasagga' which was probably an epidemic disease



Medicine Trough

Ruins of the ancient hospital in the Cetiya mountain (current Mihintale)



Alahana Pirivena hospital complex in Polonnaruwa – King Parakramabahu I (1153-1186)

Sri Lanka – Health Resources (2014)

Total population -	20,771,000
Urban population (%)	18.2
Number of hospitals	622
Number of hospital beds	80,105
Medical Officers (per 100,000 population)	34.3
Medical Officers (per 100,000 population)	6.5
Nurses (per 100,000 population)	185.1
Public Health Midwives (per 100,000 population)	28.7
Medical Officers of Health (MOH) Divisions	338

Sri Lanka administration

Administratively divided into

9 provinces

25 districts

332 Divisional Secretariats (DS)

few Registration Divisions in each DS

Birth, Death and Marriages Registrar in each of the Registration Division

14,021 Grama Niladari Divisions - the lowest tier in the administration

Registration of Deaths

Births, Deaths and Marriages Registrar records on the Register of Deaths (Form B2).

80% of deaths in Sri Lanka are registered by Non-Medical registrars
Hence data quality is poor (proportion of death due to unknown causes is above 40%)

Registration requires

1. a "Certificate of Cause of Death" (Form) B12 from Medical Practitioner
2. a "Declaration of the Death"
In a hospital, the medical officer in-charge declares the death on (Form B33)

Outside a hospital, the Grama Niladhari reports death on (Form B24)

Sudden Deaths requires - Inquirer's Certificate of Death (Form B 18)

if autopsy is performed - Post Mortem Report (Health 42)

Registration of Deaths cont...

Registrar General's Department established in 1864

Collection of mortality information started in 1867 (voluntary registration)

Registration of births and deaths made compulsory under an Ordinance passed in 1885

Ordinance was replaced by the **Birth and Death Registration Act** in 1951

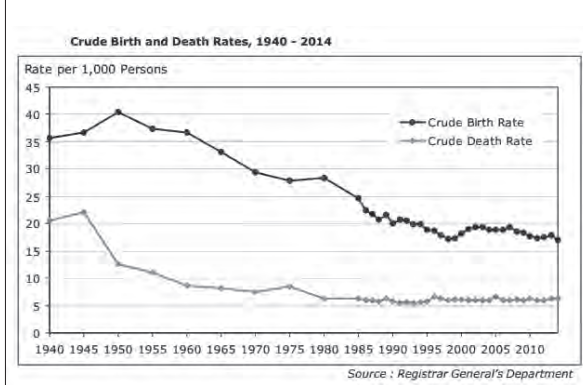
Mortality data received from all 332 DS are tabulated centrally and publish as national mortality figures

Hospital mortality information are collected by using the IMMR (Indoor Morbidity and Mortality Return)

Sri Lanka – Mortality Status

Crude Birth Rate (per 1,000 population)	16.9 (2014)
Crude Death Rate (per 1,000 population)	6.2 (2014)
Neonatal Mortality Rate (per 1,000 live births)	7.0 (2010)
Infant Mortality Rate (per 1,000 live births)	9.9 (2010)
Under-five Mortality Rate (per 1,000 live births)	12.2 (2010)
Maternal Mortality Rate (per 100,000 live births)	22.0 (2010)
Life Expectancy at Birth (2011-2013)	78.6 (F), 72 (M)

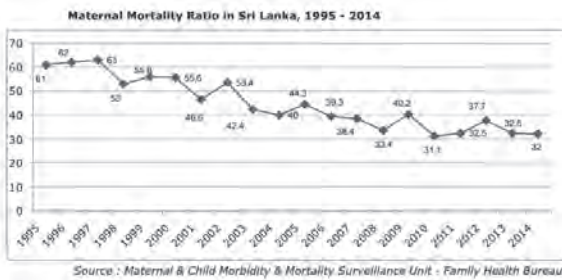
Crude Birth and Death Rates



Trends in Maternal and Infant Mortality

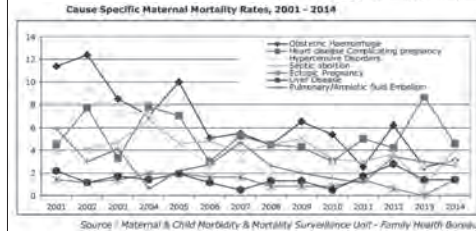
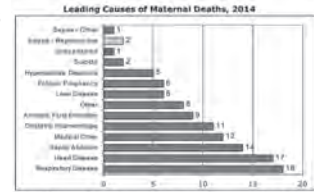


Recent Trends in Maternal Mortality



Maternal Mortality Trends

Changing trends from direct obstetric to indirect medical causes. Cause-specific mortality ratios for almost all direct causes came down



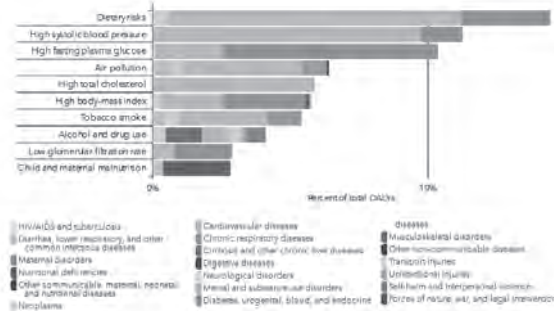
Last Decade trends in causes of death



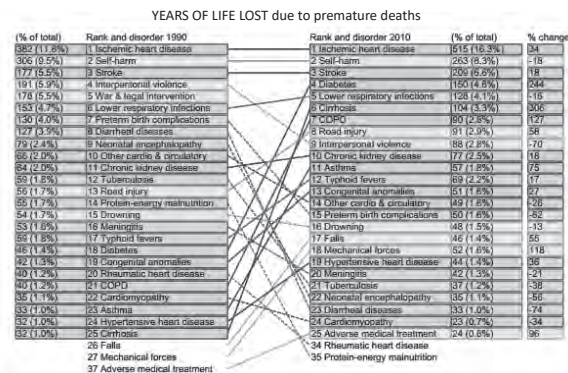
Top 10 causes of death by rate in 2015 and percent change, 2005-2015

Risk Factors for Premature Deaths

Disability-Adjusted Life Years (DALY) - total years of healthy life lost



Changing Trend of Causes of Death



Conclusion

It seems the mortality pattern in Sri Lanka is being changed during the last decades

Changing from a pattern seen in developing countries to a pattern seen in developed countries

The trends in mortality has been transformed from a high infectious and parasitic diseases to cardiovascular, cerebral-vascular, respiratory and metabolic disorders

Social factors also play a role for high mortality

Sri Lanka has achieved one of the lowest maternal mortality rates in the developing world

Tank you

Death Certificate

Form 100-101 (Rev. 10-1-2015) **മരണ പ്രഖ്യാപന പത്രം**
DEATH CERTIFICATE
DECLARATION OF DEATH

1. Name of the deceased: _____
 2. Sex: _____
 3. Age: _____
 4. Date of birth: _____
 5. Place of birth: _____
 6. Date of death: _____
 7. Place of death: _____
 8. Cause of death: _____
 9. Signature of the medical officer: _____
 10. Signature of the registrar: _____

1. Name of the deceased: _____
 2. Sex: _____
 3. Age: _____
 4. Date of birth: _____
 5. Place of birth: _____
 6. Date of death: _____
 7. Place of death: _____
 8. Cause of death: _____
 9. Signature of the medical officer: _____
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 3. Age: _____
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 5. Place of birth: _____
 6. Date of death: _____
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 8. Cause of death: _____
 9. Signature of the medical officer: _____
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1975 අංක 41 දරන විවාහ, උප්පැන්න හා මරණ (සංශෝධන) පනතෙන් සංශෝධිත උප්පැන්න හා මරණ ලියාපදිංචි කිරීමේ
 ආඥාපනතේ 110 වන පරිච්ඡේදයේ 11 අ වන වගන්තියේ විධිවිධාන යටතේ මෙම පිටපත නිකුත් කරන ලද බවට සහතික කරමි.
 இக்கடிப்பித்தி 1975 ஆம் ஆண்டின் 41 ஆம் பிரிவுகள், இறப்புகள், விவாகரத்து (திருத்தம்) சட்டத்தினால் திருத்தப்பட்டது.
 இறப்புகள், இறப்புகள், விவாக பற்றி சரம் சட்டம் அத்தி. 110 பிரிவு 11 அ வின் ஏற்பாடுகளின் கீழ் வழங்கப்படுகின்றது.
 This copy is issued under the provisions of Section 11 A of the Births and Deaths Registration Act (Cap. 110) as amended by
 the Births, Deaths and Marriages (Amendment) Law, No. 41 of 1975.

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 District Registrar / Adml. District Registrar / Registrar

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 குறிப்பு - இப்பிரதியில் சேர்ப்புகள் அல்லது மாற்றங்கள் செய்யல் தண்டனக்குரிய குற்றமாகும்.
 Note. - It is a punishable offence to make any addition or alteration in this copy.

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ලිපිනය:

**A Survey on the Current Conditions of Mortality in Nigeria.
A Case Study of Nigeria Demographic and Health Survey 2013**

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ABSTRACT

Nigeria operates a pluralistic healthcare delivery system with the orthodox and traditional healthcare delivery system operating alongside each other. Yet one is usually amazed at the number of pages of mortality report dotted by several figures published by Nigeria government.

There is no gainsaying the fact that health is wealth, however, quite unfortunately, countless families have been reduced to abject poverty and misery by the reason of the huge health cost incurred during repeated or protracted hospital admissions to manage complicated and disabilities that usually result to death.

The data used was from the survey carried out by the Nigeria demographic and health survey which covered the entire population that serves as an indicator for each of the six zones (thirty six states and federal capital territory Abuja Nigeria).

From the data, it was observed that 12% of women and men are likely to die between exact ages of 15-50 years. Maternal deaths account for 32% of all death of women among the age of 15-49 years. The life time risk of maternal deaths indicate that 1 of 30 women in Nigeria will have a death related to pregnancy or childbearing. Infant and under-5 mortality statistics rate in the last five years were 69 and 128 deaths per 1,000 live births respectively. The neonatal mortality rate is 37 deaths per 1000 live births. Postnatal mortality rate is 31 deaths per 1000 live births. The perinatal mortality death rate is 41 deaths per 1000 pregnancies. Childhood mortality rates are higher in rural areas than in urban areas. Also childhood mortality is higher in the northwest part of Nigeria.

According to Nigeria malaria fact sheet, about 100 million cases of malaria are recorded annually with over 300,000 deaths; sadly the majority of these victims are children.

Nigeria has a persistence high childhood mortality rate in spite of all the preventive measures and intervention to reduce this ugly trend. this is almost in line with global reports, as seen from literatures, that nearly all the deaths of children comes from preventable communicable diseases and malnutrition disorder. These challenges have been attributed to poor environmental health condition, poverty and ignorance.

Key words: mortality, under5 mortality, maternal mortality,

BACKGROUND

Global reports have shown that many countries in South Asia and Sub-Saharan Africa including Nigeria still have high under-five mortality unlike some countries in East Asia, Pacific, Latin America,

Caribbean, and Central/Eastern Europe that have made substantial progress in its reduction.

Recently, the World Health Organization indicated that the mortality rate in Nigeria is high, with several socio-economic, health and environmental factors contributing to the high mortality rate in Nigeria.

Every single day, Nigeria loses about 2,300 under-five year olds and 145 women of childbearing age. This makes the country the second largest contributor to the under-five and maternal mortality rate in the world

Underneath the statistics lies the pain of human tragedy, for thousands of families who have lost their children. Even more devastating is the knowledge that, according to recent research, essential interventions reaching women and babies on time would have averted most of these deaths.

Although analyses of recent trends show that the country is making progress in cutting down infant and under-five mortality rates, the pace still remains too slow to achieve the last Millennium Development Goal (MDG) 4 target of a two-thirds reduction in the under-five mortality rate between 1990 and 2015 .

Preventable or treatable infectious diseases such as malaria, pneumonia, diarrhea, measles and HIV/AIDS account for more than 70 per cent of the estimated one million under-five deaths in Nigeria.

While the Main causes of neonatal deaths are birth asphyxia, severe infection including tetanus and premature birth. The majority of these occur within the first week of life, mainly due to complications during pregnancy and delivery reflecting the intimate link between newborn survival and the quality of maternal care. Malnutrition is the underlying cause of morbidity and mortality of a large proportion of children under-5 in Nigeria. It accounts for more than 50 per cent of deaths of children in this age bracket.

Similarly, a woman's chance of dying from pregnancy and childbirth in Nigeria is 1 in 13. Eclampsia, sepsis, hemorrhage, anemia in pregnancy are the main causes of maternal deaths in Nigeria, although many of these deaths are preventable. The coverage and quality of health care services in Nigeria continue to fail women and children. Presently, less than 20 per cent of health facilities offer emergency obstetric care and only 35 per cent of deliveries are attended by skilled birth attendants. This shows the close relationship between the well-being of the mother and the child, and justifies the need to integrate maternal, newborn and child health interventions.

It is important to note that wide regional disparities exist in child health indicators with the North-East and North-West geopolitical zones of the country having the worst child survival figures. (Unicef-Nigeria)2013.

There is also the menace of road accidents; this has killed nearly 1.3 million people annually according to Dr. David Okello, director at World Health Organization (WHO). Another cause of death is the sad incidence of insurgency that has ravaged parts of the North-West and North-East regions. While the government and other stakeholders have risen to fight against insecurity especially in these zones.

This study is aimed at outlining the trends and levels of mortality in Nigeria using the NDHS 1999 to 2013 .

It will also identify the relationship between under5 mortality and socio economic characteristics, using place of residence, geopolitical zones, mother's education and household wealth.

Finally examine the implication of the current condition of mortality in the nearest future.

Mortality is a term that means “DEATH”, or describes death and related issues. It is also a state of death occurring as a result of illness occasioned by diseases. . A major importance of mortality statistics and causes of death is the evaluation of health status of a population in order to identify priority areas for policy making and programme implementations.

World Health Organization has encouraged countries to collect statistics for key Health indication and to build monitoring capacity. . Demographic and Health Survey (DHS) is the main source of data for developing countries. Although limited in its ability to provide information on causes of death.

SURVEY

According to the population and housing census, Nigeria's population in 2013 was 173,615,345 , with an annual growth rate of 2.7%. Nigeria is made up of 36 states and a Federal Capital Territory. It is grouped into six geo-political zones/regions: North West, North East, North Central, South East, South West and South- South. Nigeria's current level of urbanization is about 45% but the country has one of the world's highest urbanization growth rates estimated at 5.3% per year . Fertility has remained high with a Total Fertility Rate (TFR) of 5.7 since 2003. The highest TFR is in the North West Zone (7.3) and lowest in the South West Zone (4.5). TFR also varies by location (highest in rural areas), education and wealth quintile. The health indices are characterized by wide regional disparities and generally better in the southern than the northern regions.

DATA ANALYSIS

This is a retrospective analysis of the data collected in the Nigeria Demographic and Health Surveys (NDHS) 2013.

The Nigeria Demography and Health Survey 2013 was implemented by the national population commission, it is the fifth in the series of demographic and Health surveys conducted so far in Nigeria. Previous surveys were conducted in 1990, 1999, 2003 and 2008. The mortality data's were retrieved as the database for this study.

The data sources, retrieval processes and other details have been described in a larger study on the trends and effects of changes in determinants of mortality in Nigeria. However, it suffices to state that the NDHS were based on nationally representative sample of women aged 15-49 years and men aged 15-59 years who were selected using a stratified two-stage cluster sampling technique. Data were collected on key health issues by trained field workers through structured interviewer administered questionnaires

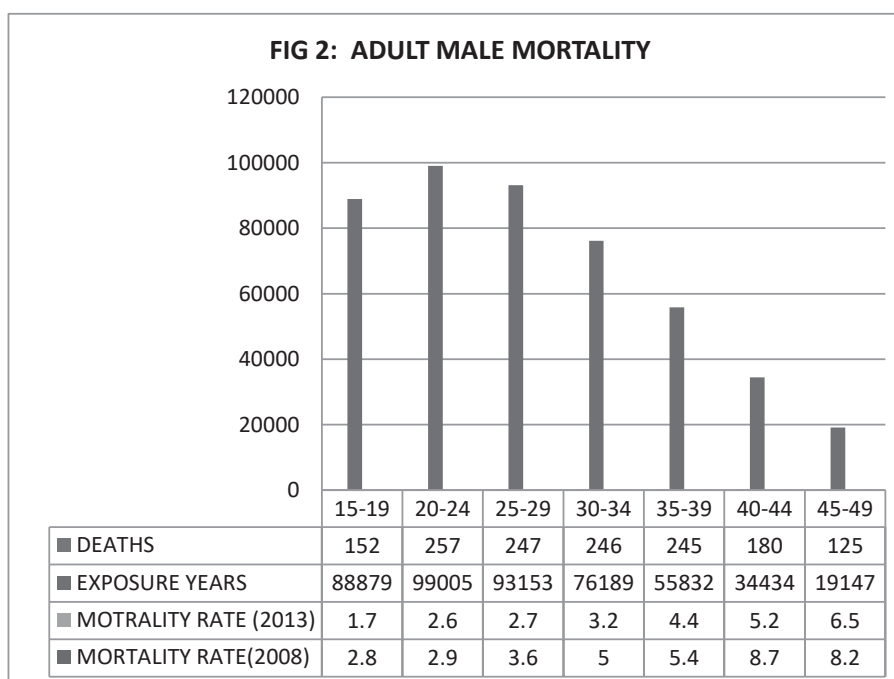
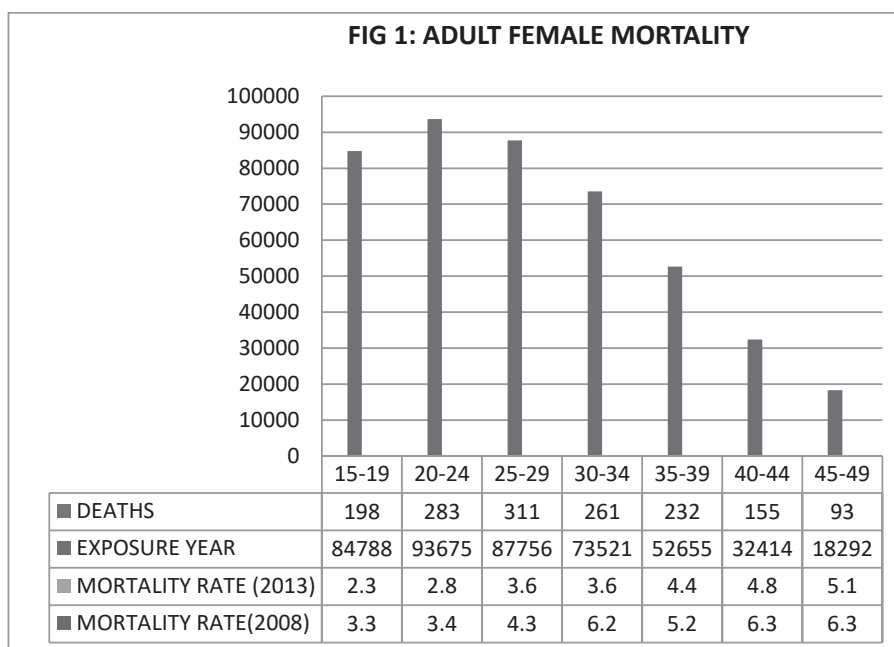
DESCRIPTION OF VARIABLES USED

The categorical, socio-economic and socio-demographic variables were used for the multivariate analysis. mother's educational attainment (no education, primary, secondary, and higher), place of residence (urban/rural residence), wealth quintiles (poorest 20% is assigned the lowest quintile and the richest 80% is assigned the highest quintile), geopolitical regions or zones of six (north-central, north-

east, north-west, south-east, south-south, and south-west), birth in the last 3 years, (less than or equal to two births, or more than two births), birth order (less than or equal to four or more than four),

RESULTS

TREND IN ADULT MORTALITY

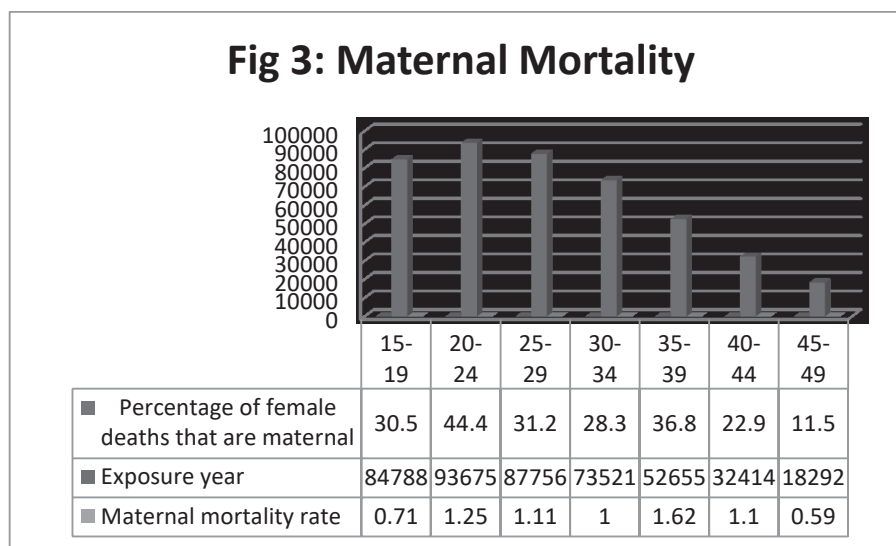


Source- NDHS 2013.

Fig 1 and 2 shows age-specific mortality rates for women and men age 15-49 for the seven-year period preceding the survey. Overall, the Mortality rates are higher among women than men in the younger age groups (below 35 years), while the reverse is true in the older age groups (40 years and above). The 2008 and 2013 NDHS surveys results show a decline in mortality rates from 4.7 deaths

to 3.5 deaths per 1,000 populations among women age (15-49) and from 4.6 deaths to 3.3 of age per 1,000 population among men age (15-49). Age-specific assessments of mortality rates indicate a declining trend for both women and men in all age groups.

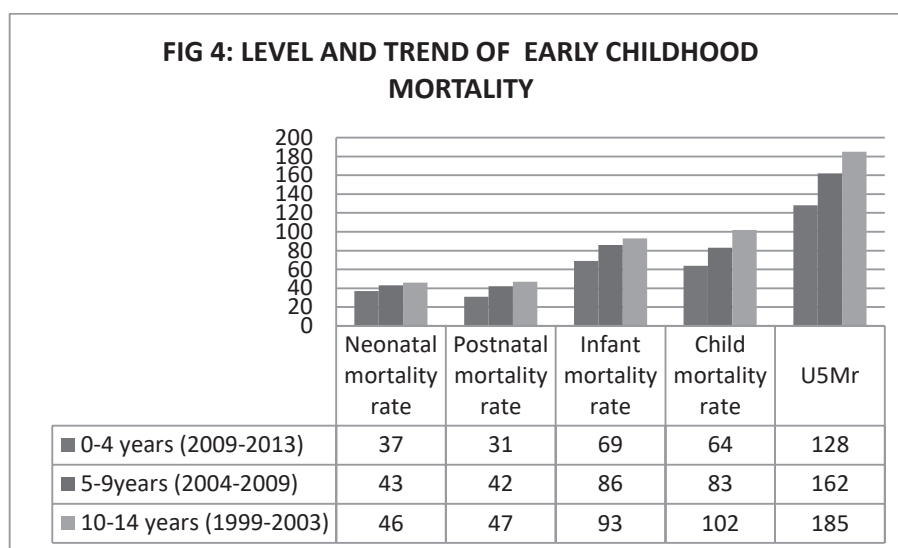
MATERNAL MORTALITY



Source-NDHS 2013.

Maternal deaths are subset of all female deaths associated with pregnancy and childbearing. The annual number of maternal death for 2013 is 40,000 deaths with a population of 39,171,087 of women age 15-49. The maternal mortality ratio was 560 maternal deaths per 100,000 live births for the seven-year period preceding the survey. This ratio is not significantly different from the 545 ratio reported in the 2008 NDHS.

The maternal mortality rate is highest among women age 35-39 (1.6), followed by those age 20-24 (1.3). The percentage of female deaths that are maternal deaths varies by age and ranges from 12 percent among women age 45-49 to 44 percent among women age 20-24. The lifetime risk of maternal death indicates that 1 in 30 women in Nigeria will have a death related to pregnancy or childbearing.

LEVEL AND TREND OF EARLY CHILDHOOD MORTALITY

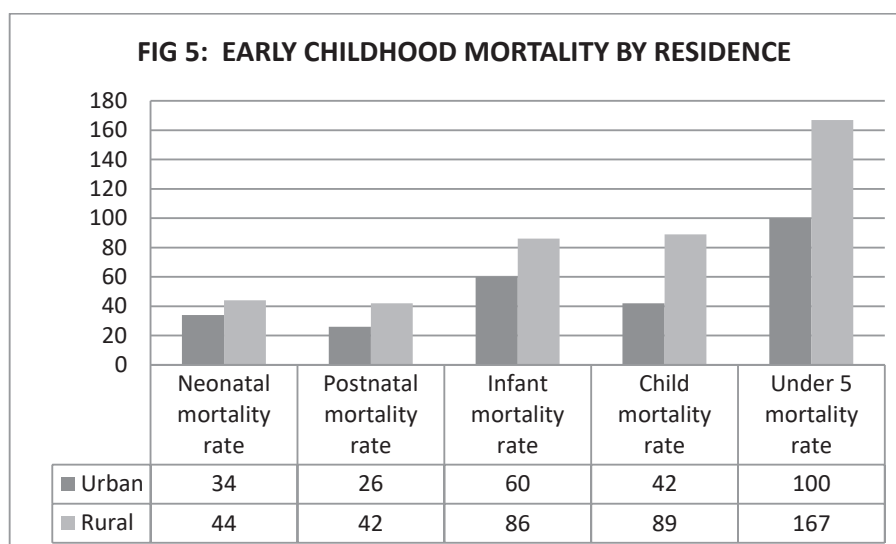
Source- NDHS 2013.

This figure shows neonatal, postnatal, infant, child and under 5 mortality rate for successive fifteen year period preceding the survey. The annual deaths of 2013 for neonatal, infant and under mortality are 261,549, 517,760 and 804,427 respectively, with an under5 population of 30,546, 275.

Results from the 2013 NDHS show a considerable decline in all levels of childhood mortality. Neonatal mortality decreased by 20 percent, from 46 deaths per 1,000 live births to 37 deaths per 1,000 live births. Infant mortality declined by 26 percent from 93 deaths per 1,000 live births to 69 deaths per 1,000 live births. Under-5 mortality declined by 31 percent over the same period, from 185 deaths per 1,000 live births to 128 deaths per 1,000 live births. This implies that one in every 15 Nigeria children die before their first birthday and that one in eight die before their fifth birthday during the same five year period.

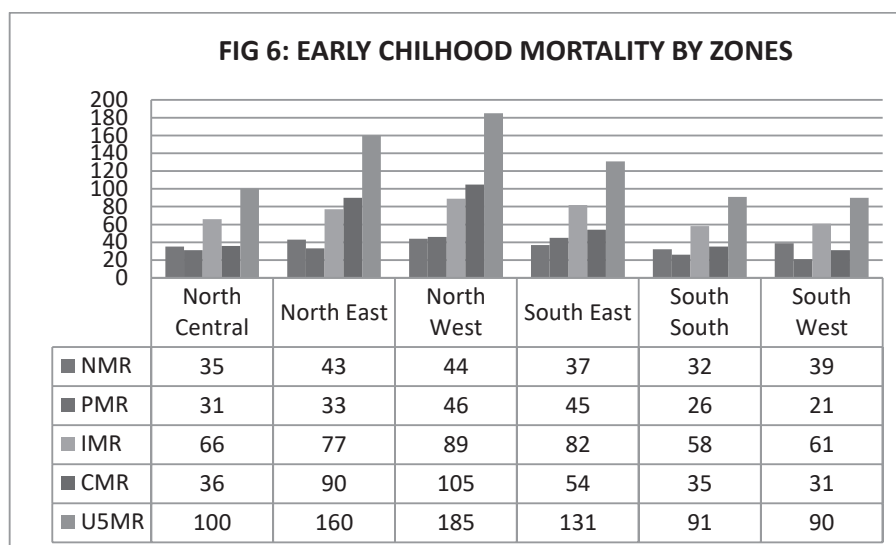
RELATIONSHIP BETWEEN CHILDHOOD MORTALITY AND SOCIO ECONOMIC CHARACTERISTICS.

Mortality rate are presented for 10years period preceding the survey using place of Residence, Zones, Mothers Education and Household Wealth.



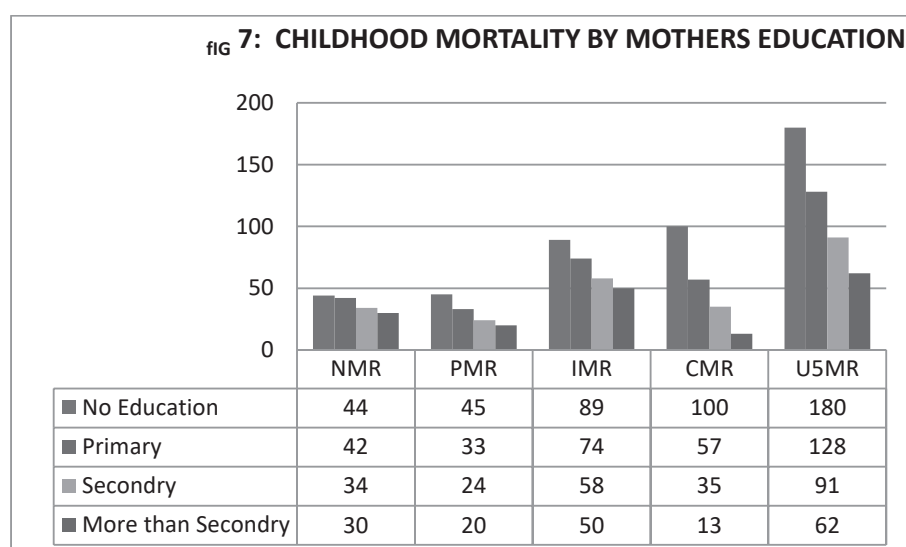
Source- NDHS 2013.

This figure shows that mortality rates in urban areas are consistently lower than those in rural areas. Infant mortality is 43 percent higher in rural areas (86 deaths per 1,000 live births) than in urban areas (60 deaths per 1,000 live births). The urban- rural difference is even more pronounced in the case of under-5 mortality.



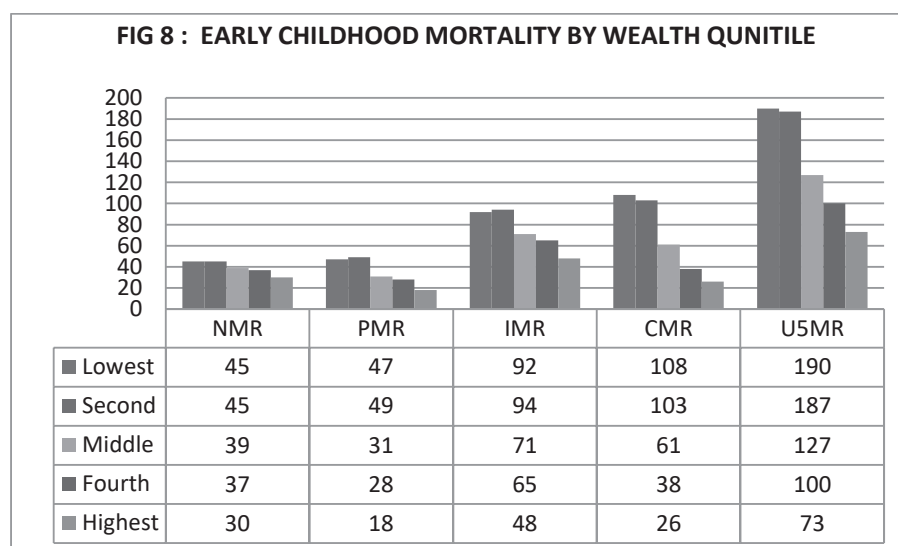
Source- NDHS 2013.

There are zonal differences in infant and under-5 mortality as well. Under-5 mortality rates range from a low of 90 deaths per 1,000 live births in the South West to a high of 185 deaths per 1,000 live births in the North West. Under-5 mortality is also relatively high in the North East and North West.



Source- NDHS 2013

As expected, mother's education is inversely related to a child's risk of dying. Under-5 mortality among children born to mothers with no education (180 deaths per 1,000 live births) is almost twice as high as that among children born to mothers with a secondary education (91 deaths per 1,000 live births) and about three times as high as that among children of mothers with more than a secondary education (62 deaths per 1,000 live births). The beneficial effect of educating mothers is evident for all childhood mortality categories.



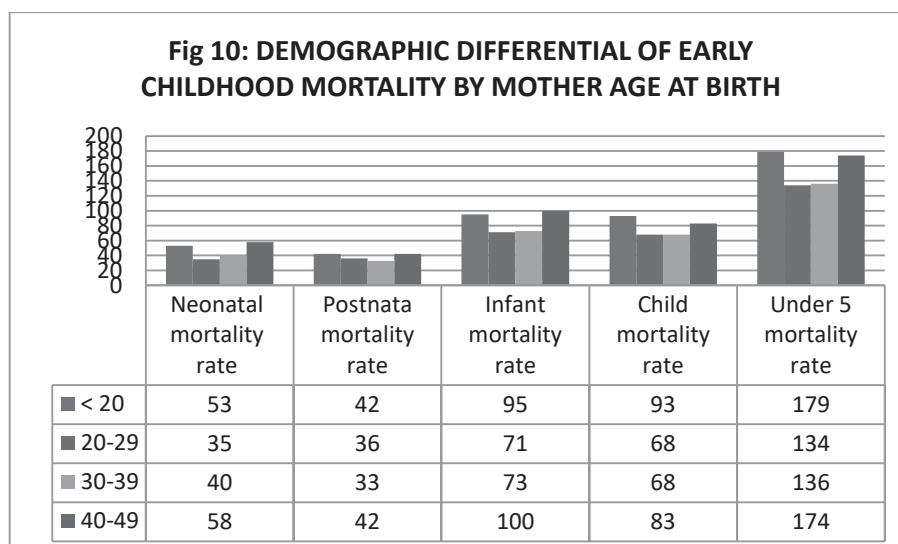
Source- NDHS 2013.

Childhood mortality generally decreases as wealth increases, although rates are similar in the two lower quintiles. Children from poorer or rural household are reported to be vulnerable than their counterpart in other regions. (unicef 2010). A child born to a financially deprived and less educated family is at risk of dying perinatal or within first month of life. The child is exposed to childhood illness, such as malaria, diarrhea due to poor living conditions. The above graph showed that infant and child survival are

strongly influenced by these socio economic characteristics. This is also in line with (UNDP, 2007). Infant and child mortality rates are basic indicators of a country's socio-economic situation and quality of life.

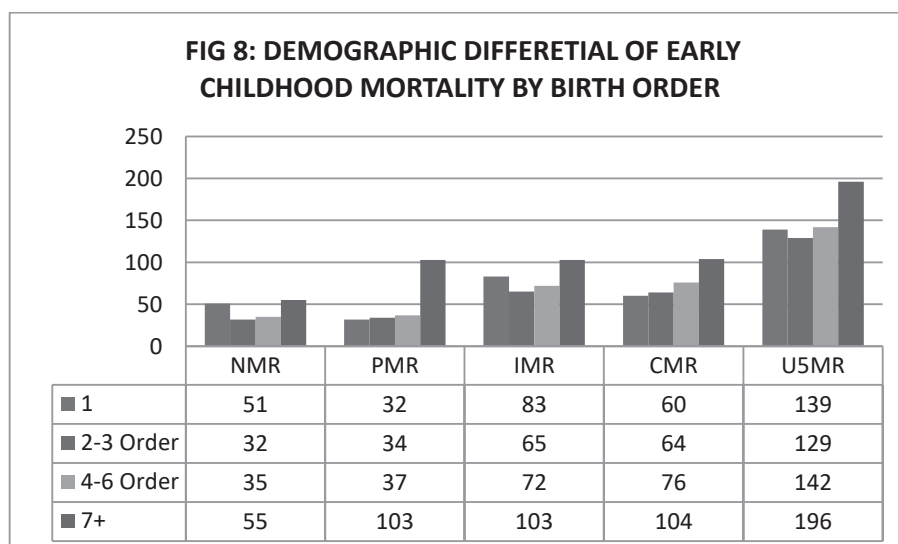
DEMOGRAPHIC DIFFERENTIALS IN EARLY CHILDHOOD MORTALITY RATES

The Demographic characteristics of both mother and children have been found to play an important role in child survival. This section present demographic differential in early childhood mortality by mother's age at birth, Birth order, previous birth interval.



Source- NDHS 2013.

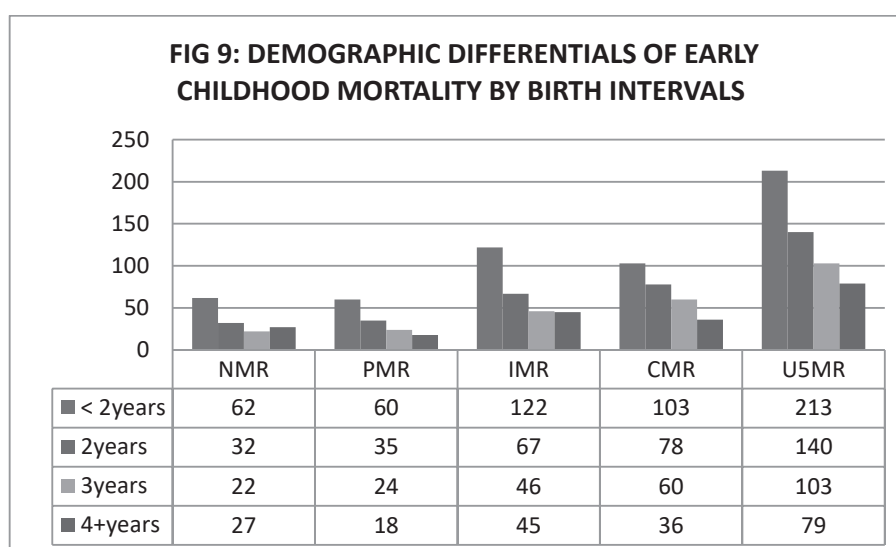
With the exception of mothers in the 40-49 age group (100), infant mortality is higher for mothers under age 20 than for older mothers.



Source- NDHS 2013.

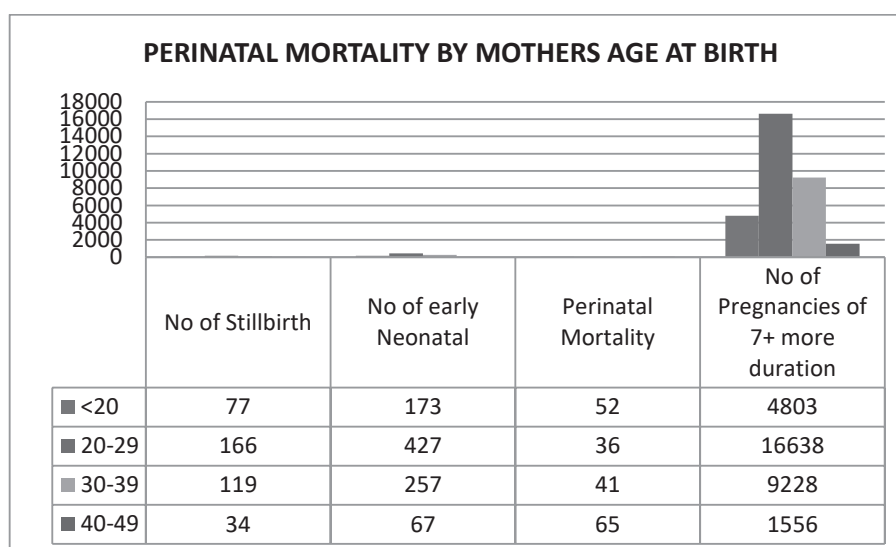
Infant mortality is also higher for first births and seventh- and higher-order births than for births of orders 2-6. Short birth intervals, especially intervals of less than two years, substantially reduce chil-

dren's chances of survival.



Source- NDHS 2013.

Children born less than two years after the preceding birth are more than 2.5 times as likely to die within the first year of life and more than twice as likely to die within the first five years of life as children born three years after the preceding birth.



The perinatal mortality rate is 41 deaths per 1,000 pregnancies of seven or more months of gestation. The perinatal mortality rate is higher among young mothers (below age 20) and mothers age 40- 49, as well. Although perinatal mortality generally decreases with increasing education and household wealth, the pattern is not always consistent.

SUBMISSION

This study has described the trend and level of mortality in Nigeria, the relationship between child

mortality and socio economic characteristics using the Nigeria Demographic and Health Survey 2013.

Adult mortality decreased in all ages, both men and female, maternal mortality is high with 560 ratios per 1000 live births, childhood mortality is 36, 69 and 128 deaths respectively per 1000 live births for neonatal, infant and under 5 mortality. Postnatal mortality rate is 31 deaths per 1000 live births. The perinatal mortality death rate is 41 deaths per 1000 pregnancies. Childhood mortality rates are higher in rural areas than in urban areas. Also childhood mortality is higher in the northwest part of Nigeria.

Given this established pattern; it is not surprising that very little progress had been recorded in childhood survival in Nigeria between 1999 and 2013. This tends to agree with previous results of global statistics that many countries in Sub-Saharan Africa have made little or no progress towards the MDG 2000 goal.

Going by this slow pace of cutting down infant under 5 mortality rates for the 15 year period preceding the survey,

This would imply that Nigeria has a low chance of achieving the recent sustainable development goal 3 which aimed at reducing the global maternal mortality ratio to less than 70 per 100,000 live births, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1000 live births by 2030, except it has to double its current rate of reductions.

CONCLUSION

Mortality rate is still high in Nigeria in spite of the measures put in place to curb this menace.

There is a need to increase the attention directed at tackling maternal and newborn deaths if the statistics are to improve. Antenatal care, care at birth and postnatal care need to be improved if we are to save more women and children.

The disparity that exists between the urban and the rural regions, geopolitical zones with regards to healthcare needs to be addressed as well in order to ensure equity. There is still more to be done to curtail the predominant deaths among Nigerians by improving the standard of living of Nigerians as well as the creation of more awareness on precautionary measures to prevent accidents that lead to death.

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Presentation Slides

A SURVEY ON THE CURRENT CONDITIONS OF MORTALITY IN NIGERIA. A CASE STUDY OF NIGERIA DEMOGRAPHIC AND HEALTH SURVEY 2013



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BACKGROUND

Global reports have shown that many countries in South Asia and Sub-Saharan Africa including Nigeria still have high mortality rates unlike some countries in East Asia, Pacific, Latin America, Caribbean, and Central/Eastern Europe that have made substantial progress in its reduction.

Recently, the World Health Organization indicated that the mortality rate in Nigeria is high, With several socio-economic, health and environmental factors contributing to the high mortality rate in Nigeria.

Every single day, Nigeria loses about 2,300 under-five year olds and 145 women of childbearing age.

This makes the country the second largest contributor to the under-five and maternal mortality rate in the world

2

BACKGROUND contd.

Underneath the statistics lies the pain of human tragedy, for thousands of families who have lost their children.

Even more devastating is the knowledge that, according to recent research, essential interventions reaching women and babies on time would have averted most of these deaths.

Although analyses of recent trends show that the country is making progress in cutting down infant and under-five mortality rates.

The pace still remains too slow that it could not achieve the last Millennium Development Goal (MDG) 4 target of a two-thirds reduction in the under-five mortality rate between 1990 and 2015.

3

Preventable or treatable infectious diseases such as malaria, pneumonia, diarrhoea, measles and HIV/AIDS account for more than 70 per cent of the estimated one million under-five deaths in Nigeria.

While the Main causes of neonatal deaths are birth asphyxia, and severe infection which includes neonatal tetanus and premature birth.

The majority of these occur within the first week of life, mainly due to complications during pregnancy and delivery reflecting the intimate link between newborn survival and the quality of maternal care.

4

Malnutrition is the underlying cause of morbidity and mortality of a large proportion of children under-5 in Nigeria. It accounts for more than 50 per cent of deaths of children in this age bracket.

Similarly, a woman's chance of dying from pregnancy and childbirth in Nigeria is 1 in 13.

Eclampsia, sepsis, hemorrhage, anemia in pregnancy, are the main causes of maternal deaths in Nigeria,

Although many of these deaths are preventable, the coverage and quality of health care services in Nigeria continue to fail women and children.

Presently, less than 20 per cent of health facilities offer emergency obstetric care and only 35 per cent of deliveries are attended by skilled birth attendants.

5

This shows the close relationship between the well being of the mother and the child.

It also justifies the need to integrate maternal, newborn and child health interventions.

It is important to note that wide regional disparities exist in child health indicators with the North-East and North-West geopolitical zones of the country having the worst child survival figures. (Unicef -Nigeria 2013).

There is also the menace of road accidents; this has killed nearly 1.3 million people annually according to Dr. David Okello, director at World Health Organization (WHO).

6

Another cause of death is the sad incidence of insurgency that has ravaged parts of the North-east and North-west regions. However the government and other stakeholders have risen to fight against insecurity in these zones.

7

This study is aimed at outlining the trends and levels of mortality in Nigeria using the NDHS 2013 .

It will also identify the relationship between under5 mortality and socio economic characteristics, using place of residence, geopolitical zones, mother's education and household wealth.

Finally, it will examine the implication of the current condition of mortality in the nearest future.

8

Mortality is a term that means "DEATH", or describes death and related issues. It is also a state of death occurring as a result of illness occasioned by diseases.

A major importance of mortality statistics is the evaluation of health status of a population in order to identify priority areas for policy making and programme implementations.

- World Health Organization has encouraged countries to collect statistics for key Health indication and to build monitoring capacity.
- Demographic and Health Survey (DHS) is the main source of data for developing countries, Although limited in its ability to provide information on causes of death

9

SURVEY

According to the population and housing census, Nigeria's population in 2013 is 173,615 ,345 , with an annual growth rate of 2.7%.

Nigeria is made up of 36 states and a Federal Capital Territory.

It is grouped into six geo-political zones/regions: North West, North East, North Central, South East, South West and South-South.

Nigeria's current level of urbanization is about 45% but the country has one of the world's highest urbanization growth rates estimated at 5.3% per year .

Fertility has remained high with a Total Fertility Rate (TFR) of 5.7 since 2003. The highest TFR is in the North West Zone (7.3) and lowest in the South West Zone (4.5).

TFR also varies by location (highest in rural areas), education and wealth quintile.

The health indices are characterized by wide regional disparities and generally better in the southern than the northern regions

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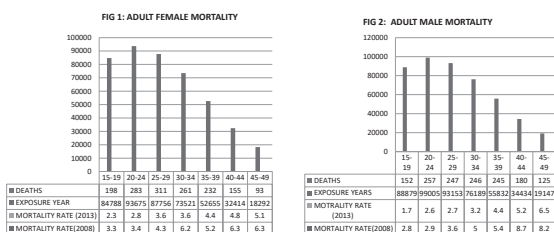
DATA ANALYSIS

- This is a retrospective analysis of the data collected in the Nigeria Demographic and Health Surveys (NDHS) for 1999, 2003, 2008 and 2013.
- The Nigeria Demography and Health Survey 2013 was implemented by the national population commission of Nigeria.
- it is the fifth in the series of demographic and Health surveys conducted so far in Nigeria.
- Previous surveys were conducted in 1990, 1999, 2003 and 2008.
- The survey was a national representation of entire population of the six zones in Nigeria (36 states and the federal capital territory Abuja).
- The sample comprised men and women aged 15-49, Using a stratified two stage cluster sampling technique.
- The data were collected by train field workers through interviewer administered questionnaires.

11

RESULTS

TREND IN ADULT MORTALITY



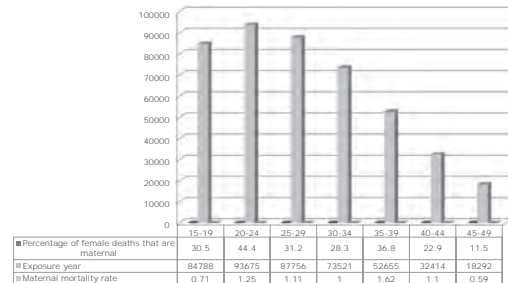
Source- NDHS 2013.

12

- Fig 1 and 2 shows age-specific mortality rates for women and men age 15-49 for the seven-year period preceding the survey.
- Overall Mortality rates are higher among women than men in the younger age groups (below 35 years), while the reverse is true in the older age groups (40 years and above).
- This implies that Twelve percent of women and men are likely to die between exact ages 15 and 50.
- The 2008 and 2013 NDHS surveys results show a decline in mortality rates from 4.7 deaths to 3.5 deaths per 1,000 populations among women age (15-49) and from 4.6 deaths to 3.3 of age per 1,000 population among men age (15-49).
- Age-specific assessments of mortality rates indicate a declining trend for both women and men in all age groups.

13

TREND IN MATERNAL MORTALITY
Fig 3: Maternal Mortality



Source-NDHS 2013

Maternal deaths are subset of all female deaths associated with pregnancy and childbearing.

The annual number of maternal death for 2013 is 40,000 deaths with a population of 39,171,087 of women age 15-49.

The maternal mortality ratio is 560 maternal deaths per 100,000 live births for the seven-year period preceding the survey.

This ratio is not significantly different from the 545 ratio reported in the 2008 NDHS.

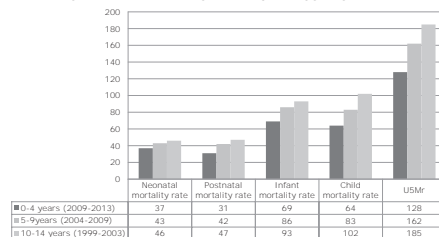
Maternal mortality rate is highest among women age 35-39 (1.6), followed by those age 20-24 (1.3).

The percentage of female deaths that are maternal deaths varies by age and ranges from 12 percent among women age 45-49 to 44 percent among women age 20-24.

The lifetime risk of maternal death indicates that 1 in 30 women in Nigeria will have a death related to pregnancy or childbearing.

LEVEL AND TREND OF EARLY CHILDHOOD MORTALITY

FIG 4: LEVEL AND TREND OF EARLY CHILDHOOD MORTALITY



16

Source- NDHS 2013.

This figure shows neonatal, postnatal, infant, child and under 5 mortality rate for successive fifteen year period preceding the survey.

The annual deaths of 2013 for neonatal, infant and under 5 mortality were 261,549, 517,760 and 804,427 respectively, with an under5 population of 30,546, 275.

Results from the 2013 NDHS show a considerable decline in all levels of childhood mortality.

Neonatal mortality decreased by 20 percent, from 46 deaths per 1,000 live births to 37 deaths per 1,000 live births.

Infant mortality declined by 26 percent from 93 deaths per 1,000 live births to 69 deaths per 1,000 live births.

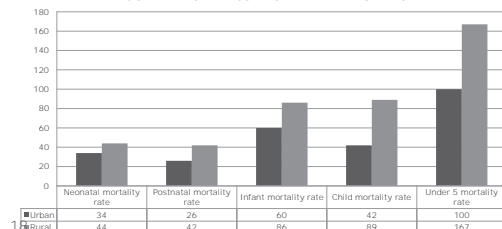
Under-5 mortality declined by 31 percent over the same period, from 185 deaths per 1,000 live births to 128 deaths per 1,000 live births.

This implies that one in every 15 Nigeria children die before their first birthday and that one in eight die before their fifth birthday during the same five year period.

RELATIONSHIP BETWEEN CHILDHOOD MORTALITY AND SOCIO ECONOMIC CHARACTERISTICS.

Mortality rate are presented for 10years period preceding the survey using place of Residence, Zones, Mothers Education and Household Wealth.

FIG 5: EARLY CHILDHOOD MORTALITY BY RESIDENCE



Source- NDHS 2013.

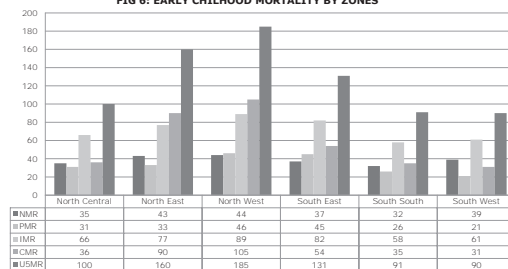
This figure shows that mortality rates in urban areas are consistently lower than those in rural areas.

Infant mortality is 43 percent higher in rural areas (86 deaths per 1,000 live births) than in urban areas (60 deaths per 1,000 live births).

The urban-rural difference is even more pronounced in the case of under-5 mortality.

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FIG 6: EARLY CHILDHOOD MORTALITY BY ZONES

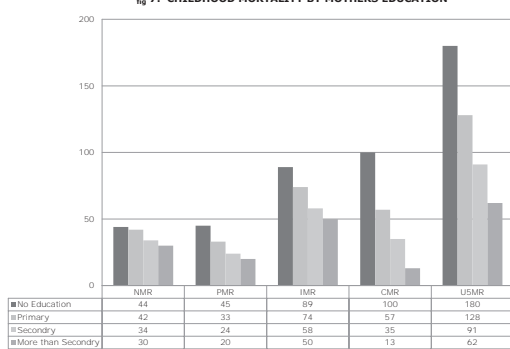


Source- NDHS 2013.

There are zonal differences in infant and under-5 mortality as well. Under-5 mortality rates range from a low of 90 deaths per 1,000 live births in the South West to a high of 185 deaths per 1,000 live births in the North West.

Under-5 mortality is also relatively high in the North East and North West.

Fig 7: CHILDHOOD MORTALITY BY MOTHERS EDUCATION



Source- NDHS 2013.

22

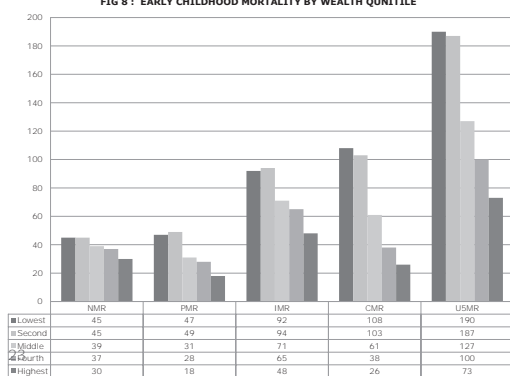
As expected, mother's education is inversely related to a child's risk of dying.

Under-5 mortality among children born to mothers with no education (180 deaths per 1,000 live births) is almost twice as high as that among children born to mothers with a secondary education (91 deaths per 1,000 live births).

It is about three times as high as that among children of mothers with more than a secondary education (62 deaths per 1,000 live births).

The beneficial effect of educating mothers is evident for all childhood mortality categories.

FIG 8 : EARLY CHILDHOOD MORTALITY BY WEALTH QUINTILE



Source- NDHS 2013.

24

Childhood mortality generally decreases as wealth increases, although rates are similar in the two lower quintiles.

Children from poorer or rural household are reported to be vulnerable than their counterpart in other regions. (unicef 2010).

A child born to a financially deprived and less educated family is at risk of dying perinatal or within first month of life.

The child is exposed to childhood illness, such as malaria, diarrhea due to poor living conditions.

This shows that infant and child survival are strongly influenced by these socio economic characteristics.

This is also in line with (UNDP, 2007) Infant and child mortality rates are basic indicators of a country's socio-economic situation and quality of life.

SUBMISSION

This study has described the trend and level of mortality in Nigeria, the relationship between childhood mortality and socio economic characteristics using the Nigeria Demographic and Health Survey 2013.

Adult mortality decreased in all ages, both men and female. Maternal mortality is high with 560 ratio per 100,000 live births.

Childhood mortality is 36, 69 and 128 deaths per 1000 live births for neonatal, infant and under 5 mortality.

Childhood mortality rates are higher in rural areas than in urban areas. Also childhood mortality is higher in the northwest part of Nigeria.

25

Given this established pattern; it is not surprising that very little progress had been recorded in childhood survival in Nigeria between 1999 and 2013.

This tends to agree with previous results of global statistics that many countries in Sub-Saharan Africa have made little or no progress towards the MDG 2000 goal.

Going by this slow pace of cutting down under 5 mortality for the 15 year period preceding the survey.

26

- This would imply that Nigeria has a low chance of achieving the recent sustainable development goal 3, which aims are
- reducing the global maternal mortality ratio to less than 70 per 100,000 live births;
- end preventable deaths of newborns and children under 5 years of age,
- with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births by 2030, except it has to double its current rate of reductions.

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CONCLUSION

Mortality rate is still high in Nigeria, in spite the measures put in place to curb this menace.

There is a need to increase the attention directed at tackling maternal and newborn deaths if the statistics are to improve.

Antenatal, peri-natal and postnatal cares need to be improved if we are to save more women and children.

The disparity that exists between the urban and the rural regions, with regards to healthcare needs to be addressed as well in order to ensure equity.

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There is still more to be done to curtail the predominant deaths among Nigerians by improving the standard of living of Nigerians.

It is also important to create more awareness on precautionary measures to prevent accidents that lead to death.

THANK YOU

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FCT. HEALTH SOCIAL SERVICE DEPT., ABUJA					MEDICAL CERTIFICATE OF CAUSE OF DEATH	
SURNAME	FIRST NAMES(S)	Age	Sex	Hospital No		
Occupation	Ethnic Group	Date of Admission		Date of Death		
<p>CAUSE OF DEATH</p> <p>Direct Cause Disease or condition directly leading to death, not the mode of dying such as heart failure, asthma etc.</p> <p>(a) Due to (or as a consequence of)</p> <p>(b) Due to (or as a consequence of)</p> <p>(c)</p>				<p>Approximate interval between onset and death</p> <p>.....</p> <p>.....</p> <p>.....</p>		
<p>Antecedent Causes Morbid conditions if any, giving rise to the above cause, stating the underlying condition last.</p>						
<p>Other Significance Conditions Contributing to the death, but not related to the diseases or condition causing it.</p>						
<p>(Name of the Attending Physician/ Surgeon)</p> <p>.....</p>				<p>Signature</p> <p>.....</p>		
<p>Medical Qualification(s)</p> <p>.....</p>				<p>Date</p> <p>.....</p>		

Overview of The Mortality Statistics in Sierra Leone

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ABSTRACT

Sierra Leone has made significant progress in recording mortality statistics over the past years, however, a huge gap still exist in collecting, collating and reporting mortality statistics in the country. Two un-unified data collection system are currently in place in Sierra Leone. One is the mortality data from the civil registration system (births and deaths) which are mostly incomplete and inaccurate. The other system is through the health management information system (HMIS) which collect mortality data at the primary health unit level.

The civil registration system which as per legislation should be responsible for collecting and collating Mortality data in Sierra Leone is marred by inherent problems. Deaths are greatly under-reported under this system, with illiteracy, traditional practices, remoteness and lack of appropriate administrative structures being the main factors responsible for this high level of under-reporting of mortality in Sierra Leone. Health Statisticians have hence resorted to rely on censuses and surveys as the primary source of the data used for estimating mortality, which, in itself, also poses significant challenges in determining the true mortality levels in Sierra Leone. The health management information system (HMIS) on the other hand ensures community health workers to report deaths to primary health units randomly (using the paper based health facility register and summary forms). These units in turn report these deaths on monthly basis as part of routine monthly data that is integrated in the electronic system (DHIS2). This system however only captures mortality data at the peripheral health unit (PHU) level.

It is hence necessary for Sierra Leone to unify the two mortality data statistics systems. The enactment of the civil registration Act in July 2016 paves the legal way of unifying the systems, however much more is needed to finalize the process.

1.0 INTRODUCTION

Socio-economic planning and monitoring requires information on both the number of deaths and the causal sequences that led to the deaths (UN, 2004). Ye et al. (2012) stated that one of the best ways to help the living is by counting the dead, establishing the characteristics of those who died and the underlying causes based on data from various registration systems. Such data are an essential component of population health status and are required for identifying priority areas; and for evidence-based policy-making and programme implementation. Comprehensive, efficient and effective records of deaths from registration systems are among some of the sources of information on mortality and causes of death statistics (UN, 2014). This information is invaluable for the assessment and monitoring of the health status of populations. However, for most African countries, statistics on mor-

tality is mostly not properly recorded or where it is recorded it is incomplete.

The record of mortality statistics in most African countries is the key responsibility of the Civil Registration Department. However, in some countries, there are other registration system in place that either run side-by-side with civil registration or dominate the record of mortality statistics.

Although Sierra Leone has made significant progress in recording mortality statistics over the past years, a huge gap still exists in collecting, collating and reporting mortality statistics in the country. Two un-unified data collection system are in place in Sierra Leone. One, is the mortality data from the civil registration system (births and deaths) which are mostly incomplete and inaccurate. The other system is through the health management information system (HMIS) which collect mortality data at the primary health unit level.

2.0 CIVIL REGISTRATION LEGISLATION IN SIERRA LEONE

A civil registration system is a system that is concerned with the continuous, permanent, and compulsory recording of the occurrence and characteristics of vital events such as births, marriage, divorce, migration, and deaths (Mba 2002).

By definition, vital statistics, which are derived from civil registration records, are compiled from local registers and their coverage should be nationwide and comprehensive if both the registration and statistics systems are adequate and well maintained. Unfortunately, most of the civil registration systems in Sierra Leone and other parts of Africa are far from yielding the accurate and complete data needed for the direct estimation of basic demographic and socioeconomic measures. While the lack of reliable vital statistics, particularly birth and death statistics from civil registration system, has been apparent for the last several decades, the demand for accurate data on fertility and mortality has grown immensely over the same period in Sierra Leone and other developing countries.

Establishment of civil registration system in a country usually begins with enactment of legislation. The civil registration legislation should have clear definitions of vital events and provide for organization, management and operations of civil registration system in the country. The law should also provide the procedures of monitoring of registration operations and responsibilities of the different actors. Experience shows that some countries had established some form of system for registration of births, deaths and marriages without enacting the registration law. Nevertheless, it should be important to recognize that legislation is the foundation of every civil registration system.

Civil Registration commenced in Sierra Leone since the founding of the Colony at about 1791 with the mandate to register births, deaths and Marriages for both settlers and immigrants. In 1901 a law was enacted making the registration of vital events compulsory for the founders of the colony of Freetown and Bonthe Island. Though penalties for non registration were imposed yet this law was largely ineffective because by 1825, the Colonial Secretary admitted the unavailability of Births and deaths records as a means of ascertaining the causes of Births and Deaths. This trend occasioned a series of amendments in rapid succession. Before the amendment of the 1983 Births and Deaths which harmonized and made registration compulsory in Sierra Leone two systems of registration existed: -

- A compulsory system which operated only in the Western Area and Sherbro Urban

- District.
- An Optional system in the protectorate.

The 1983 Births and deaths Act No.11 harmonized and made the registration of Births, Stillbirths and deaths compulsory. This meant all births; Stillbirths and Deaths were to by law be registered. This act therefore served a basis for the registration of Births, Stillbirths and Deaths in the Country. Since this method are being made to update the Act to grapple with registration challenges. In July 2012, a workshop was held with participants drawn from all works of life to formulate national Births and Deaths policy and to review the existing Act. In early 2016, Members of Parliament unanimously passed in to law the National Civil Registration Act, 2016 that called for the compulsory registration of citizens and non-citizens resident in Sierra Leone as well as provide the registrants with multipurpose E-cards. The Act which has gone through the first, second and third reading and has been passed, but now awaits the signature of assent from the President, among other things will provide for the establishment of the National Civil Registration Authority (NCRA) to undertake this task for the purpose of registering birth, adoptions, marriages, divorce and deaths throughout Sierra Leone. Parts VIII & XI of this Act highlighted deaths registration which with time would subsume the 1983 Births & Death Act.

2.1 CIVIL REGISTRATION PROCESS AND COMPLETENESS STATUS

The Civil registration process in Sierra Leone is still low. UNICEF sponsored assessment of Birth and Deaths situation in Sierra Leone puts it at 51%. Its completeness is far from satisfactory particularly in the provinces as the structures and facilities central to the process are grossly inadequate. The process is heavily dependent on other health care service providers, and the good will of Nongovernmental organizations (NGOs) to survive the rigors associated with the process. The political will is there but there is need for heightened political commitment by committing resources, upgrading the capacity of the institution and the existing staff.

The office of the Registrar of Births and Deaths is a unit of the Ministry of Health and Sanitation (MoHS) and is responsible for vital registration. District Registrars are employees of local councils (local government) but are supervised by staff of the MoHS. Almost all of the 149 Chiefdoms have a Community Health Officer (an employee of MoHS) who registers births and deaths. At district level, the process is carried out by district registrars working under the supervision of the District Medical Officers in collaboration with District and Town Councils. Registration is carried out in all health facilities in the districts by registering all births and deaths occurring in the catchment or attending villages. Reports of the various registrations are forwarded to the district Headquarter monthly for onwards transmission quarterly to the national Headquarter.

It must be borne in mind that the Local Government system introduced in 2004 is still in a transitional phase as the councils are still to understand and assume their roles for the devolved functions precisely for births and deaths. They need proper orientation in order for them to determine how they could play their roles effectively. Having proper resources is a prerequisite for the effectiveness of the system and its sustainability.

Births and Deaths registration in Sierra Leone is highly under resourced. There is inadequate office space at both national and district levels. Moreover, there are no means of transportation in all the offices in order to manage a countrywide operation.

2.2 VITAL STATISTICS COMPILATION, ANALYSIS AND REPORT DISSEMINATION

Vital statistics compilation, Analysis and Report dissemination is done on a quarterly and annual basis. Statistical returns on births, still births and deaths are registered and recorded by offices in the periphery and forwarded to the district offices every month. These offices in turn collate and compile these figures which are sent to the National Headquarters quarterly. Causes of death registration are undertaken for deaths occurring in health centers and homes; a medical certificate of cause of death is issued out by the medical practitioner who managed the ailment in order of primary, secondary, and antecedents causes of a particular death. For those occurring at home, the death statistical/notification report is normally administered to ascertain the cause of death. The reporting status of deaths particularly in the western area appears very much encouraging, while the reporting status at grass-roots level (provinces) needs improvement

The National office compile, analyze and circulate these data for the consumption of Government, NGOs, and the public.

2.3 CURRENT MORTALITY REGISTRATION PROCESS IN SIERRA LEONE

According to the Births and Deaths Registration Act No:11, death registration follows the following process. There are three categories of Death registration:

- Current Death Registration: Death occurring and registered within Fourteen (14) days-this registration is known as original registration.
- Late Death Registration: Death occurring and registered after 14 days but within one year.
- Delayed Death Registration: Death occurring and registered from one year and above.
- There are also two types of death categories:
 - Certified death: Certified Deaths are deaths attended to by a medical practitioner
 - Uncertified death: Uncertified Deaths are deaths unattended to by medical practitioners

Death registration follows the filling of the following forms:

- Medical Certificate of cause of death prepare by medical practitioner
- Statistical /Notification form
- Death Record
- Burial Permit
- Death Certificate

*THIS DOES NOT MEAN THE MODE OF DYING E.G HEART FAILURE, ASTHENIA, ETC. IT MEANS THE DISEASE, INJURY, OR COMPLICATION WHICH CAUSED DEATH.

Republic of Sierra Leone
OFFICE OF CHIEF REGISTRAR OF BIRTHS AND DEATHS
DEATH STATISTICAL/NOTIFICATION REPORT

C.R. Form D.

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REGISTRATION NO.

1. Place of Registration / /
District Chiefdom Town/Village

1. DECEASED		For Statistical Office Only
2. Name and Surname		
Maiden Surname		
3. Time and date of occurrence a.m. p.m. Day Month Year		4. Age
5. Sex <input type="checkbox"/> 1. Male <input type="checkbox"/> 2. Female		6. Place of Occurrence District Chiefdom Town/Village
7. Usual Residence District Chiefdom Town/Village		8. Marital Status <input type="checkbox"/> 1. Married <input type="checkbox"/> 2. Customary Marriage <input type="checkbox"/> 3. Single <input type="checkbox"/> 4. Widow(er) <input type="checkbox"/> 5. Divorced/Separated
9. Tribe/Nationality		10. Education <input type="checkbox"/> 0. Not literate <input type="checkbox"/> 1. Primary <input type="checkbox"/> 2. Secondary <input type="checkbox"/> 3. University <input type="checkbox"/> 4. Literate but no schooling
11. CAUSE OF DEATH		
11. When cause of death is medically certified, (a) Immediate Cause: (b) Antecedent Cause:		
12. If violent death due to <input type="checkbox"/> 1. Accident <input type="checkbox"/> 2. Suicide <input type="checkbox"/> 3. Homicide <input type="checkbox"/> 0. Not violent		13. When cause of death not medically certified, probable cause of death
14. Opinion based on <input type="checkbox"/> 1. Liques/post mortem <input type="checkbox"/> 2. Paramedical Staff <input type="checkbox"/> 3. Registrar		
11. TYPE OF ATTENTION		
15. If death occurred in <input type="checkbox"/> 1. Government Hospital <input type="checkbox"/> 2. Mission Hospital <input type="checkbox"/> 3. Other Health Institution <input type="checkbox"/> 4. Private home <input type="checkbox"/> 5. Other, specify:		
IV. INFORMANT		
16. Name and Surname		17. Full Address
18. Capacity <input type="checkbox"/> 1. Parent <input type="checkbox"/> 2. Husband <input type="checkbox"/> 3. Wife <input type="checkbox"/> 4. Other (Specify)		19. Signature with date
V. NOTIFIER		
20. Name and Surname		21. Full Address
22. Capacity <input type="checkbox"/> 1. TRA <input type="checkbox"/> 2. Midwife <input type="checkbox"/> 3. Village Headman <input type="checkbox"/> 4. Other (specify)		23. Signature with date

14. Date of Registration

Day Month Year

Full Name and signature of Registrar

Republic of Sierra Leone

OFFICE OF CHIEF REGISTRAR OF BIRTHS AND DEATHS
DEATH RECORD

C.R. FORM D1

REGISTRATION No. / / /

1. Place of Registration
Registration Centre / / /
D CH RC

District / Chiefdom / Town/Village

I. DECEASED

1. Names and Surname _____ Maiden Surname _____

2. Time and Date of Occurrence: _____ a.m. _____ p.m. _____ Day _____ Month _____ 20 _____ Year

3. Age (record in hours and mins under 1 day, in days under 1 month, in months under 1 year; otherwise note age in completed years): _____

4. Sex: ☐ Male ☐ Female

5. Place of Occurrence: _____ District _____ Chiefdom _____ Town/Village _____

6. Usual residence: (full address: if less than one year old, give mother's full address) _____

7. Marital status (if age is 15 years or more): ☐ Married ☐ Customary marriage ☐ Single ☐ Widow(er)
☐ Divorce / Separated

8. Tribe / Nationality: _____

II. CAUSE OF DEATH

9. Cause of Death (in case of multiple causes, specify each separately) _____

10. Type of certification: ☐ Medically certified ☐ Postmortem inquest ☐ Paramedical personnel ☐ None

III. INFORMANT / NOTIFIER

11. Names and Surname _____

12. Full address: _____

13. Capacity of informant (Parent, Husband, Wife, Other (specify) _____)
I certify that the particulars given by me above are true to the best of my knowledge and belief.

14. _____
Signature of informant or left thumb print

15. Date of Registration _____ / _____ / 20 _____
Day Month Year

Official Seal

Full Name and Signature of Registrar

C. R. FORM P

Republic of Sierra Leone
OFFICE OF CHIEF REGISTRAR OF BIRTHS AND DEATHS
BURIAL PERMIT

The death of
 male / female, aged which occurred
 on / / 19..... having been
 Day Month Year
 registered by me on / / 19.....
 Day Month Year
 with Registration No.....

OR


a male / female child of the mother
 and the father
 which was still - born
 on / / 19..... with Registration
 Day Month Year
 No.....

I, hereby, give permission for interment / cremation of the body at
 Cemetery
 Place..... Signature.....
 Date..... Name.....

*Official Seal of Registrar
 of Births and Deaths*

Serial No. **Nº 1006992**

Republic of



Sierra Leone

Office of Chief Registrar
Ministry of Health and
Sanitation

Death Certificate No.....

ORIGINAL

This is to certify that....., Male/Female
Name of deceased

died on..... 20..... at..... a.m.
..... p.m. at
Day Month Year Time of Death

..... Nationality.....
Full address of place of death

This event was registered at..... in Registry Volume No.....
Registration Centre

Page No..... No..... of the Register of Deaths of the Republic of Sierra Leone
and the deceased

usual place of residence.....
Full address of place of residence

Witness my hand this..... day of 20.....

Official Seal
S/37/14/120bksx100/9.14

.....
Chief Registrar.

3.0 THE HEALTH INFORMATION MANAGEMENT SYSTEM IN SIERRA LEONE.

The Health Information System (HIS) is the processes and mechanisms through which health related data is produced and made accessible to users. An integrated and properly functioning health information system (HIS) is a prerequisite for sound decision making and planning through provision of timely, reliable and relevant information. Routine health data in Sierra Leone is collected through a network of some 1300 peripheral health units (PHUs) and 22 hospitals that are unevenly distributed throughout the country across 13 health districts coordinated by monitoring and evaluation and disease surveillance officers. As part of the process of strengthening the HIS of the ministry, a district-based electronic data management system, known as the district health information system (DHIS2) has been developed to integrate and improve the quality and efficiency of data storage, transfer, analysis and dissemination. Data is currently being captured in electronic form at district level and

entered into an integrated data warehouse. This has facilitated the production of reports for the District Health Management Team (DHMT), at national level and for feedback to all levels, including PHUs and community level. It is also utilized by stakeholders during review meetings and decision making at all levels.

The HIS has several sub-systems:

- Integrated Disease Surveillance and Response (IDSR)
- Vital Registration (VR) for births and deaths
- Human Resource Information System (HRIS)
- Logistics Management Information System (LMIS)
- Population-Based Information Systems
- Research-generated health information

Data collected are to be stored and analyzed in the District Health Information Software (DHIS2). In- and out-patient data should be collected for cases and deaths, from all government hospitals, capturing data about patients' diagnosis categorized into specific modules and age cohorts. Data should be captured at hospital level and keyed into the computerized database application that aggregates the data at district and national level. Hospital M&E Officers are responsible for data collection of hospital records and to supervise data entry. However, a key shortfall with HIS is that in Practice, the software of HIS (DHIS2) does not currently capture data on death at the hospital level. It only captures mortality data at PHU level.

4.0 TREND IN MORTALITY STATISTICS

Due to the incompleteness and inaccuracy of the civil registration system in Sierra Leone, censuses and surveys have been the main source of collecting data relating to mortality. A huge proportion of the population especially in the provinces does not register births and deaths with the authority even though there are offices of birth and deaths in the provisional head quarter towns. As a result, births and deaths are greatly underreported in Sierra Leone, with illiteracy, traditional practices, remoteness and lack of appropriate administrative structures, being the most significant factors responsible for this high level of underreporting of mortality in Sierra Leone. Hence, over the years, there has been a need to rely on censuses and surveys as the primary source of data used for estimating mortality, which, in itself, also poses significant challenges in determining true mortality levels in Sierra Leone.

A trend in the mortality using the latest Sierra Leone Demographic survey (2013) is presented below:

5.0 CHALLENGES WITH MORTALITY STATISTICS REPORTING

For Both systems of mortality registration, similar challenges exist. Some of the common challenges include:

- Local Government Councils still to own up to their responsibility in ensuring that all deaths are reported and registered since births and death is a devolved function.

- DHMTs to provide space and storage facility for deaths registration.
- Most DMO are still to give death the necessary attention required.
- Most health providers not trained in death registration hence lack the know how to effectively probe and ascertain cause of deaths occurring outside their facilities.
- Cemeteries keepers encourage illicit burial
- Traditional authorities still to accept the importance of death registration.
- Weak enforcement of laws governing compulsory death registration.
- Weak social mobilization on the importance of prompt death registration.
- Death registration records exposed to destruction because of the absence of condition and facility providing for conservation.
- NGOs supporting births and deaths remain birth registration bias.
- Absence of vehicle to supervise and monitor death registration countrywide.
- Logistic and Thin Staff strength to grapple with the registration process countrywide.

5.1 INTEGRATION BETWEEN CIVIL REGISTRATION AND HEALTH INFORMATION MANAGEMENT SYSTEM

Sierra Leone needs to unify the two mortality data statistics systems and improve its civil registration system by training the local chiefdom authorities and central government on how to design, administer and maintain functioning civil registration systems at all levels. The passing into law of the National Civil Registration Act 2016 which provides for the amendment and the consolidation of the laws relating to the compulsory registration of citizens and non-citizens resident in Sierra Leone, to provide for the issuance of identity cards, to provide for the establishment of the National Civil Registration Authority responsible for the registration of births, marriages, nullities, deaths, adoptions and divorces throughout Sierra Leone and is a step in the right direction. However, much more has to be done to ensure that a unified and efficient system of civil registration is enhanced. Some possible recommendations in this light include:

- Since mortality data collected from the civil registration system is mostly paper based while that of the HIS is electronic, the electronic system can be expanded to the civil registration so that one set of data is collected
- Create mandates within the Ministry of Health for health workers and traditional birth attendants to register births and deaths
- Engage community health workers as outreach registrars.
- Include birth registration in public health campaigns
- Establish a monitoring system, led by the Ministry of Health and Civil Registration authority to ensure the continuous operation and modernization of the registration system

6.0 CONCLUSION

Mortality data are collected by several complementary methods. Different countries use different systems to collect, collate and analyze mortality data. Sierra Leone currently uses two un-unified mor-

tality data collection systems. The civil registration system which is the preferred system is mired by gross under reporting of deaths especially in the provinces where challenges ranging from traditional beliefs to poor structural management undermines the system. The Health Management information system on the other hand uses an electronic data base system to record data collected from the PHUs. The system however does not currently use data from the hospitals where majority of the mortality occur. Hence the most reliable data source for mortality in Sierra Leone has been from censuses and surveys.

Government recognizing these challenges is putting in place mechanism to unify the systems and provide support to the civil registration system to ensure that mortality data are correctly and timely collected. The enactment of the civil registration Act 2016 is a process to support this move. However, much more support and processes have to be put in place to achieve this goal.

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Presentation Slides

OVERVIEW OF MORTALITY STATISTICS IN SIERRA LEONE

INTRODUCTION

- The record of mortality statistics in most African countries is the key responsibility of the Civil Registration Department
- Some countries, however have other registration system in place that either run side-by-side with civil registration or dominate the record of mortality statistics.
- Sierra Leone has made significant progress in recording mortality statistics over the past years, but a huge gap still exists in collecting, collating and reporting mortality statistics

INTRODUCTION CONT'D

- Two un-unified mortality data collection system are in place in Sierra Leone
 - Civil Registration System
 - Health Management Information System (HMIS)

CIVIL REGISTRATION LEGISLATIONS IN SIERRA LEONE

- Civil Registration commenced in Sierra Leone during the Colony at about 1791 with the mandate to register births, deaths and marriages for both settlers and immigrants
- In 1901 a law was enacted making the registration of vital events compulsory for the founders of the colony of Freetown and Bonthe Island
- The 1983 Births and deaths Act No.11 harmonized and made the registration of Births, Stillbirths and deaths compulsory

CIVIL REGISTRATION LEGISLATIONS IN SIERRA LEONE CONT'D

- In July 2012, a workshop was held with participants drawn from all works of life to formulate national Births and Deaths policy and to review the existing Act. In July 2016, Members of Parliament unanimously passed in to law the National Civil Registration Act, 2016 that called for the compulsory registration of citizens and non-citizens resident in Sierra Leone
- Parts VIII & XI of this Act highlighted deaths registration which replaces the 1983 Births & Death Act.

CIVIL REGISTRATION PROCESS AND COMPLETENESS STATUS

- The Civil registration process in Sierra Leone is still low. UNICEF sponsored assessment of Birth and Deaths situation in Sierra Leone puts it at 51%.
- The office of the Registrar of Births and Deaths is a unit of the Ministry of Health and Sanitation (MoHS) and is responsible for mortality collection and analysis
- The Local Government system introduced in 2004 is still in a transitional phase as the councils are still to understand their roles for the devolved functions precisely for births and

CIVIL REGISTRATION PROCESS AND COMPLETENESS STATUS CONT'D

- They need proper orientation in order for them to determine how they could play their roles effectively
- Births and Deaths registration in Sierra Leone is highly under resourced. There is inadequate office space at both national and district levels

CURRENT MORTALITY REGISTRATION PROCESS IN SIERRA LEONE

- According to the Births and Deaths Registration Act No:11, death registration follows this process. There are three categories of Death registration:
- Current Death Registration: Death occurring and registered within Fourteen (14) days-this registration is known as original registration.
- Late Death Registration: Death occurring and registered after 14 days but within one year.
- Delayed Death Registration: Death occurring and registered from one year and above.

CURRENT MORTALITY REGISTRATION PROCESS IN SIERRA LEONE CONT'D

There are also two types of death categories:

- ❑ Certified death: Certified Deaths are deaths attended to by a medical practitioner
- ❑ Uncertified death: Uncertified Deaths are deaths unattended to by medical practitioners

CURRENT DEATH REGISTRATION PROCESS IN SIERRA LEONE CONT'D

Death registration follow the filling of the following forms:

- Medical Certificate of cause of death prepare by medical practitioner
- Death Record
- Burial Permit
- Death Certificate
- Statistical /Notification form

SAMPLE FORM: MEDICAL CERTIFICATE

SAMPLE FORM: DEATH RECORD

SAMPLE FORM: BURIAL PERMIT

This form is used to issue a burial permit for the deceased. It includes fields for the deceased's name, age, sex, date of death, and place of death. It also includes a section for the burial location and a signature line for the Registrar.

SAMPLE FORM: DEATH CERTIFICATE

This form is used to issue a death certificate. It includes fields for the deceased's name, age, sex, date of death, and place of death. It also includes a section for the cause of death and a signature line for the Registrar.

SAMPLE FORM: STATISTICAL /NOTIFICATION FORM

This form is used for statistical and notification purposes. It includes fields for the deceased's name, age, sex, date of death, and place of death. It also includes a section for the cause of death and a signature line for the Registrar.

THE HEALTH INFORMATION MANAGEMENT SYSTEM IN SIERRA LEONE

- The Health Information System (HIS) is the processes and mechanisms through which health - related data is produced and made accessible to users
- Routine health data in Sierra Leone is collected through a network of some **1300** peripheral health units (PHUs) and 22 hospitals that are unevenly distributed throughout the country across 13 health districts coordinated by monitoring and evaluation and disease surveillance officers

THE HEALTH INFORMATION MANAGEMENT SYSTEM IN SIERRA LEONE CONT'D

- As part of the process of strengthening the HIS of the ministry, a district-based electronic data management system, known as the district health information system (DHIS2) has been developed to integrate and improve the quality and efficiency of data storage, transfer, analysis and dissemination.
- Amongst the various sub-system that the HIS captures is:
 - ❖ Vital Registration (VR) for births and deaths
 - In - and out - patient data is collected for Cases and Deaths from all government hospitals, capturing data about

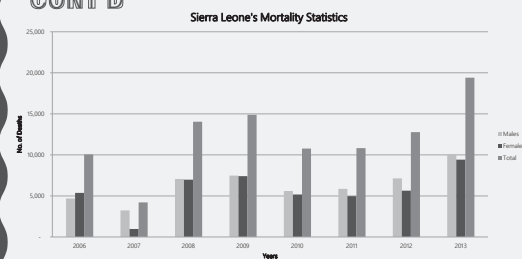
PROBLEMS WITH HIS

- A key shortfall with HMIS is that in Practice, the software of HMIS (DHIS2) does not currently capture data on death at the hospital level. It only captures mortality data at PHU level

TREND IN MORTALITY STATISTICS

- The incompleteness in adequate mortality data from both the civil registration and HMIS has led health statisticians to resort to censuses and surveys as the primary source of the data used for estimating mortality, which, in itself, also poses significant challenges in determining the true mortality levels in Sierra Leone
- A trend in mortality using the latest Sierra Leone Demographic survey is presented below

TREND IN MORTALITY STATISTICS CONT'D



CHALLENGES WITH MORTALITY STATISTICS REPORTING

For Both systems of mortality registration, similar challenges exist. Some of the common challenges include:

- Local Government Councils still to own up to their responsibility in ensuring that all deaths are reported and registered since births and death is a devolved function.
- Most health providers not trained in death registration hence lack the know how to effectively probe and ascertain cause of deaths occurring outside their facilities.
- Traditional authorities still to accept the importance of death registration.

CHALLENGES WITH MORTALITY STATISTICS REPORTING CONT'D

- Weak enforcement of laws governing compulsory death registration.
- Weak social mobilization on the importance of prompt death registration.
- Death registration records exposed to destruction because of the absence of condition and facility providing for conservation.
- NGOs supporting births and deaths remain birth registration bias.
- Logistic and Thin Staff strength to grapple with the registration process countrywide

INTEGRATION BETWEEN CIVIL REGISTRATION AND HEALTH INFORMATION SYSTEM

- Sierra Leone needs to unify the two mortality data statistics systems and improve its civil registration system by training the local chiefdom authorities and central government on how to design, administer and maintain functioning civil registration systems at all levels
- The passing into law of the National Civil Registration Act 2016 which provides for the amendment and the consolidation of the laws relating to the compulsory registration of citizens and non-citizens resident in Sierra Leone is a step in the right direction.


INTEGRATION BETWEEN CIVIL REGISTRATION AND HEALTH INFORMATION SYSTEM CONT'D

- However, much more have to be done to ensure that a unified and efficient system of civil registration is enhanced. Some possible recommendations in this light include:
 - ❑ Since mortality data collected from the civil registration system is mostly paper based whiles that of the HIS is electronic, the electronic system can be expanded to the civil registration so that one set of data is collected
 - ❑ Create mandates within the Ministry of Health for health workers to register deaths
 - ❑ Engage community health workers as outreach registrars.
 - ❑ Establish a monitoring system, led by the Ministry of Health and Civil Registration authority to ensure the continuous operation and modernization of the registration system

THANK YOU FOR
LISTENING
QUESTIONS?

Death Certificate

Serial No. **38324**

Republic of  *Sierra Leone*

Office of Chief Registrar
Ministry of Health

Death Certificate No. _____

ORIGINAL

This is to certify that _____, Male/Female
Name of deceased

died on _____ 20 _____ at _____ a.m.
Day Month Year Time of Death p.m. at

_____ Nationality _____
Full address of place of death

This event was registered at _____ in Registry Vol. No. _____
Registration Centre

Page No. _____ No. _____ of the Register of Deaths of Republic of Sierra Leone and the deceased

usual place of residence _____
Full address of place of residence

Witness my hand this _____ day of _____ 20 _____

Official Seal _____
Chief Registrar

C.R. FORM D1

Republic of Sierra Leone
OFFICE OF CHIEF REGISTRAR OF BIRTHS AND DEATHS
DEATH RECORD

REGISTRATION NO.

1. Place of Registration

D CH RC

Registration Centre _____

District _____ / Chiefdom _____ / Town/Village _____

I DECEASED

2. Names and surname _____ Maiden Surname _____

3. Time and Date of Occurrence: _____ a.m. _____ p.m. _____ Day _____ / _____ Month _____ / 20 _____ Year _____

4. Age (record in hours and mins under 1 day, in days under 1 month, in months under 1 year; otherwise note age in completed years): _____

5. Sex: ☐ Male ☐ Female

6. Place of Occurrence: _____ District _____ / _____ Chiefdom _____ / _____ Town/Village _____

7. Usual residence: (full address; if less than one year old, give mother's full address) _____

8. Marital status (if age is 15 years or more): ☐ Married ☐ Customary marriage ☐ Single ☐ Widow(er)
☐ Divorce/Separated

9. Tribe/Nationality: _____

II CAUSE OF DEATH

10. Cause of Death (in case of multiple causes, specify each separately) _____

11. Type of certification: ☐ Medically certified ☐ Postmortem inquest ☐ Paramedical personnel ☐ None

III INFORMANT

12. Names and Surname _____

13. Full address: _____

14. Capacity of informant (Parent, Husband, Wife, Other (specify) _____)

I certify that the particulars given by me above are true to the best of my knowledge and belief.

15. _____
Signature of Informant or left thumb print

16. Date of Registration: _____ Day _____ / _____ Month _____ / 20 _____ Year _____

Official Seal _____

Full Name and Signature of Registrar _____

<i>Republic of Sierra Leone</i> OFFICE OF CHIEF REGISTRATION OF BIRTHS AND DEATHS Medical Certificate of Cause of Death					FOR USE BY STATISTICAL OFFICE ONLY	
Full Name of deceased		Date of death		Sex Male <input type="checkbox"/> Female <input type="checkbox"/>		
Nationality / Tribe		Age (in years last birthday)		If under 24 hours Hours Minutes		
Usual Residence (for infant born in institution: Residence of mother before admission)		If under 1 year Months Days		Hours Minutes		
CAUSE OF DEATH						
I		Disease of condition directly leading to death*		(A) Due to (or as a consequence of)		Interval between onset and death
				(B) Due to (or as a consequence of)		
				(C)		
II		Other significant conditions contributing to death, but not related to the disease or condition causing it				
Name (Rubber stamp) of institution or name of Medical Doctor with address		Witness my hand this day of / 20		Signature		
		Medical qualifications				

*THIS DOES NOT MEAN THE MODE OF DYING E.G HEART FAILURE, ASTHENIA, ETC.
IT MEANS THE DISEASE, INJURY, OR COMPLICATION WHICH CAUSED DEATH.*

Title of Presentation: Mortality Statistics Handling problems in Kenya
Mortality Statistics: Challenges, The Kenyan Experience

Rogers Amugune Kayugira

KENYA MEDICAL TRAINING CENTER, NAIROBI, KENYA

SENIOR LECTURER

BRIEF INSTITUTIONAL BACKGROUND OF THE KENYA MEDICAL TRAINING COLLEGE

The Kenya medical training college is an institution located in the heart of Nairobi, the capital city and seat of government of Kenya. Founded in 1927, it's an organization which obviously has a long standing history and tradition that spans to about nine decades. It trains middle level (paramedical) personnel who provide well over ninety percent of the health care services in Kenya in different disciplines and capacities. Since its inception, it has expanded to offer more than thirty disciplines in the forty two campuses spread throughout the country. It boasts of a student population of a staggering twenty seven thousand. It graduates approximately six thousand graduates annually. It aspires to expand its capacity to forty seven campuses i.e. a campus in each county (counties are our newfound administrative units) with a student population of over forty thousand.

HISTORY OF CIVIL REGISTRATION IN KENYA

Civil Registration and Vital Statistics (CRVS) in Kenya was developed under the births and deaths registration act enacted in 1928. Throughout the years, registration of births and deaths has evolved and is now managed by the Civil Registration Department (CRD) within the ministry of interior and coordination of national government. These data are imperative for national-level allocation of resources, along with planning and the targeting of health interventions. ([www.cpc.unc.edu/measure/pima/civil registration and vital statistics](http://www.cpc.unc.edu/measure/pima/civil-registration-and-vital-statistics) accessed on 23/05/16)

However, the registration of especially births and deaths seriously began in Kenya in the late sixties initially on a pilot basis in about ten districts then. This was with the assistance of United Nations' agencies and other goodwill donors. It later spread to other districts in the subsequent years. Although this has happened, the registration of births and deaths is yet to become a success story in Kenya.

ABBREVIATIONS

KNBS-Kenya National Bureau of Statistics

NEP-North Eastern Province

ASAL-Arid and Semi-arid Land

NER-Net Enrolment Rate

HIV/AIDS-Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome

KHDS-Kenya Health and Demographic Survey

ABSTRACT

Many aspects of mortality remain unexplored or 'unexplained' for the majority of populations in developing countries. Kenya is no exception. There are several reasons for this, from lack of trained manpower to collecting, analysing and interpreting mortality data to the inadequacies and complexities of methodologies for collecting and analyzing such data. On the whole, the inadequacy of data, whether due to unavailability or unreliability, seems to be the major problem in the developing countries. The traditional sources of mortality data have been civil registration systems and population censuses. The combination of a complete civil registration system and periodic reliable censuses provides much of the information needed for basic mortality studies. However, the problems of incompleteness, delays in aggregating the data and biases introduced by the registrars at the local level in reporting events make the civil registration system of little immediate value in many developing countries. Household sample surveys thus represent, in many countries, the most practicable response to the growing need for data on a variety of subjects. Especially during the past 30 years, several developing countries have resorted to household sample surveys for obtaining information on a number of topics, including fertility, mortality and migration. The Kenya demographic and health survey is one such good example. It has been argued that a household survey is the most flexible data collection method available to national statistical institutions. The methodology of household sample surveys in terms of basic concepts, field procedures and sampling techniques has expanded and improved considerably over the years. Various types of surveys covering a range of subjects and spanning different periods can produce needed data for planning and evaluating development programs. Kenya is halfway either semi arid or arid. Residents in this part of the country are mainly pastoralists. They move from one place to another in search of pasture and water for their livestock. This further complicates and aggravates Kenya's problem of bettering its collection of mortality data. Other than that, these areas are some of the most insecure places in this country. This only makes matters worse for Kenya. It is therefore, evident that Kenya as a nation has a fair share of problems when it comes to collecting, collating, analyzing and disseminating mortality statistics.

Key words: Mortality statistics challenges, mortality data, collection, collating and dissemination

INTRODUCTION

According to the World Health Organization, a country should have registration of births and deaths coverage above 80% for its data to be considered complete and reliable. In Kenya, however, the coverage rate is only 58% for births and 46% for deaths putting it well below international standards.

This low coverage rate hampers population forecasting, which impacts planning for investments in health, geographic coverage and health programs-gaps that contribute to inequalities in access to healthcare and poor health outcomes (www.cpc.unc.edu/measure/pima/civil-registration-and-vital-statistics)

In Kenya, the Department of Civil Registration is mandated to register all deaths. This process hasn't

been effective due to several reasons. It is evidenced by the still very low coverage of the registration at a mere 38%. Some of the reasons that have been cited for this include lack of awareness about the importance of the registration of deaths, lack of information on the requirements when death occurs, low knowledge of registration procedures by registrars of births and deaths and low interest of improving registration systems by the central and even county governments (Kivinda, Justina multi-agent based system for registration of deaths in Kenya, 2012).

According to the Kenya National Bureau of Statistics (2009) early experiences during national housing and population census revealed that there used to be severe under-reporting of deaths. Recent deaths provide information on age patterns of mortality.

THE PERCENTAGE DISTRIBUTION OF DEATHS REPORTED IN HOUSEHOLDS BY AGE

Age	Percentage of deaths in age group
0	31.3
1-4	15.6
5-9	5.3
10-14	3.4
15-19	3.5
20-24	4.8
25-29	5.3
30-34	5.7
35-39	4.9
40-44	4
45-49	3.3
50-54	2.8
55-59	2.2
60-64	2.3
65+	5.7
Total number of deaths	225225

Majority of deaths in the above table are under age 1 and patterns of death by sex remain more or less the same for the other ages.

Other setbacks that maybe of an administrative nature include:-

- a. An outdated Act guiding the registration of births and deaths (it was first enacted in 1928)
- b. The manual processes leading to the loss of records, misplacement and delay in service delivery
- c. Inadequate tools of operation e.g. office space, equipment, vehicles etc....
- d. Severe staff shortage
- e. Inadequate funding
- f. Poor customer redress
- g. Lack of standardized registration and operational procedures
- h. Low staff morale

- i. Inadequate ICT skills
- j. Lack of computerized registration systems
- k. Lack of proper succession management

Kowal, Rao and Mather (2003) contend that in Kenya, lack of training and feedback has been mentioned as the cause of apathy and lack of motivation in staff that hampers the registration of deaths. Coupled with this is the lack of the capacity to analyse data at the local level, with resultant non-utilisation of data at the local levels leading to further inattention to the system.

Other non-administrative issues that have dogged the civil registration of deaths in Kenya are multifaceted. For example, Kenya is largely semi-arid or arid. These areas commonly referred to as either NEP (North Eastern Province) or ASAL (Arid and Semi-arid Land) contribute immensely to the tugging down of Kenya's coverage rate of registration of deaths. Firstly, it is scarcely populated with a population density of 18 persons per square kilometer as compared to the national density of 83 persons per square kilometer. Secondly, inhabitants of these areas are mainly pastoralists who live nomadic lifestyles. They migrate from one place to another in search for pasture and water for their livestock. In Kenya, the ASAL occupy 89% of the country and are home to about 36% of the population, 70% of the national livestock herd and 90% of the wild game that supports the country's tourism industry. 1.2 The ASALs have the lowest development indicators and the highest incidence of poverty in the country (Ministry of Devolution and Planning, Policy Paper, 2015)

SOME OF KENYA'S POPULATION INDICATORS

Urban population (% of total)	25.6 %
Population density	80.9 people per sq. km of land area
Population growth	2.6 %
Birth rate	34.6 per 1,000 people
Death rate	8.3 per 1,000 people
Fertility rate	4.3 births per woman
Population ages 0-14 (% of total)	41.9 %
Population ages 15-64 (% of total)	55.3 %
Population ages 65 and above (% of total)	2.8 %
Population, female (% of total)	50 %
Employment to population ratio	61.2 %

Source: Kenya National Bureau of Statistics 2009

Demographic and socio-economic changes have produced important consequences for the ASAL population and environment (Hecklav, 1978.) The ASAL population has always been subject to periodic fluctuations in rainfall, with the constant threat of livestock losses, crop failures, and food shortages. Traditional responses to seasonal and periodic droughts included temporary migration of both humans and livestock, relying on local wild game and vegetation and exchanges with other areas of stock and labour for food. Within recent decades wage labour, non-farm commercial activities, the establishment of commercial livestock and agricultural markets, and improvement in roads and trans-

port, allowing for the easier importing of goods, have reduced in some areas the leveling effect of droughts. People can now purchase food in stores. Moreover, the growth of commercial livestock and agricultural markets have created incentives for intensifying production, increasing herd sizes, and expanding farm operations (O'Leary 1980).

EDUCATION

A significant proportion of the population aged 6-17 in ASALs has never been to school. An estimated 1.9 million aged 6-13 years and 2.7 million aged 13- 17 years are out of school. Forty six percent (46%) of these are concentrated in nine ASAL counties. The gross primary school enrolment rate in most ASAL Counties is below 50% against a national average of 119.6% while the average net enrolment rate is 40% against a national average of 95.9%¹³. This is a significant increase of about 90% on the 2003 Net Enrolment Rate (NER), suggesting a growing demand for education. However, it also [Revised 7th July 2015] Page 17 conceals significant differentials within the region. At secondary level, the NER in arid areas in 2013 was 9% on average, against a national average of 39.5%¹³. For a significant number of children in the ASALs, long distances to school remain a challenge particularly in the rural areas (Ministry of Devolution and Planning, Policy Paper, 2015). Another report by the Central Bureau of Statistics indicates that NEP and ASAL areas had the highest population of 78% of ages 18-24 who had never attended school. The area equally experienced highest school drop-out rates of ages 10-14 years at 18%.

The population enrolled in school increased by about 59.7 percent between 1999 and 2009. The share of female enrolment increased from 47.7 percent in 1989 to 48.3 percent in 2009 compared to 52.3 percent and 51.7 percent for males. This is a clear indication that the primary education system in Kenya has become more inefficient – with more overage children still attending primary school education. The overall NER was 78.7 percent with male at 77.8 percent and female at 79.7 percent compared with 70.1 percent in the 1999 Census with male at 69.6 percent and female at 70.5 percent. This increase indicates that the proportion of children enrolled in primary school level belonging to the relevant age group (6-13) has improved. Girls seem to be doing better than boys as recorded in the previous census. All the provinces except North Eastern reported an average NER of over 70.0 percent for both sexes. Nairobi recorded the highest NER of 89.3 percent, while North Eastern reported the lowest at 39.1 percent. (Population and Housing census of Kenya 2009)

PRE-PRIMARY EDUCATION NET ENROLMENT RATE BY RESIDENCE AND PROVINCE

Kenya	3592120	42.6
Rural	2895461	38
Urban	696658	55.1
Province		
Nairobi	218077	59.5
Central	333073	54.5
Coast	313837	44.5
Eastern	502649	34.6
North Eastern	226658	6.3
Nyanza	553889	53
Rift Valley	992206	43.3
Western	451731	37.2

Source: Kenya National Bureau of Statistics 2009

METHODOLOGY

The methodology applied was mixed methods of study. They included desk review of existing literature on the registration of births and deaths, a quantitative study of demographic and statistical data concerning death registration and development in Kenya and last but not least, the author's general experience of work in the area of health information management in various regions in the country.

OBJECTIVES

1. To examine the extent to which mortality statistics are collected, collated, analysed, utilised and disseminated.
2. To assess the challenges encountered in the process of compiling mortality statistics

LITERATURE REVIEW

Registration of persons for occurrence of a vital event is generally referred to as civil registration (KNBS, 2010). According to the UN, a vital event is the occurrence of a live birth, death, foetal death (defined as the death of a foetus before birth or extraction from its mother, irrespective of the duration of pregnancy), marriage, divorce, adoption, legitimation, recognition of parenthood, annulment of marriage, or legal separation (UN, 2001). "Vital registration" is sometimes used interchangeably with "civil registration". According to United Nations Department of Economic and Social Affairs, civil registration is the continuous permanent, compulsory recording of the occurrence and characteristics of vital events and as provided through decree of regulation in accordance with the legal requirement in each country (UN, 1998). It covers all vital events occurring in each geographical area and all population groups. Not all countries register the above events. In Kenya, only live births and death events are registered, albeit with serious under coverage. Many people in Asia and Africa are born and die without being recorded in any legal document. This contravenes UN proclaimed right to a recorded name and nationality. Each year, nearly 50 million newborn children are not registered, (United Nations Children's

Fund, 2005). Barely a third of countries outside North America and Europe have the capacity to obtain usable mortality statistics, and half the countries in Africa and Southeast Asia record no cause of death data at all (Mathers C, *et al* ,2005). The root cause of this is stagnation in maintenance of civil records in the last three decades largely due to:

- i. Lack of prioritization of civil registration systems by governments. As a result, governments have not set aside adequate budgets to improve vital statistics systems. The data collected lacks completeness especially cause-of-death.
- ii. Development partners failure to recognise civil registration systems as key components of development infrastructure. It is therefore difficult to assess the impact of aid funding on poverty and mortality.
- iii. Lack of international mandate to strengthen civil registration systems. Instead international mandate has focused on the vital statistics instead of the civil registration system that generates the vital statistics. The body mandated with vital statistics, the y Statistical Commission, has no authority and resources to enforce improvement of civil registration systems. It assists countries to improve civil registration systems by periodically publishing principles and recommendations through its Statistics Division. Apart from civil registration, complementary sources of statistics, although not recommended, are allowed as alternative source of data particularly to capture mortality and cause of death. The three principal alternatives are population censuses, household sample surveys and sample registration. These alternatives have inherent limitations which emanate from assumptions and approximations of the demographic relationships between various characteristics of the population (UN, 2001). Civil registration data is the main source of vital statistics. In order to generate useful and sensible statistics, the deaths records have to be complete, accurate and captured in a timely manner. The United Nations has developed an assessment framework for vital statistics generated from civil registration system to guide countries on recommended parameters of a good registration system. The cause of death should be recorded to assist countries know the causes of death. For relevance, age of persons at the time of death is necessary for tabulations of 5 year age intervals. The data should also be accessible in a variety of data formats. In addition there should be quality metadata.

PURPOSE OF REGISTRATION OF DEATHS

The purpose of registration of death is primarily the legal value of the documents obtained from the process. In Kenya, the act of registering a death provides an individual with a medical certificate ascertaining the cause of death especially in matters of inquest. A burial permit is the only legal document that permits burial, cremation or any other form of disposal. It is illegal to dispose a body without a permit, the penalty being a fine of KES 500.00 or six months imprisonment or both (Births and Deaths Registration Act-Cap 149, Revised2010).

BENEFITS OF REGISTRATION OF DEATHS

Benefits to individuals

Civil registration provides relevant documents relating to a vital event. In case of a birth event, a birth registration generates a birth certificate. Registration of a death event is the basis for a death certificate. These two documents act as legal proof of birth and death respectively. A death certificate can be used as proof of legal relationship to a deceased parent thereby giving the children the right of administration of property. Additionally, a birth certificate of a child and the parent's death certificate can be used to secure sponsorship for the orphaned children by NGOs. For example, a combination of a birth- and a parent's death certificate enables orphaned children in Uganda to be registered for sponsorships by NGOs and FBOs (Plan International, 2008) and in addition by local private companies who can provide orphaned children with university loans: "It is important for us that our orphans are part of scholarships...It helps us to look after them better" -Focus Group Discussion with Early Childhood Care Development caregivers, Uganda, August 2008. A death certificate is useful to individuals who need to claim pensions of their deceased spouses. It also grants surviving spouses right to re-marry.

Benefits to the government and Society

Data on deaths are needed to assess the impact of policies at national and local level. The completeness of death data is needed to set priorities so as to formulate policies and monitor their impact. It is also useful in determining population changes. In Kenya, the Central Bureau of Statistics department carries out population census once in 10 years. Between the censuses, projections are done based on number of deaths and births. This is supplemented by surveys in selected areas for verification purposes. A good civil registration system will benefit the department by minimizing on the number of costly surveys as the statistics on deaths will be updated all the time and will be comprehensive. In South Africa, many adult deaths occurred in the early 1990s as a result of HIV/AIDs epidemic, but due to poor quality data on deaths, the government could not determine the cause of the massive deaths. Supplementary registration methods at local level helped to bring out the main cause of death which was identified to be as a result of HIV/AIDs infection. As a result the civil registration system has improved and cause of death is identifiable. The government recently increased the budget on HIV/AIDs as a result of availability of quality data that could classify deaths related to HIV/AIDs.

Benefits to the international community

International aid to fight specific diseases can only measure the impact of their efforts by getting complete and timely data on cause of death. Some of the millennium development goals (MDGs), specifically eradication of extreme poverty and hunger, achievement of universal primary education, attaining gender equality, reductions in child mortality, improvements in maternal health, and reductions in prevalence of HIV/AIDs, malaria, and other diseases can only measure their impact by having reliable source of statistical data. The only long term and consistent system to provide this data seems is civil registration system.

Benefits to the democratic process

One of the major weaknesses of the electoral process in Kenya is non-removal of deceased persons from the register of electors thus giving false statistics on the number of eligible voters. In the 2007 general elections, the voters register had a total of 14,296,180 voters. Out of this, number, an estimated 1.7million voters had died since 1997, the year when the voters roll was initiated. ECK had only managed to delete 513,000 deceased persons. Therefore over 1.2 million dead people were still in the register. This was a major credibility loss for the then Electoral Commission of Kenya as the deceased records were used to manipulate the voter turnout. It also led to inflated voter numbers and subsequently high costs due to overestimation of materials for conducting the election (Kregler Commission, 2008) such as ballot papers. The non- availability of accurate data on deceased voters hinders the process of cleaning up the voters' roll in a very significant way. It leads to removal of the wrong persons because in some instances, the name of the relative who reported the death to the assistant chief has been registered instead of that of the dead person. The death records also have insufficient information to facilitate successful removal of the deceased persons from the voters' roll. The deceased persons records that are not successfully removed from the voters register are a risk to the credibility of the voters register. In 2007, many fraudulent activities were committed using the records of the deceased voters. Foremost, they contributed to high cost of the election process as the amounts of resources mobilized were based on the number of voters. For example, number of ballot papers produced was based on the number of voters. Secondly, the number of electoral officials hired depended on the number of voting precincts. The number of precincts is calculated by groups of 1,000 voters. Lastly, it was reported that some election officials colluded with some politicians to inflate the voter turnout due to the fact that there were many records of persons who had not voted, including the deceased persons.

Benefits to financial institutions and insurance industry

Financial institutions hardly learn of deaths except by coincidence, nonpayment of loans, claims by dependants or matured unclaimed policies. Even when a report of death of a client gets to them, they want to be sure that it not a false claim. To ascertain the accuracy of the death reports, they have to cross check with assistant chiefs with involvement of their legal personnel for authenticity of the information. This is because the records at the headquarters are not updated quickly enough to give a one stop information source.

The process of registration of deaths in Kenya

The process of registration of deaths in Kenya is community based. Communities have the responsibility of notifying the provincial administration of deaths occurring at home. Upon notification, registration forms are completed by the assistant chiefs for onward transmission to the district registrar. The completed forms are the ones used to prepare burial permits by the district registrar. The provincial administration acts as registration assistants on behalf of the department of civil registration. Where deaths occur at the hospitals, the medical officers act as registration assistants and are responsible

for completion of specific death registration forms and submitting them to the district registrar. The completed forms are submitted to the district registrar once per month or as may be directed in case of areas with high mortality rate like national hospitals. Upon receiving the registration forms from hospitals and assistant chiefs, the district registrar verifies them and serializes them alphabetically for compilation of a deaths register for the district. A copy of the deaths register is subsequently transmitted to the headquarters for storage. The Death certificates are prepared from these registers and referenced with the serial number assigned on the register. Under certain circumstances, a registration of a death event may not occur immediately. This is referred to as a late registration. According to The Births and Deaths Registration Act-Cap.149, late death means the “death of a person which has occurred in Kenya since 23rd January, 1906, the particulars whereof have not been registered in the register of deaths within six months of the date of such death” .In such cases the registrar has to obtain written authority from the Principal Registrar and the person reporting must pay the prescribed fees to process the registration. The organizational structure of the Department of Civil Registration in Kenya is shown below (figure 1). At the lowest level, individuals report occurrence of a birth or death to the civil authorities and in turn receive legal documents (burial permits, birth notification). Police, health practitioners and local leaders also report events to the district registrar. The District Registrar's function is to authenticate and summarise data for onward transmission to higher authorities. The compiled and summarised data is maintained at the head office central registry.

RESULTS

There are a number of potentially adverse developments that have coincided with the upturn in childhood mortality. After several decades of growth, per capita income stagnated in the 1980s. Impressive gains in levels of education were not sustained, and improvements in public health measures, particularly immunisation levels, also leveled out or were reversed. Then the late 1980s and early 1990s saw the emergence of HIV/AIDS as a major public health factor.

Estimates of Childhood Mortality by Trussell's Method

Age (x)	Probability of Dying by Age x North					South					West				
	1962	1969	1979	1989	1999	1962	1969	1979	1989	1999	1962	1969	1979	1989	1999
1	0.137	0.129	0.120	0.113	0.112	0.132	0.132	0.117	0.110	0.108	0.142	0.132	0.123	0.116	0.116
2	0.160	0.143	0.122	0.103	0.104	0.167	0.167	0.128	0.108	0.109	0.169	0.150	0.129	0.108	0.110
3	0.188	0.162	0.132	0.102	0.096	0.202	0.202	0.141	0.109	0.103	0.199	0.171	0.139	0.107	0.102
5	0.229	0.196	0.161	0.124	0.116	0.238	0.238	0.167	0.128	0.120	0.235	0.201	0.165	0.126	0.119
10	0.276	0.239	0.191	0.145	0.132	0.276	0.276	0.190	0.144	0.132	0.272	0.234	0.187	0.142	0.130
15	0.313	0.269	0.222	0.170	0.155	0.310	0.310	0.219	0.168	0.153	0.307	0.264	0.218	0.167	0.152
25	0.338	0.305	0.254	0.189	0.185	0.336	0.336	0.252	0.187	0.184	0.335	0.302	0.252	0.187	0.184

Source: KNBS, 1999

Estimates of dying by age x show a consistent decline from 1962 through 1989. However, between

the 1989 and 1999 censuses, the rate of decline slowed drastically to the extent that there was a slight increase in child mortality for the younger women.

Differences in childhood mortality among geographic regions of a country are a very important factor for regional planning. Data from both the 1989 census and 1998 KDHS show the existence of enormous differentials in childhood mortality by province of mother's residence. The 1989 census data reveal that the chance of dying before age 5 was about four times (six times in the KDHS) higher in Nyanza province than in Central province.

Far less is known about levels and trends in adult mortality in the Africa region than about childhood mortality. One reason for the shortage of data on adult mortality is that measuring it is more difficult than measuring childhood mortality. While census data indicate a decline in adult mortality between 1969 and 1989 (a drop of about 5% in the 1970s and 18% in the 1980s), the 1998 KDHS documented a rise in adult mortality attributed to the HIV/AIDS epidemic.

Mortality Trends by Various Data Sources

Mortality Indicator	1962 Census	1969 Census	1979 Census	1989 Census	1989 KDHS	1993 KDHS	1998 KDHS
IMR	.	119	88	66	63	62	71
U5MR	219	190	157	125	-	93	105
Male e_0	-	46.9	52.0	57.5	-	-	-
Female e_0	-	51.2	55.1	61.4	-	-	-

- = Data unavailable Source: KNBS 2009

OVERALL MORTALITY

Kenya does not have complete vital registration data that can be used to assess the estimates of mortality, the only available external source to verify the quality of data comes from the demographic and health surveys. However, comparison of central age specific death rates between projected deaths rates based on the matched mortality derived from the 2008/09 KDHS and reported deaths in the last 12 months prior to the Census (non adjusted and adjusted for age not stated). The patterns are similar, with early childhood death rates quite close while there are indications of under-reporting at older ages.

The NEP (North Eastern Province) which scores poorly on all the fronts of education, health, and general socio-economic standing also does badly on the notification and registration of deaths. Refer to the table below:-

PERCENTAGE DISTRIBUTION OF REGISTERED DEATHS BY PROVINCE

	Number of deaths registered 1 year prior the census	% of deaths registered
Kenya	263564	72
Nairobi	18108	82
Central	25621	95
Coast	17907	72
Eastern	34183	84
North Eastern	17915	22
Nyanza	53620	72
Rift Valley	67032	62
Western	29178	87

Source: KNBS 2009

Only about 4 provinces are way above the required rate of 80% of the registration of deaths. However, the North Eastern Province is far way below the rest of the provinces therefore, pulling down the national average coverage rate tremendously.

DISCUSSION

The fact that Kenya is well over the 80% mortality coverage rate recommended by the World Health Organization, arid and semi arid regions pose a myriad of challenges to the national and county governments in raising this figure due to the following reasons:-

These regions are majorly scantily populated. As observed earlier, the population density is a paltry 18 person per square kilometer as opposed to the national one of 69 persons per square kilometer. This makes it extremely difficult for the national and county governments to effectively offer the services of civil registration of vital statistics.

POPULATION BY PROVINCE

Province	Population	Area in KM ²	Density (persons per KM ²)
Nairobi	3138369	695	4516
Central	4383742	11499	381
Coast	3325307	79686	42
Eastern	5668123	140698	40
North Eastern	2310757	127358	18
Nyanza	5442711	12477	436
Rift Valley	10006805	182505	55
Western	4334282	7400	586
Total	38610096	562318	69

Source: KNBS 2009

NOMADISM

Owing to the fact that the inhabitants of these areas are mainly pastoralists leaving on huge tracts of land (127358 Km²) which are virtually arid or semi-arid, they've adopted a nomadic lifestyle. It necessitates them to move around with their livestock in search of water and pasture. Some of these areas go without rain for even ten years. Coupled with the fact that these areas are poorly covered by communication and road networks, the vastness notwithstanding, notifying deaths or even births to the relevant authorities becomes a tall order for this population.

GEOGRAPHY AND RELIEF

The geography and relief in NEP and ASAL are extremely harsh and hostile (high temperatures and protracted droughts). This is another natural phenomenon that hinders the effective provision of civil registration and vital statistics services in the said areas. Sweltering heat of temperatures raising to 40^o C and above, the undulating hot sandy terrain makes it practically impossible for either the informants or even the government officials to access the services and the population respectively.

INSECURITY

Civil strife and instability in Kenya's neighbouring states such as South Sudan and Somalia has brought the country and especially the NEP and ASAL areas a lot of insecurity. This is due to the influx of nearly 600 thousand refugees into the Kakuma and Dadaab refugee camps, who along with them came illegal arms and criminal elements notably the Alshabab Militia and others. Both these areas are located in NEP. This has not only overstretched the provision of any social services but also brought about insecurity and heightened criminal and even terrorist activities into the country. As a result, government officials who do not originally hail from these areas have now resorted to declining to work there for the fear of their own safety. This has further complicated the government's effort to improve the registration of deaths due to the acute staff shortages.

ILLITERACY

As noted earlier, low literacy levels have also taken their toll on the notification and subsequent registration of deaths in NEP and ASAL. Low enrolment in pre-primary, primary, secondary and other levels of education in general in these areas has brought about high levels of illiteracy. The population therefore, either does not understand or see the importance at all in the notification and registration of deaths

RELIGION

Well over 90% of the population in NEP belongs to the Islam faith. As their tradition, they bury their dead almost immediately following such deaths. With the other factors notwithstanding, such as the lack of road and communication networks, vastness of the area and ignorance by the population on how to go about notifying and registering a death, such deaths are not registered.

SCARCITY OF TRAINED MANPOWER

The Kenya Medical Training College graduates approximately 1000 health information managers annually. This is the cadre of medical personnel that are deployed to register deaths as part of their routine work. However, the government placed a freeze on employment ten years ago. This has continued to cause an acute shortage of qualified personnel to effectively register deaths countrywide.

CONCLUSION

Registration of deaths as a vital event is not effective in Kenya. The master register of dead persons is not up to date and retrieval of the records is tedious. Many deaths go unreported despite there being governing regulations and procedures for notification and registration of deaths occurring in the country and of Kenyan citizens living in other countries. This is attributed to poor methods and procedures employed in carrying out this process. The problem is compounded by lack of an effective computerized system for managing the registration process. Registration of deaths is a mandatory legal requirement in Kenya and in many countries worldwide. Besides registering to fulfill the legal requirement, a death record has numerous benefits to individuals, society, businesses and international organizations particularly WHO. Additionally, civil registration is one of UN recognized human rights (Kivinda, 2012)

RECOMMENDATIONS

Using baseline assessments and county forums, MEval-PIMA identified three intervention areas for CRVS strengthening: coverage, quality and data use. The areas of focus to respond to the identified need include:

- Providing assistance to the department and county staff by building their capacity in data collection, data processing and analysis, and additional M&E activities (strategic planning, monitoring and evaluation, and development and implementation of data use plans);
- Working with the Ministry of Health to improve cause-of-death data capture and lay the foundation for reliable mortality statistics for the country; and
- Support for a digital registration system security assessment, along with improvements to support functionality and deployment of the system to county level, including training, connectivity, and performance monitoring.

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Presentation Slides

**TOPIC: MORTALITY STATISTICS: CHALLENGES
THE KENYAN EXPERIENCE**

**PRESENTED TO: THE 18TH IFHIMA
CONGRESS HELD IN JAPAN, TOKYO
FROM THE 12TH TO 14TH OCTOBER 2016**

PRESENTED BY: ROGERS AMUGUNE

KAYUGIRA

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BRIEF INSTITUTIONAL BACKGROUND OF THE KENYA MEDICAL TRAINING COLLEGE

The Kenya medical training college is an institution located in the heart of Nairobi, the capital city and seat of government of Kenya. Founded in 1927, it's an organization which obviously has a long standing history and tradition that spans to about nine decades. It trains middle level (paramedical) personnel who provide well over ninety percent of the health care services in Kenya in different disciplines and capacities. Since its inception, it has expanded to offer more than thirty disciplines in the forty two campuses spread throughout the country. It boasts of a student population of a staggering twenty seven thousand. It graduates approximately six thousand graduates annually. It aspires to expand its capacity to forty seven campuses i.e. a campus in each county (counties are our newfound administrative units) with a student population of over forty thousand.

HISTORY OF CIVIL REGISTRATION IN KENYA

Civil Registration and Vital Statistics (CRVS) in Kenya was developed under the births and deaths registration act enacted in 1928. Throughout the years, registration of births and deaths has evolved and is now managed by the Civil Registration Department (CRD) within the ministry of interior and coordination of national government. These data are imperative for national-level allocation of resources, along with planning and the targeting of health interventions.

ABSTRACT

Many aspects of mortality remain unexplored or unexplained for the majority of populations in developing countries. Kenya is no exception. There are several reasons for this, from lack of trained manpower to collecting, analysing and interpreting mortality data to the inadequacies and complexities of methodologies for collecting and analyzing such data. On the whole, the inadequacy of data, whether due to unavailability or unreliability, seems to be the major problem in the developing countries. The traditional sources of mortality data have been civil registration systems and population censuses. The combination of a complete civil registration system and periodic reliable censuses provides much of the information needed for basic mortality studies. However, the problems of incompleteness, delays in aggregating the data and biases introduced by the registrars at the local level in reporting events make the civil registration system of little immediate value in many developing countries.

INTRODUCTION

According to the World Health Organization, a country should have registration of births and deaths coverage above 80% for its data to be considered complete and reliable. In Kenya, however, the coverage rate is only 58% for births and 46% for deaths putting it well below international standards.

This low coverage rate hampers population forecasting, which impacts planning for investments in health, geographic coverage and health programs-gaps that contribute to inequalities in access to healthcare and poor health outcomes (registration and vital statistics)

In Kenya, the Department of Civil Registration is mandated to register all deaths. This process hasn't been effective due to several reasons. It is evidenced by the still very low coverage of the registration at a mere 38%. Some of the reasons that have been cited for this include lack of awareness about the importance of the registration of deaths, lack of information on the requirements when death occurs, low knowledge of registration procedures by registrars of births and deaths and low interest of improving registration systems by the central and even county governments (Kivinda, Justina multi-agent based system for registration of deaths in Kenya, 2012).

METHODOLOGY

The methodology applied was mixed methods of study. They included desk review of existing literature on the registration of births and deaths in Kenya, a quantitative study of demographic and statistical data concerning death registration and development in Kenya and last but not least, the author's general experience of work in the area of health information management in various regions in the country.

OBJECTIVES

1. To examine the extent to which mortality statistics are collected, collated, analyzed, used and disseminated.
2. To assess the challenges encountered in the process of compiling mortality statistics

BENEFITS OF REGISTERING DEATHS

1. **Benefits to individuals**
Civil registration provides relevant documents relating to a vital event e.g. a death certificate
2. **Benefits to the government and Society**
Data on deaths are needed to assess the impact of policies at national and local level

BENEFITS OF REGISTERING DEATHS

3. **Benefits to the international community**
International aid to fight specific diseases can only measure the impact of their efforts by getting complete and timely data on cause of death.
4. **Benefits to the democratic process**
The non-availability of accurate data on deceased voters hinders the process of cleaning up the voters' roll

BENEFITS OF REGISTERING DEATHS

5. **Benefits to financial institutions and insurance industry**
Financial institutions hardly learn of deaths except by coincidence, nonpayment of loans, claims by dependants or matured unclaimed policies

RESULTS

1. Adverse developments to mortality data due to the upturn in childhood mortality (refer to table with estimates of childhood mortality by Trussell's method in article)
2. Difficulty in measuring adult mortality (refer to table on mortality trends by various sources in article)

RESULTS

Estimates of Childhood Mortality by Trussell's Method

Age (x)	Probability of Dying by Age x North				South		West				
	1962	1969	1979	1989	1962	1969	1962	1969	1969	1979	1989
1	0.137	0.129	0.120	0.113	0.112	0.132	0.132	0.132	0.132	0.117	0.110
		0.108	0.142	0.132	0.123	0.116	0.116	0.116			
2	0.160	0.143	0.122	0.103	0.104	0.167	0.167	0.167	0.128	0.108	
		0.109	0.169	0.150	0.129	0.108	0.110	0.110			
3	0.188	0.162	0.132	0.102	0.096	0.202	0.202	0.202	0.141	0.109	
		0.163	0.199	0.171	0.139	0.107	0.102	0.102			
5	0.229	0.196	0.161	0.124	0.116	0.238	0.238	0.238	0.167	0.128	
		0.120	0.235	0.201	0.165	0.126	0.119	0.119			
10	0.276	0.239	0.191	0.145	0.132	0.276	0.276	0.276	0.190	0.144	
		0.132	0.272	0.234	0.187	0.142	0.130	0.130			
15	0.313	0.269	0.222	0.170	0.155	0.310	0.310	0.310	0.219	0.168	
		0.153	0.307	0.264	0.218	0.167	0.152	0.152			
25	0.338	0.305	0.254	0.189	0.185	0.336	0.336	0.336	0.252	0.187	
		0.184	0.335	0.302	0.252	0.187	0.184	0.184			

Source: KNBS, 1999

Estimates of dying by age x show a consistent decline from 1962 through 1989. However, between the 1989 and 1999 censuses, the rate of decline slowed drastically to the extent that there was a slight increase in child mortality for the younger women.

RESULTS

3. Kenya doesn't have complete vital registration data that can be used to assess the estimates of mortality, since the only available external source to verify the quality of data comes from the demographic and health surveys.

Results

Mortality Trends by Various Data Sources

Mortality Indicator	1962 Census	1969 Census	1979 Census	1989 Census	1989 KDHS	1993 KDHS	1998 KDHS
IMR	119	88	66	63	62	71	
U5MR	219	190	157	125	-	93	105
Male eo	-	46.9	52.0	57.5	-	-	-
Female eo	-	-	51.2	55.1	61.4	-	-

- = Data unavailable Source: KNBS 2009

RESULTS

4. The NEP (North Eastern Province) a region that covers a quarter of Kenya's land mass, scores poorly on all the fronts of education, health, and general socio-economic standing also performs badly on the notification and registration of deaths.

Results

PERCENTAGE DISTRIBUTION OF REGISTERED DEATHS BY PROVINCE

	Number of deaths registered	1 year prior the census	% of deaths registered
Kenya	263564	72	
Nairobi	18108	82	
Central	25621	95	
Coast	17907	72	
Eastern	34183	84	
North Eastern	17915	22	
Nyanza	53620	72	
Rift Valley	67032	62	
Western	29178	87	

Source: KNBS 2009

Results

POPULATION BY PROVINCE

Province	Population	Area in KM2	Density (persons per KM2)
Nairobi	3138369	695	4516
Central	4383742	11499	381
Coast	3325307	79686	42
Eastern	5668123	140698	40
North Eastern	2310757	127358	18
Nyanza	5442711	12477	436
Rift Valley	10006805	182505	55
Western	4334282	7400	586
Total	38610096	562318	69

Source: KNBS 2009

Discussion

The fact that Kenya is way below the 80% mortality coverage rate recommended by the World Health Organization at 38%, arid and semi arid regions pose a myriad of challenges to the national and county governments in raising this figure to required level e.g. nomadism (pastoralism), geography, security, education, religion and scarcity of trained manpower.

Conclusion

1. Registration of deaths as a vital event is generally not efficient in Kenya.
2. The master register of dead persons is not up to date and retrieval of the records is tedious.
3. Many deaths go unreported despite there being governing regulations and procedures for notification and registration of deaths occurring in the country and of Kenyan citizens living in other countries.

Recommendations

1. Providing assistance to the department and county staff by building their capacity in data collection, data processing and analysis, and additional M&E activities (strategic planning, monitoring and evaluation, and development and implementation of data use plans);

Recommendations

3. Working with the Ministry of Health to improve cause-of-death data capture and lay the foundation for reliable mortality statistics for the country; and
4. Support for a digital registration system security assessment, along with improvements to support functionality and deployment of the system to county level, including training, connectivity, and performance monitoring.

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Death Certificate

REPUBLIC OF KENYA							
CERTIFICATE OF DEATH						Nº 513801	
Death in the		District in the				Province	
Entry No.	/.....		Name and Surname of Deceased				
Sex		Age		Occupation			
Date of Death			Place of Death		Residence		
Cause of Death							
Name and Description of Informant				Name of Registering Officer		Date of Registration	
<p>I, District/Assistant Registrar for District, hereby certify that this certificate is compiled from an entry/return in the Register of Deaths in the District.</p> <p style="text-align: right;">..... District/Assistant Registrar</p> <p>Given under the Seal of the Director of Civil Registration on the day of, 20.....</p> <p>This certificate is issued in pursuance of the Births and Deaths Registration Act (Cap. 149) which provides that a certified copy of any entry in any register or return purporting to be sealed or stamped with the Seal of the Director of Civil Registration shall be received as evidence of the dates and facts therein contained without any or other proof of such entry.</p> <p>GFA (SP) 7103—Rev. Edn.—8/2014</p>							

Mortality Profile

ICD 10-Based Reporting Targeting Every Death to Count

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The capacity and accuracy of ICD 10-based mortality and morbidity reporting of the concerned personnel of public hospitals are steadily increasing. It is now mandatory for the public hospitals to use ICD 10 for presenting mortality and morbidity data in the Local Health Bulletins (online health bulletins uploaded by all health organizations of Bangladesh). To analyze mortality profile for 2013, data were extracted from the Local Health Bulletins of upazila health complexes, district hospitals, medical college hospitals, and postgraduate institute hospitals. From these hospitals a total of 120,392 deaths were reported in 2013. The largest proportion of those deaths was reported from medical college hospitals (39.25%); upazila health complexes closely followed them

by reporting 38.81% of the deaths. District-level hospitals and the postgraduate institute hospitals contributed respectively 18.19% and 3.75% of the total hospital death toll.

Table 8.1 shows the type of hospitals where from mortality data for 2013 were collected.

Causes of deaths in all hospitals

Distribution of causes of deaths among chapters of ICD 10 reference book

We analyzed the causes of death separately for each type of the hospitals mentioned above. To get an overall mortality profile of the country, we performed another analysis combining the data

Table 8.1. Reported deaths from different types of hospitals

Type of hospital	Total hospitals	Data received from hospitals		Reported deaths	
	No.	No.	%	No.	%
Upazila health complex	424	381	89.86	46724	38.81
District, general and other 200-250 bed hospital	63	58	92.06	21895	18.19
Medical college hospital	14	12	85.71	47258	39.25
National Institute of Cardiovascular Diseases (NICVD)	1	1	100.0	3117	2.59
National Institute of Kidney Diseases & Urology (NIKDU)	1	1	100.0	176	0.15
National Institute of Cancer Research & Hospital (NICRH)	1	1	100.0	110	0.09
National Institute of Traumatology and Rehabilitation(NITOR)	1	1	100.0	174	0.14
National Institute of Chest Disease and Hospital (NIDCH)	1	1	100.0	938	0.78
Total	506	456	89.24	120392	100.00

Table 8.2. Distribution of the top causes of death among ICD 10 chapters in 451 public hospitals (total death due to top causes: 48,818) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	3157	6.47
II	Neoplasms	178	0.36
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	302	0.62
IV	Endocrine, nutritional and metabolic diseases	445	0.91
V	Mental and behavioral disorders	11	0.02
VI	Disease of the nervous system	1897	3.89
VII	Diseases of the eye and adnexa	2	0.00
VIII	Diseases of the ear and mastoid process	6	0.01
IX	Diseases of the circulatory system	16206	33.20
X	Diseases of the respiratory system	6787	13.90
XI	Diseases of the digestive system	261	0.53
XII	Diseases of the skin and subcutaneous tissue	12	0.02
XIII	Diseases of the musculoskeletal system and connective tissue	90	0.18
XIV	Diseases of the genitourinary system	1042	2.13
XV	Pregnancy, childbirth and the puerperium	123	0.25
XVI	Certain conditions originating in the perinatal period	7779	15.93
XVII	Congenital malformations, deformations, and chromosomal abnormalities	82	0.17
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	538	1.10
XIX	Injury, poisoning, and certain other consequences of external causes	4521	9.26
XX	External causes of morbidity and mortality	5379	11.02
	Total	48818	100.00

of upazila health complexes (UHC), district and general hospitals (DH and GH) as well as medical college hospitals (MCH) as they admit all types of patients (unlike the specialized institutes). A total of 115,877 deaths were reported from these three types of hospitals. ICD 10 codes were mentioned for top causes of death in each of the hospitals and the number of deaths with the top 10 causes was 48,818 out of which 6,511 were in UHC, 13,013 were in DH, and 29,294 were in MCH. Total number of reporting hospitals were 451 (381 UHCs, 58 DHs and GHs and 12 MCHs). Table 8.2 shows the distribution of the top causes of deaths among ICD 10 chapters. The highest number of deaths was caused by the diseases or conditions mentioned in the 9th chapter which consists of diseases of the circulatory system (16,206 deaths, 33.2%).

Top 10 causes of deaths according to ICD 10 three-digit codes

Figure 8.1 shows the top 10 causes of deaths across the 451 public hospitals. Three-digit ICD 10 codes and the number of reported deaths are shown

in parentheses inside the figure. In the case of transport accidents, we used the corresponding ICD 10 block (V01-V99), instead of three-digit code, to show all types of transport accidents under a single entity. Birth asphyxia and transport accidents appeared as the leading causes of deaths.

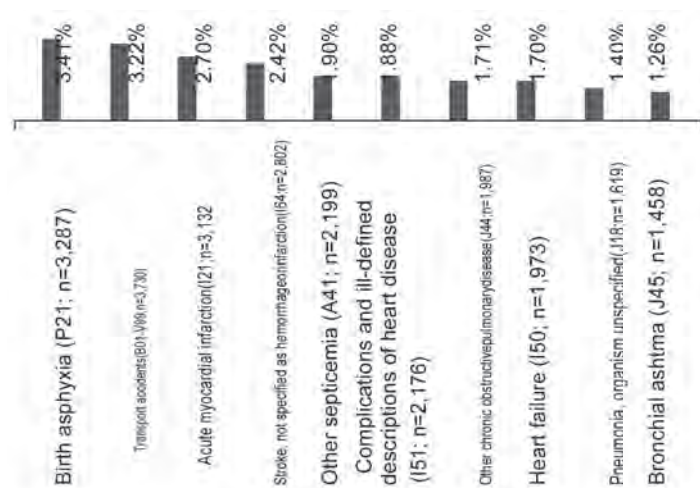


Figure 8.1. Top 10 causes of death as percentage of total deaths reported from 451 public hospitals (total deaths: 46,724) (2013)

Table 8.3. Distribution of top causes of death among ICD 10 chapters in 381 UHCs (total deaths due to top causes: 6,511) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	379	5.82
II	Neoplasms	65	1.00
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	89	1.37
IV	Endocrine, nutritional and metabolic diseases	40	0.61
V	Mental and behavioral disorders	11	0.17
VI	Disease of the nervous system	125	1.92
VII	Diseases of the eye and adnexa	1	0.02
VIII	Diseases of the ear and mastoid process	6	0.09
IX	Diseases of the circulatory system	1804	27.71
X	Diseases of the respiratory system	2166	33.27
XI	Diseases of the digestive system	156	2.40
XII	Diseases of the skin and subcutaneous tissue	6	0.09
XIII	Diseases of the musculoskeletal system and connective tissue	1	0.02
XIV	Diseases of the genitourinary system	68	1.04
XV	Pregnancy, childbirth and the puerperium	45	0.69
XVI	Certain conditions originating in the perinatal period	426	6.54
XVII	Congenital malformations, deformations, and chromosomal abnormalities	27	0.41

XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	222	3.41
XIX	Injury, poisoning, and certain other consequences of external causes	472	7.25
XX	External causes of morbidity and mortality	402	6.17
	Total	6511	100.00

Causes of deaths by type of hospitals

Upazila health complex

Table 8.3 shows the top 10 causes of death in 381 upazila health complexes distributed among ICD 10 chapters (total deaths 46,724; top 10 causes included 6,511 deaths). The top five disease groups included diseases of the respiratory system (2,166 deaths, 33.27%); diseases of the circulatory system (1,804 deaths, 27.71%); injury, poisoning, and certain other consequences of external causes (472 deaths, 7.25%); certain conditions originating

in the perinatal period (426 deaths, 6.54%), and external causes of morbidity and mortality (402 deaths, 6.17%).

Figure 8.2 shows the top 10 causes of death in 381 upazila health complexes according to ICD 10 three-digit codes. Three-digit ICD 10 codes

and the number of reported deaths are shown in parentheses inside the figure. In the case of transport accidents, we used the corresponding ICD 10 block (V01-V99), instead of three-digit code, to show all types of transport accidents

under a single entity. Asthma and pneumonia (due to unspecified organisms) appeared as the leading causes of deaths.

District and general hospitals

Table 8.4 and Figure 8.3 show the distribution of top causes of deaths among ICD 10 chapters in 58 district and general hospitals (total deaths 21,895; top causes included 13,013 deaths).

The top 5 disease groups included diseases of the circulatory system (4,869 deaths, 37.42%); certain conditions originating in the perinatal period

Table 8.4. Distribution of top causes of death among ICD 10 chapters in 58 DHs and GHs (total deaths due to top causes: 13,013) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	555	4.26
II	Neoplasms	53	0.41
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	213	1.64

IV	Endocrine, nutritional and metabolic diseases	128	0.98
V	Mental and behavioral disorders	0	0.00
VI	Disease of the nervous system	259	1.99
VII	Diseases of the eye and adnexa	1	0.01
VIII	Diseases of the ear and mastoid process	0	0.00
IX	Diseases of the circulatory system	4869	37.42
X	Diseases of the respiratory system	1744	13.40
XI	Diseases of the digestive system	42	0.32
XII	Diseases of the skin and subcutaneous tissue	6	0.05
XIII	Diseases of the musculoskeletal system and connective tissue	0	0.00
XIV	Diseases of the genitourinary system	246	1.89
XV	Pregnancy, childbirth and the puerperium	47	0.36
XVI	Certain conditions originating in the perinatal period	3295	25.32
XVII	Congenital malformations, deformations, and chromosomal abnormalities	55	0.42
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	254	1.95
XIX	Injury, poisoning, and certain other consequences of external causes	661	5.08
XX	External causes of morbidity and mortality	585	4.50
	Total	13013	100

(3,295 deaths, 25.32%); diseases of the respiratory system (1,744 deaths, 13.4%); injury, poisoning, and certain other consequences of external causes (661 deaths, 5.08%); and external causes of morbidity and mortality (585 deaths, 4.5%).

Medical college hospitals

Table 8.5 and Figure 8.4 show the distribution of top causes of death distributed among ICD 10 chapters in 12 medical college hospitals (total deaths 47,258; top causes included 29,294 deaths). The top 5 disease groups included diseases of the circulatory system (9,533 deaths, 32.54%); external causes of morbidity and mortality (4,393 deaths, 14.99%); certain conditions originating in the perinatal period (4,058 deaths, 13.85%); injury, poisoning, and certain other consequences of external causes (3,388 deaths, 11.57%), and diseases of the respiratory system (2,877 deaths, 9.82%).

Postgraduate institute hospitals

National Institute of Cardiovascular Diseases (NICVD)

Figure 8.5 shows the distribution of causes of death in the National Institute of Cardiovascular Diseases (NICVD). ICD 10 codes and number of cases are shown in parentheses inside the figure. In more than one-third cases (35.19%), acute myocardial infarction was the cause of death.

National Institute of Kidney Diseases & Urology (NIKDU)

Figure 8.6 shows the distribution of causes of death in the National Institute of Kidney Diseases and Urology (NIKDU). ICD 10 codes and number of

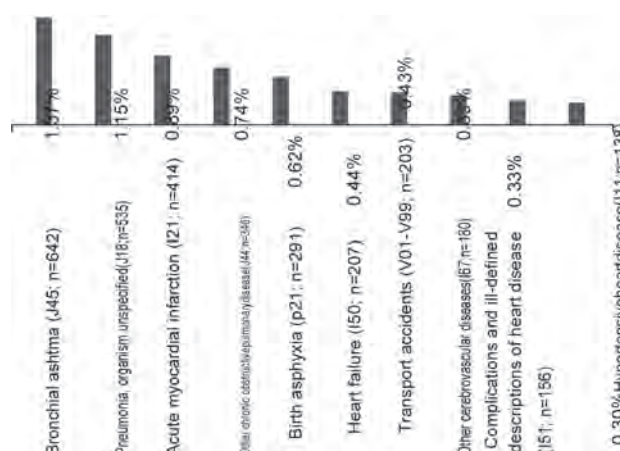


Figure 8.2. Top 10 causes of death as percentage of total deaths reported in 381 UHCs (total deaths: 46,724) (2013)

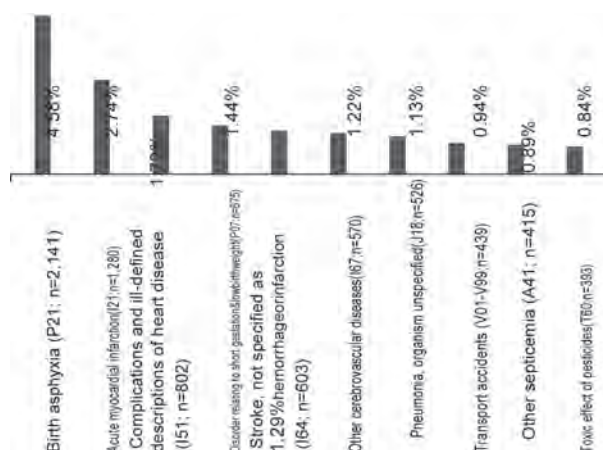


Figure 8.3. Top 10 causes of death as percentage of total deaths reported in 58 DHs and GHs (total deaths: 46,724) (2013)

Table 8.5. Distribution of top causes of death among ICD 10 chapters in 12 MCHs (total deaths due to top causes: 29,294) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	2223	7.59
II	Neoplasms	60	0.20
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	0	0.00
IV	Endocrine, nutritional and metabolic diseases	277	0.95
V	Mental and behavioral disorders	0	0.00
VI	Disease of the nervous system	1513	5.16
VII	Diseases of the eye and adnexa	0	0.00
VIII	Diseases of the ear and mastoid process	0	0.00

IX	Diseases of the circulatory system	9533	32.54
X	Diseases of the respiratory system	2877	9.82
XI	Diseases of the digestive system	63	0.22
XII	Diseases of the skin and subcutaneous tissue	0	0.00
XIII	Diseases of the musculoskeletal system and connective tissue	89	0.30
XIV	Diseases of the genitourinary system	728	2.49
XV	Pregnancy, childbirth and the puerperium	31	0.11
XVI	Certain conditions originating in the perinatal period	4058	13.85
XVII	Congenital malformations, deformations, and chromosomal abnormalities	0	0.00
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	62	0.21
XIX	Injury, poisoning, and certain other consequences of external causes	3388	11.57
XX	External causes of morbidity and mortality	4392	14.99
	Total	29294	100.00

deaths are shown in parentheses inside the figure. Chronic kidney disease of stage 5 appeared as the leading cause of deaths (39.2% deaths).

National Institute of Cancer Research & Hospital (NICRH)

Figure 8.7 shows the top 10 causes of death in the National Institute of Cancer Research & Hospital (NICRH). ICD 10 codes with corresponding number of deaths are shown in parentheses inside

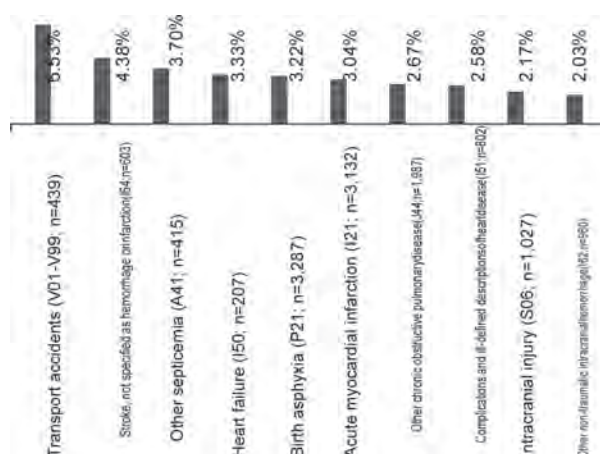


Figure 8.4. Top causes of death as percentage of total deaths reported in 12 MCHs (total deaths: 47,258) (2013)

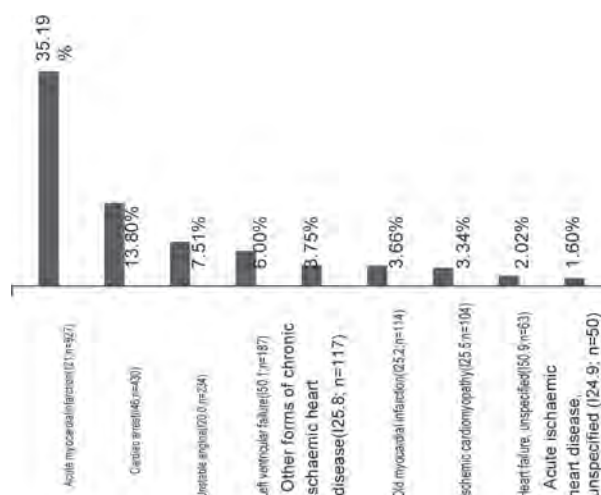


Figure 8.5. Top causes of death as percentage of total deaths reported in NICVD (total deaths: 3,117) (2013)

the figure. Malignant neoplasm of bronchus or lung was responsible for about 31% of deaths.

National Institute of Diseases of Chest & Hospital (NIDCH)

Figure 8.8 shows the distribution of causes of deaths in the National Institute of Diseases of Chest and Hospital (NIDCH) according to ICD 10 three-digit codes. Chronic obstructive pulmonary diseases (27.3%) and tuberculosis (22.6%) were the leading causes of deaths.

Limitations of mortality analysis

ICD 10 based mortality reporting by the public hospitals was started in 2012 and we anticipate some mistakes by the personnel concerned in this new system of reporting. However, as mentioned in the beginning of this chapter, we are pleased to note that the quality of reporting is constantly increasing. Till date the organizations are providing ICD 10 codes only for top 10 diseases in aggregated form. Hence, the distribution of causes of death among ICD 10 chapters was not based on causes of all deaths, rather the top 10 causes only. Also, age and sex disaggregation of the mortality data could not be shown from this aggregated form of report. We are hopeful to present more accurate and elaborate analyses in the future.

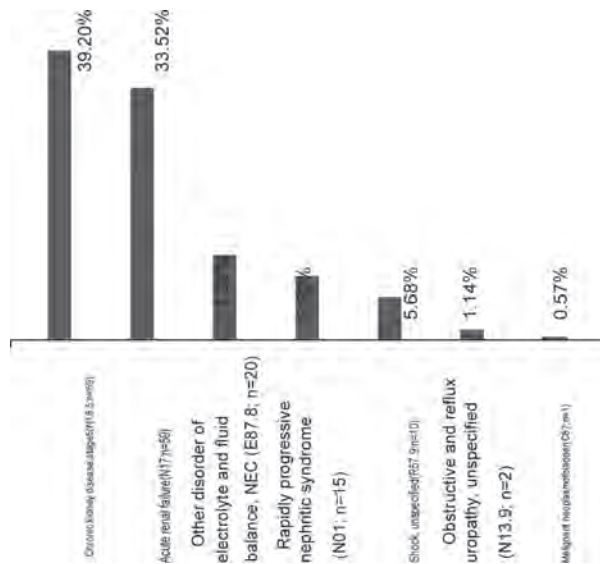


Figure 8.6. Top causes of death as percentage of total deaths reported in NIKDU (total deaths: 176) (2013)

Presentation Slides

ICD 10-Based Reporting: Targeting Every Death to Count

Dr. Shah Ali Akbar Ashrafi, MBBS, MPH

Assistant Professor

(Community Medicine)

Directorate General of Health Services
Ministry of Health and Family Welfare
Bangladesh

Bangladesh

- 8 Divisions
- 64 Districts
- 490 Upazila (Sub District)
- 4553 Union Councils



Total Population: 160 m

Population density per
sq. km: 1203

No. of hospitals under DGHS

- Total number of Government Hospitals: 592
- 1. Government hospitals of secondary and tertiary levels: 125
- 2. Government hospitals at upazila and union levels: 467
- No. of private registered hospitals and clinics: 2,983

Population-health workforce

- Population per physician: 2,894
(No. of registered physicians: 65,767)
- Population per nurse: 8,497
(No. of registered diploma nurses: 33,183)
- Population per medical technologist: 29,034
- Population per community health worker: 2,603

Facilities based death reporting

(Total number of death 120,392)

Facilities	%
Medical College Hospitals	39.25
Sub district (Upazila) Level Hospitals	38.81
District Level Hospitals	18.19
Post Graduate Level Hospitals	3.75

Total Death: 47,258
Medical College Hospitals

Top 10 Causes of deaths according to ICD 10	%
Transport Accident	6.53
Stroke, not specified as hemorrhage or infarction	4.38
Other Septicemia	3.70
Heart Failure	3.33
Birth Asphyxia	3.22
Acute Myocardial Infarction	3.04
Other Chronic Obstructive Pulmonary Disease	2.67
Complications and ill defined description of heart disease	2.58
Intracranial Injury	2.17
Other non-traumatic Intracranial Hemorrhage	2.03

Total Death 46,724
381 Sub District level hospitals

Top 10 Causes of deaths according to ICD 10	%
Bronchial Asthma	1.37
Pneumonia , Organism unspecified	1.15
Acute Myocardial Infarction	0.89
Other Chronic Obstructive Pulmonary Disease	0.74
Birth Asphyxia	0.62
Heart Failure	0.44
Transport Accident	0.43
Other Cardiovascular Disease	0.39
Complications and ill defined description of heart disease	0.33
Hypertensive Heart Disease	0.32

Limitation of Mortality Analysis

- ICD 10 based mortality reporting by public hospitals started in 2012
- Anticipate that there may be some mistakes in the reporting system
- Facilities are providing ICD 10 codes in aggregated form
- Age and sex disaggregation of mortality data could not be shown
- Physicians are found sometimes reluctant to ensure ICD 10 coding at facilities.

Way forward

- GoB inacted "Birth and Death Registration act 2004" and established rules 2016
- A National Mortality Technical Working Group – developed
- MoH starts implementation of International Form of MCCoD and incorporated with DHIS-2 (Initially 4 hospitals)
- Verbal Autopsy (VA) introduced for identifying CoD with ICD 10 mortality coding for community death

Continue:

- Health system has taken initiative for notifying all birth and death for registration within 45 days to strengthen CRVS system in Bangladesh
- CRVS secretariat established under the Cabinet Division
- Bloomberg Philanthropies Data for Health (D4H) Initiative have a collaborative agreement with CRVS Secretariat &
- Trained 10 personnel for ICD 10 mortality coding with TA from UoM

7.1 International form of medical certificate of cause of death

7.1.1 International form of medical certificate of cause of death

Additional data that might be necessary for the reporting system of countries can be added to this certificate. It should not replace the information shown below.

People's Republic of Bangladesh

Office of the Registrar of Births and Deaths

Kulshengga Municipality

Kulshengga Thana, Kulshengga

Death Certificate

(Annex-1 of Birth and Death Registration Rules, 2004)

Register No: 1

Date of Registration: 15-03-2016 Date of Issue: 15-03-2016

Death Registration No: 301164037503100157

Name: NurAnn Khatun

Date of Birth: 10-11-1963

Date of Death: 09-03-2016 Sex: Male

Place of Death: Narsingdi Medical College

Cause of Death (as stated by the Informant): Myocardial Infarction

Informant's Name: Late Pradyot Khatun

Informant's Name: Late Pradyot Khatun

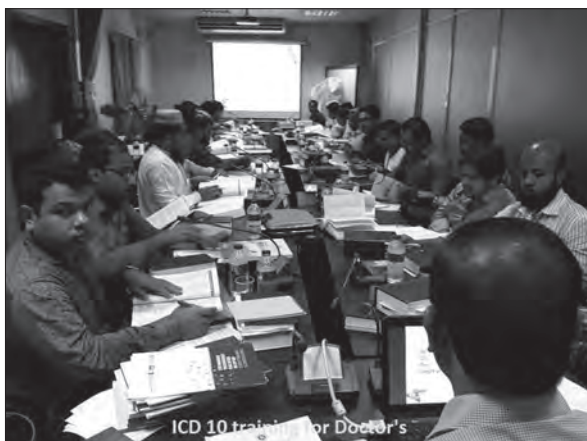
Informant's Name: Late Pradyot Khatun

Permanent Address: 100, Jharkhata, Kulshengga, Kulshengga

(Signature of Informant)

(Signature and Name of Registrar with Seal)

(Date of the Registrar's Office)



Thanks a lot

Death Certificate

(PSBDR Form-6A)

People's Republic of Bangladesh

Office of the Registrar of Birth and Death

Kishoreganj Municipality

Kishoreganj Sadar, Kishoreganj

Death Certificate[rule-12, of Birth and Death Registration (Municipality) Rules, 2006]
(Extract from Death Register)Register No: 1

Date of Registration: 13-03-2016

Date of Issue: 13-03-2016

Death Registration No:

2	0	1	6	4	8	2	7	5	0	3	0	0	0	5	5	7
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Name: *Nandan Kuar*

Date of Birth: 18-11-1965

Date of Death: 09-03-2016

Sex: *Male**Ninth March Two Thousand Sixteen*Place of Death: *Mymensing Medical College.*Cause of Death (As stated by the Informer): *Myocardial Infraction.*Father's Name: *Late Priyotosh Kuar*Mother's Name: *Late Dula Rani Kuar*Spouse Name: *Lovely Kuar*Permanent Address: *1255, Sholakia, Khrampatti, Kishoreganj.*

(Prepared by - Seal and signature)

(Signature and Name of Registrar with Seal)

(Seal of the Registrar's Office)

বাংলাদেশ ফরম নং ৮০৪

মৃত্যুর প্রমাণ পত্র

নাম.....

পিতা/মাতার নাম.....

ঠিকানা.....

.....

বয়স..... পুরুষ/মহিলা..... ধর্ম..... পেশা.....

ভর্তির তারিখ..... সময়.....

মৃত্যুর তারিখ..... সময়.....

রোগের নাম/মৃত্যুর কারণ.....

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স্বাক্ষর.....




হাসপাতাল.....

তারিখ.....

আবাসিক চিকিৎসক/

সহরেজিষ্ট্রার

বিভাগ.....

Sex	<input type="checkbox"/> Female		<input type="checkbox"/> Male		<input type="checkbox"/> Unknown												
Date of birth	D	D	M	M	Y	Y	Y	Y	Date of Death	D	D	M	M	Y	Y	Y	Y
Frame A: Medical data: Part 1 and 2																	
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line	  		Cause of death	Time interval from onset to death													
		a															
		b	Due to:														
		c	Due to:														
		d	Due to:														
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)																	
Frame B: Other medical data																	
Was surgery performed within the last 4 weeks?								<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown					
If yes please specify date of surgery								D	D	M	M	Y	Y	Y	Y		
If yes please specify reason for surgery (disease or condition)																	
Was an autopsy requested?								<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown					
If yes were the findings used in the certification?								<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown					
Manner of death:																	
<input type="checkbox"/> Disease				<input type="checkbox"/> Assault				<input type="checkbox"/> Could not be determined									
<input type="checkbox"/> Accident				<input type="checkbox"/> Legal intervention				<input type="checkbox"/> Pending investigation									
<input type="checkbox"/> Intentional self harm				<input type="checkbox"/> War				<input type="checkbox"/> Unknown									
If external cause or poisoning:								Date of injury		D	D	M	M	Y	Y	Y	Y
Please describe how external cause occurred (If poisoning please specify poisoning agent)																	
Place of occurrence of the external cause:																	
<input type="checkbox"/> At home		<input type="checkbox"/> Residential institution		<input type="checkbox"/> School, other institution, public administrative area					<input type="checkbox"/> Sports and athletics area								
<input type="checkbox"/> Street and highway		<input type="checkbox"/> Trade and service area		<input type="checkbox"/> Industrial and construction area					<input type="checkbox"/> Farm								
<input type="checkbox"/> Other place (please specify):								<input type="checkbox"/> Unknown									
Fetal or infant Death																	
Multiple pregnancy								<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown					
Stillborn?								<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown					
If death within 24h specify number of hours survived										Birth weight (in grams)							
Number of completed weeks of pregnancy										Age of mother (years)							
If death was perinatal, please state conditions of mother that affected the fetus and newborn																	
For women, was the deceased pregnant?								<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown					
<input type="checkbox"/> At time of death								<input type="checkbox"/> Within 42 days before the death									
<input type="checkbox"/> Between 43 days up to 1 year before death								<input type="checkbox"/> Unknown									
Did the pregnancy contribute to the death?								<input type="checkbox"/> Yes		<input type="checkbox"/> No		<input type="checkbox"/> Unknown					

Achieving High Quality Mortality Statistics in Mauritius

Sooneeraz Monohur¹, Nasser Jeeanody²,

*Chief Health Records Officer¹, Chief Health Statistician, Ministry of Health and Quality of Life,
Mauritius²*

[Extract: A small island developing state situated in the Southwest Indian Ocean, Mauritius covers an area of 2,040 km² and has Port Louis as its capital. The population stood at 1,261,721 persons with 637,387 females and 624,334 males at the end of 2014. Mauritius reckons a well-established civil registration system which captures almost 100% births and deaths occurring in the country and its satellite islands. The local Civil Status Office mandatorily requires the Certificate of Cause of Death, duly issued by a doctor only, to register a death prior to the disposal of a corpse.

Public hospitals keep a death register of in-patient and out-patient deaths occurring on their premises. A line list of deaths is submitted every week to the Ministry of Health and Quality of Life for monitoring purposes. Simultaneously, medical specialists meet at Regional Hospitals to review all in-patient deaths and take corrective measures as appropriate. Ultimately, the Health Statistics Division compiles the lists of deaths from hospitals, autopsy reports and the Civil Status Department, validates the data, codifies the diagnoses and publishes its findings in its annual report which is available on the website of the Ministry. ICD-10 is used for morbidity and mortality coding in all public hospitals. A booklet consisting of guidelines for the filling of the Certificate of Cause of Death was circulated to all medical practitioners some years back and this exercise will be repeated in the near future. Talks with doctors during Continuous Medical Education (CME) sessions are also targeted.

9,682 deaths were encountered in 2014 with 51% cases occurring in public hospitals. Crude death rate was 7.7 per 1,000 population showing an increasing trend as from the 1990's, probably due to the ageing population. Diabetes and heart diseases were the first two principal underlying causes of mortality in 2014 with 25.1% and 19.3% of cases respectively. According to WHO, Mauritius is the only country in the African continent to possess a high quality of mortality statistics data.]

1. Preamble

The Republic of Mauritius is a small developing state situated in the Southwest of the Indian Ocean and consists of a main island and a group of smaller islands and islets among which are Rodrigues, the CargadosCarajos, Agalega, Tromelin and the Chagos Archipelago. The Island of Mauritius covers an area of 2,040 km² and has Port Louis as its capital. The population stood at 1,262,862 at the end of 2015 comprising 624,884 males and 637,976 females. The main sources of revenue come from exports of sugarcane products, the textile industry and tourism and hotel services.

Having been a colony of the British Empire up to 1968, Mauritius continues to be mainly influenced by the British administrative system in its daily activities including health care service delivery. The State provides a free health service to all Mauritians through its network of 155 health service points. They consist of 5 Regional Hospitals, 5 Specialised Hospitals and 4 other smaller hospitals, 5 me-

di-clinics, 134 primary health care centres and 2 specialised centres with a total of 3,648 beds in 2015. Access to health care service points is within a radius of three kilometres in populated areas. The public health service comprises free primary, secondary and tertiary mainstream medicine, dental service and traditional medicine. Additionally, the private health sector consists of 17 hospitals with some 656 beds, other specialized health institutions, some 1,352 medical practitioners and 308 dentists. It is estimated that in 2015, 72.8% of patients sought care in the public health sector while 27.2% of patients resorted to the private sector.

2. Civil Registration

Civil registration of births, marriages and deaths is governed by the Civil Status (Amendment) Act, 1981 and is managed by the Registrar of the Civil Status Office. 34 Civil Status Offices are scattered across the Republic of Mauritius providing full range of services during normal office hours. Additionally, an on-call system is in place up to 20.00hrs everyday for the registration of deaths to allow for the early disposal of dead bodies. The country therefore claims almost 100% civil registration in respect of births, deaths and marriages except for a few cases of tardy declaration of births occurring every year.

3. Registration of Deaths

Inhabitation of Mauritius took place in 1638 and the first recorded death is available as from 1811. Doctors did not certify deaths at that time. However, deaths were registered prior to disposal of the body and the cause of death as provided by the family of the deceased was recorded.

Registration of deaths is governed by Part V of the Civil Status (Amendment) Act, 1981. Section 38 of the Act stipulates that *“No interment, cremation or immersion at sea of the body of any dead person shall take place without a permit from an officer in such form as the Registrar of Civil Status may approve”*. Furthermore, Section 42 of the same Act specifies that *“every person, who under this Act, is bound to give notice of the occurrence of any death shall (a) in the case of the death of any person who has been attended during his last illness by a medical practitioner, apply to the medical practitioner for a certificate of the cause of death”*. A Certificate of Cause of Death duly delivered by a medical practitioner is mandatory for the registration of a death. This Certificate of Cause of Death came into existence on 01 April 1948.

The Public Health Act requires hospitals to maintain a Register of Deaths occurring on their premises.

Presently, when a death occurs at a health institution, the treating doctor issues a Certificate of Cause of Death. This document conforms to the requirements of International Statistical Classification of Diseases and Related Health Problems (ICD-10). For deaths occurring outside of hospitals, the services of the recent treating doctor or a general practitioner is enlisted by the family of the deceased to certify the death and attribute a cause to it. In cases of suspected foul play, the case is referred to the Police Medical Officer (equivalent of the Coroner) for autopsy, if required, in order to establish the cause of death. In the case of a stillbirth, a Certificate of Stillbirth is issued by the treating doctor. A Certificate of Cause of Death has to be mandatorily issued by a doctor which is then handed over at

the local Civil Status Office for the registration of a death. No death will be registered by the Civil Status Office in the absence of a Certificate of Cause of Death except for cases of disappearance at sea. Subsequently, the Civil Status Office will issue a Certificate of Death to the parents of the deceased.

A Certificate of Cause of Death contains the National Identity Card Number, name, gender and age of the deceased and the date, time and place where the death has occurred. The causes of death as recommended by the World Health Organisation (WHO), i.e., the principal, underlying and associated causes of death, are also recorded together with the particulars of the doctor who has certified the death.

Other than for the purpose of certifying the death of a person, insurance companies and money-lenders among others may require the Certificate of Cause of Death to compare the cause of death with existing terms and conditions of a contract in order to settle accounts with the heirs of the deceased.

In case a death is not declared, beneficiaries of the deceased person will not be able to legally take possession of the property of the deceased and/or obtain any otherwise accruing financial benefit. This, along with the legal obligation, therefore mainly influences the 100% registration of deaths in Mauritius.

4. Clinical Coding

Mauritius has a long tradition of carrying out clinical coding. Mortality coding was introduced in 1957 in public hospitals followed by morbidity coding in 1974. The shift from ICD-9 to ICD-10 was adopted in 2003 for morbidity coding at public hospitals and in 2005 at the Health Statistics Department for mortality coding. WHO has been instrumental in the successful implementation of clinical coding in the country by providing consultancy and financial support for capacity-building. This has resulted in the public health service possessing a skilled team of clinical coders from among health records clerks and health statisticians.

On the other hand, a few private local firms undertake clinical coding from insurance companies, pharmacies, etc., of developed countries for billing purposes.

Health Records personnel carry out morbidity coding for inpatient episodes of care at public hospitals as part of a disease surveillance system and for international reporting. Both morbidity and mortality rules are applied for the coding of deaths at hospitals while mortality coding rules are stringently applied on all deaths by health statisticians at the Ministry of Health and Quality of Life for international reporting. As billing of services is presently not applicable at public hospitals, clinical coding is not being used for the costing of services.

Mortality coding was introduced to medical practitioners of the public as well as the private health sector through a booklet entitled "Cause of Death Certification Mauritius" in October 2004. Subsequent distribution was carried out sometimes back but new doctors have yet to be apprised. Very few sporadic lectures on clinical coding targeting doctors have taken place, especially by overseas consultants, the last one being in October 2013.

The major stumbling block remains the interpretation and understanding of the underlying cause of

death by the different stakeholders. Doctors continue to give importance to the direct cause of death which may not be the primary cause. Ill-defined conditions are in common use. Primary causes of death which do not directly relate to a medical condition are generally not accepted by other related public authorities.

All public hospitals and one private one are firmly established in morbidity and mortality coding according to ICD-10, but, only a few of the remaining private health institutions are carrying clinical coding using ICD-9.

5. Mortality data transmission

Public hospitals submit a list of deaths taking place on their premises on a weekly basis to the Ministry of Health and Quality of Life for monitoring purposes. Hospital authorities also regularly undertake a review of their deaths to ascertain whether proper care and treatment were administered to the patient and to take corrective action whenever required for the further improvement of their services. Additionally, doctors periodically discuss pertinent cases at Continuous Medical Education sessions.

The Health Records Division at the Ministry of Health and Quality of Life processes death data and submits a monthly list of deaths occurring at public hospitals to decision-makers for monitoring purposes. A summary of the principal causes of death as specified by ICD-10 is also submitted highlighting abnormal trends whenever necessary. Hospitals are also kept informed of patterns of cause of deaths on the same monthly basis.

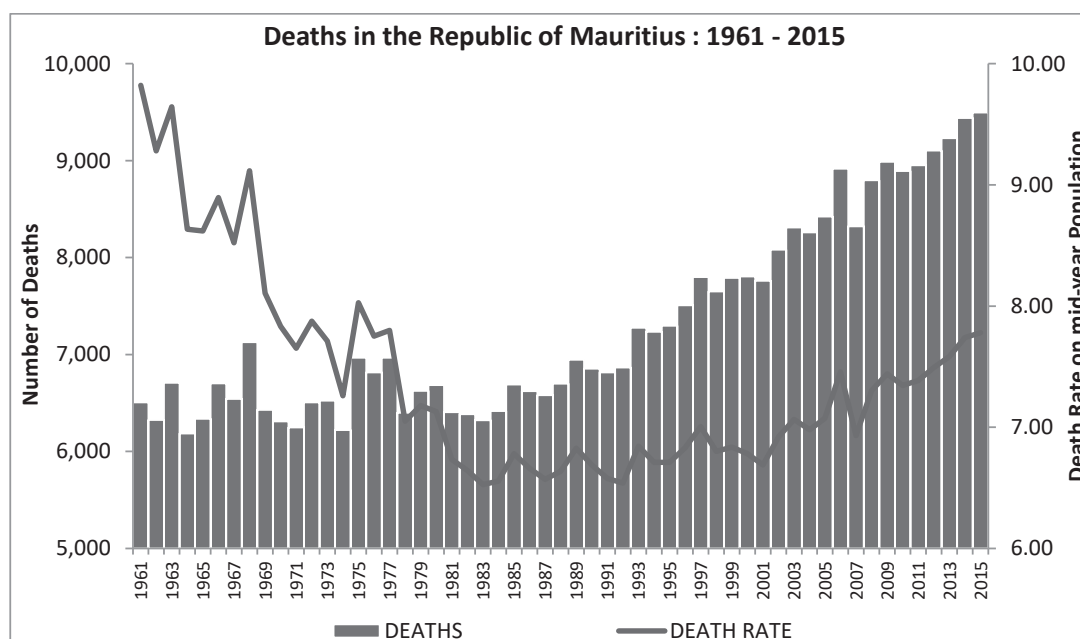
Thereafter, clean data are submitted to the Health Statistics Division at regular intervals. The latter also procures a list of all deaths occurring in the country from the Civil Status Office. Data are processed, mortality coding is carried out and reports are prepared and published. The annual Health Statistics Report provides comprehensive statistics on deaths taking place in the country which are also uploaded on the website of the Ministry of Health and Quality of Life.

Data and reports are usually transferred through e-mail to ensure timely reporting.

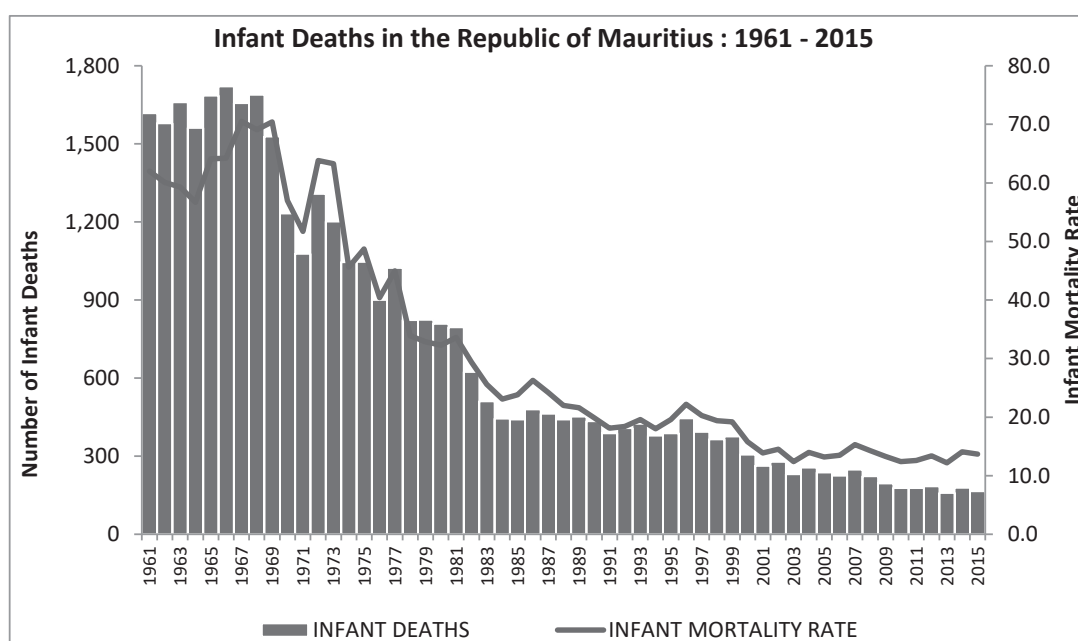
6. Mortality Statistics

Mauritius has always adhered to international laws, conventions and guidelines. As such, the necessary regulatory framework and infrastructure are in place to align to WHO directives regarding mortality data reporting. That is why the country has been able to unfailingly submit its mortality data regularly to WHO.

In the 1960's, some 10,000 deaths were encountered. Year by year, it continued decreasing up to the least of some 6,300 deaths in the 1990's. This resulted from the sustained improvement of the country's economy, its health services and the quality of life of its people. Thereafter, the number of deaths started going up. This trend is bound to continue because of the increasing population, longer life expectancy, an ageing population and the constantly improving health and social services. Crude death rate was 7.7 per 1,000 population in 2014 and 7.8 in 2015.



Over the years, the country has been able to keep track on all types of deaths, i.e., maternal, perinatal and infant deaths and stillbirths among others. Infant mortality rate which was around 60 per 1,000 live births in the 1960's has now stabilized at an average of 13 per 1,000 live births in a year. Stillbirths have also gone down from 83 per 1,000 births to an average of 9 in the same interval. The 17 maternal deaths registered in 1991 have now gone down to an average of 6 cases per year.



PRIMARY CAUSES OF DEATH (according to ICD - 10)		Number of Deaths			
		Male	Female	Total	
				No.	%
1	Diabetes Mellitus	1,189	1,096	2,285	24.1
2	Heart Diseases	1,037	854	1,891	19.9
3	Cancers and other tumours	636	627	1,263	13.3
4	Diseases of the Respiratory System	525	347	872	9.2
5	Cerebrovascular Diseases	456	357	813	8.6
6	Injury & Poisoning (Consequences of External Causes)	385	119	504	5.3
7	Hypertensive Disease	205	238	443	4.7
8	Certain infectious & parasitic diseases	149	65	214	2.3
9	Cirrhosis of liver, liver abscess, chronic liver disease and its sequelae	133	35	168	1.8
10	Renal failures	42	30	72	0.8

Source: Health Statistics Annual 2015

9,496 deaths were encountered in 2015 with 50.7% occurring in public hospitals. 57.6% of all deaths had circulatory diseases and diabetes as the underlying cause of death. Diseases of the Circulatory System remain the main cause of deaths in 2015 with 33.5% of all deaths followed by the Endocrine, nutritional and metabolic diseases with 24.7% and Neoplasms with 13.3%.

With the introduction of ICD-10 in 2003 bringing more precision in the coding of diseases, it was noted that the number of cases of diabetes had gone up and has also resulted as the highest among the primary causes of death. Recent trends have started indicating the occurrence of cardiac diseases at a younger age in adults which should be of concern to Mauritians now.

Mauritius can easily undertake numerous multivariate data analysis depending on user requirements as it possesses a robust death register.

7. Challenges

Although the issue of clinical coding crops up every now and then, the ever-changing top management at the level of the Ministry of Health and Quality of Life is not able to grasp the importance, full purpose and benefits of clinical coding. The vulgarization is therefore not cascaded downwards with clinical coding remaining confined mostly to the Health Records and Health Statistics Sections only.

According to prevalent cultural habits, doctors in Mauritius do not freely mingle with other grades of staff therefore resulting in professional and personal barriers. The work environment does not provide platforms such as meetings, inter-departmental training sessions/camps, workshops, conferences, etc., for interaction. Participation of non-medical professionals in Continuous Medical Education (CME) sessions is almost inexistent. The medical community is consequently largely unaware of the purpose and importance of clinical coding.

Coupled with this, the physical setup of workstations sometimes does not facilitate access to doctors by Health Records personnel performing clinical coding duties. Meetings with time-pressed doc-

tors for advice and/or instruction for the confirmation of diagnoses and related medical jargon have yet to be formalized.

The grade of Clinical Coder does not exist on the staff establishment of hospitals; it is the Health Records Clerk who is presently carrying out clinical coding duties, medical records tasks and statistical works in parallel. Considered as back-office work, clinical coding is often relegated in the rear to give priority to the handling of patients and the public, specially as the Health Records Service chronically suffers from shortage of staff. Once the Health Records Cadre is adequately staffed, recruitment of dedicated clinical coders from among the already trained staff has to be considered.

The Health Service has a good bunch of trained officers in morbidity coding but which requires regular refresher courses. On the other hand, only a few officers of the Health Statistics Division who do not have direct access to doctors, carry out mortality coding of some 8,000 deaths per year. Validation of clinical coding has to be therefore strengthened by some supervisory grade at all levels.

There is also need for regular international forums where clinical coders can meet in view of sharing experiences to improve their knowledge.

8. Way Forward

With the impending implementation of the e-Health Strategic Plan, the need for Health Information Management (HIM) staff has been recognized. Clinical coding will be devolved to the new post of Health Information Technician which is in the pipeline. It is hoped that the post of Clinical Coder will be created soon after.

Training opportunities will fructify in the near future as prospective candidates in the post of Health Information Technician will have to follow a course in HIM and clinical coding.

However, yearly refresher courses in clinical coding should be organized locally. International exposure in the form of recruitment of foreign consultants should be explored to ensure local staff are kept abreast with international best practice and standards. African countries should work towards a HIM Federation to promote regional networking in the absence of strong national HIM associations in many of these countries.

9. Conclusion

In spite of all constraints, Mauritius has been producing timely and a high standard of health service data since decades. This is why WHO has recognized Mauritius as the only country in the African continent to possess a high quality of mortality statistics data. The country can be a torch-bearer in the African region and is ready to share its experience especially regarding the successful and smooth implementation of ICD-10. With international networking and appropriate training opportunities, it can only go on improving its Health Information System to generate better data for informed decision-making.

10. Acknowledgements

Senior Chief Executive, Ministry of Health and Quality of Life

Director General Health Services, Ministry of Health and Quality of Life

Registrar, Civil Status Office

Chief Demographer, Ministry of Health and Quality of Life

Lead Health Analyst, Ministry of Health and Quality of Life

Staff of Health Statistics and Health Records Units, Ministry of Health and Quality of Life

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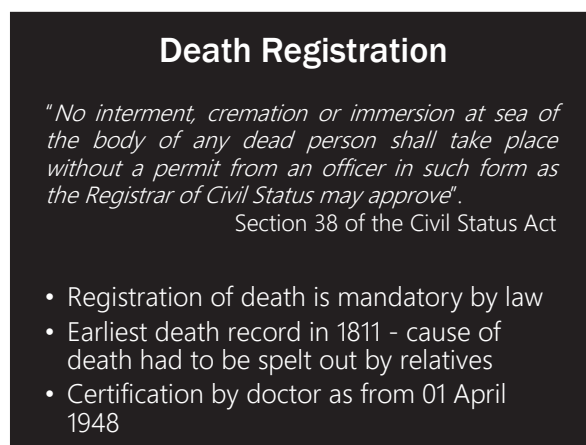
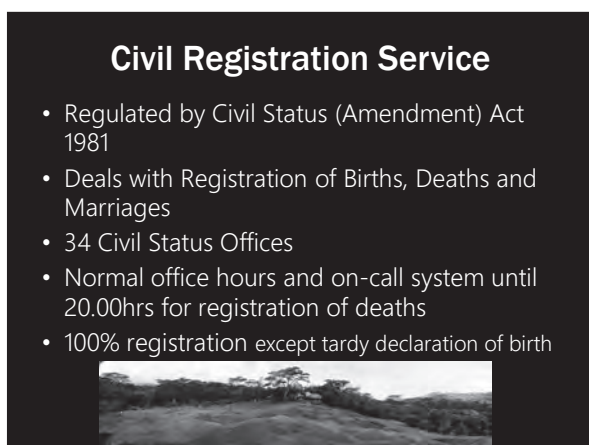
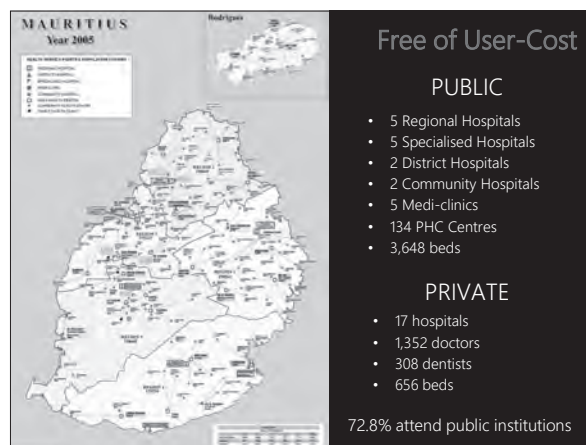
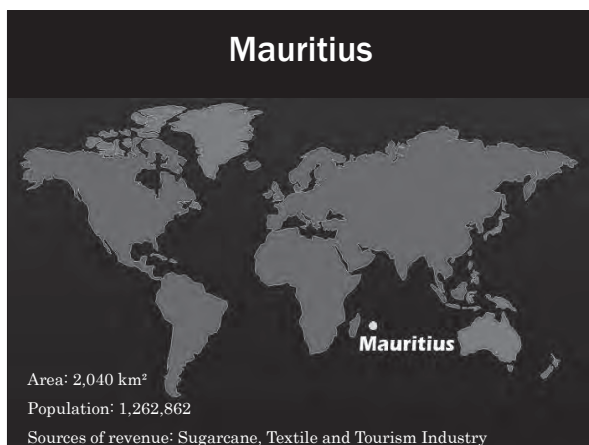
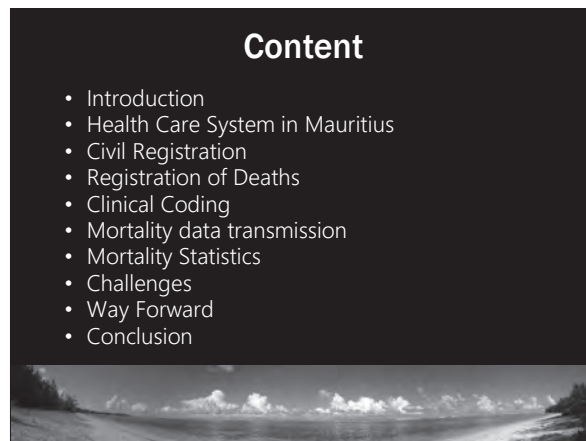
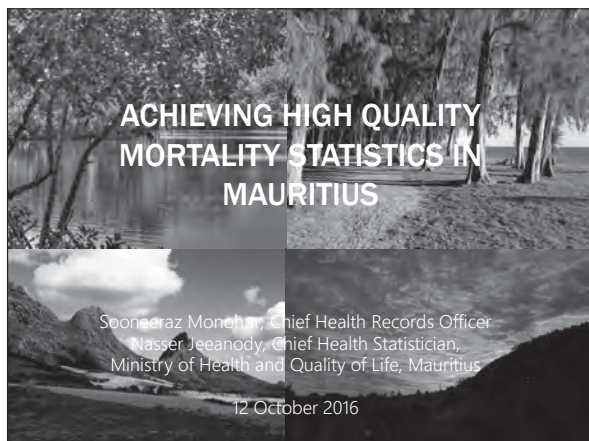
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Presentation Slides



CERTIFICATE OF THE CAUSE OF DEATH

Every person, who under this Act, is bound to give notice of the occurrence of any death shall (a) in the case of the death of any person who has been attended during his last illness by a medical practitioner, apply to the medical practitioner for a certificate of the cause of death

Section 42 of Civil Status Act, 1981

Certificate of Stillbirth

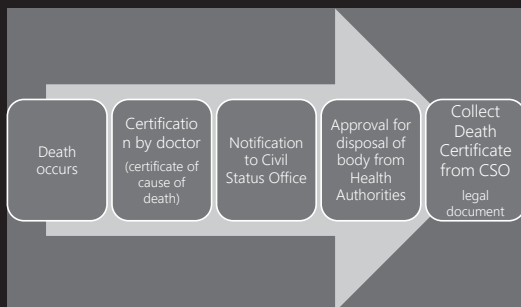
I hereby certify that, the foetus did reach a state of "liveability" after the 28th week of pregnancy, and that such foetus was NOT BORN ALIVE.

Mortality Coding

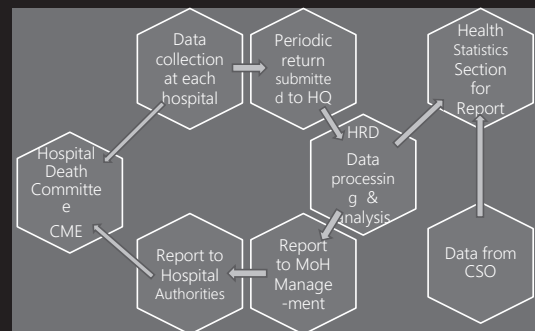
- Mortality coding introduced in 1957, morbidity coding as from 1975
- Shift from ICD-9 to ICD-10 in 2003 for Morbidity Coding and 2005 for Mortality Coding
- Mortality statistics available through Health Statistics Annual Report and MoH website



Death Registration Process



Mortality data transmission



Hospital Reporting Form

SN	Hospital	Date of Death	Date of Admission	Ward	Specialty	Unit No.	Sex	Age	Diagnosis on Admission	Cause of Death	Treating Doctor	Main code	Code 2	Code 3	Code 4	Code 5	Other
1	AGH	1-Jan-16	10-Dec-15	MHC	General Medicine	96484	M	66	Anaemia DM HBP Ischaemic Heart Disease Renal Impairment	Left Ventricular Heart Failure DM HBP	Dawoodkhani Summah	E14	I10	N18			
2	AGH	1-Jan-16	31-Dec-15	2	General Medicine	81530	M	62	Cerebrovascular Accident	Cerebrovascular Accident	Jugessur	I64					
3	AGH	1-Jan-16	1-Jan-16	2	General Medicine	86243	F	42	Fits Alcoholic	Ref Police Medical Officer	Mahomed	P00	F10				
4	AGH	2-Jan-16	30-Dec-15	15	General Medicine	26693	M	69	Cerebrovascular Accident Acute Infarction DM HBP	Cerebrovascular Accident DM HBP	Kurimbukus	I64	E14	I10			
5	AGH	2-Jan-16	1-Jan-16	15	General Medicine	740175	M	74	Chest infection	Septicaemia Chest infection	Dawoodkhan	A41	J98				
6	AGH	2-Jan-16	1-Jan-16	13	Cardiology General Medicine	66991	M	64	Atrial Fibrillation Chronic Renal Failure DM HBP Constituted Myocardial Infarction	Myocardial Infarction Chronic Renal Failure DM HBP	Bundhoo Puddoo Mowleh	I21	N18	E14	I10		
7	AGH	2-Jan-16	31-Dec-15	15	Cardiology	86829	F	94	Acute Inferior wall Myocardial Infarction	Acute Myocardial Infarction	Bundhoo	I21					

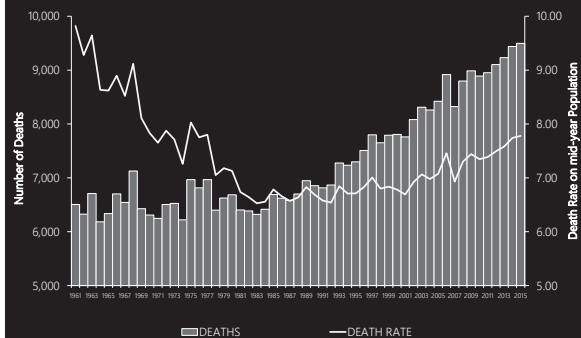
DEATHS AT HOSPITALS DISAGGREGATED BY PRIMARY CAUSE OF DEATH, AGE AND GENDER																			
DEATHS FOR THE WEEK OF : 12 to 18 September 2016																			
CAUSE OF DEATH	Infectious and parasitic diseases	Neoplasms	Diseases of the blood and immune system	Mental and behavioural disorders	Crack cocaine use	Alcohol and drug use	Metabolic diseases	Diseases of the nervous system	Diseases of the circulatory system	Diseases of the respiratory system	Diseases of the digestive system	Congenital anomalies and abnormalities	Conditions in the perinatal period	Diseases of the genitourinary system	Pregnancy, childbirth and the puerperium	Injury	Poisoning	Others	TOTAL
Below 1yr																			0
1-4																			0
5-11																			0
12-19																			0
20-29																			2
30-39																			1
40-49																			7
50-59																			12
60-69																			16
70-79																			26
80-89																			11
90-99																			20
Unsp M																			0
Unsp F																			0
TOTAL	20	12	1	1	1	1	2	40	12	9	0	0	10	0	2	0	0	0	111

Annual Reporting

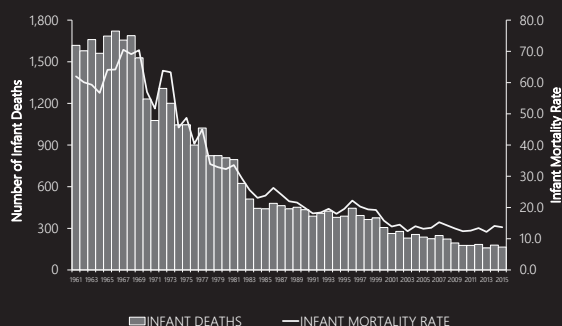
PRIMARY CAUSES OF DEATHS (according to ICD - 10)	Number of Deaths			
	Male	Female	Total No.	%
1 Diabetes Mellitus	1189	1096	2285	24.1
2 Heart Diseases	1037	854	1891	19.9
3 Cancers and other tumours	636	627	1263	13.3
4 Diseases of the Respiratory System	525	347	872	9.2
5 Cerebrovascular Diseases	456	357	813	8.6
6 Injury & Poisoning (Consequences of External Causes)	385	119	504	5.3
7 Hypertensive Disease	205	238	443	4.7
8 Certain infectious & parasitic diseases	149	65	214	2.3
9 Cirrhosis of liver, liver abscess, chronic liver disease and its sequelae	133	35	168	1.8
10 Renal failures	42	30	72	0.8

Source: Health Statistics Annual Report 2015

Deaths in the Republic of Mauritius 1961 - 2015



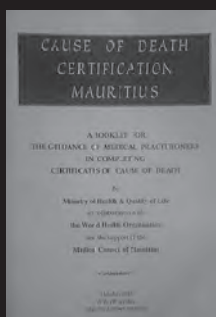
Infant Mortality Rate in the Republic of Mauritius : 1961 - 2015



Multivariate data analysis can be easily undertaken as a robust death register exists

CHALLENGES

1. Changing management staff
2. Professional barriers: doctors/paramedical
3. Infrastructure setup: difficult access to doctors
4. Post of Clinical Coder not yet recognised
5. Inadequate trained staff in mortality coding
6. Lack of international networking opportunities



Misunderstanding in attributing cause of death: Underlying / Direct Cause of Death

Non-medical conditions as Underlying Cause of death not generally accepted



Way Forward

- Post of Health Information Technician has been agreed in 2016 – clinical coding will be devolved
- Training opportunities will fructify as incumbents for the post of HIT require a Certificate in HIM/CC
- More exposure to international best practices and standards – securing foreign



Conclusion

- WHO recognises Mauritius as the only country in the African continent to possess a high quality of mortality statistics data ... but quality can be bettered
- Cause of death to be improved; ICD-11 awaited
- MRU can share its experience in Africa
- Regional HIM Federation for Africa



"Scientists generally agree that no theory is 100 percent correct. Thus, the real test of knowledge is not truth, but utility. Science gives us power. The more useful that power, the better the science."

Historian Yuval Noah Harari
read on JamesClear.com

Thank You



Death Certificate

Ministry of Health and Quality of Life

653/03/15-8m

CERTIFICATE OF THE CAUSE OF DEATH

TO THE CIVIL STATUS OFFICER OF THE DISTRICT OF

I hereby certify that I attended/examined* the body of Mr/Mrs/Miss

bearing NID No. who was/was apparently* aged years; that I saw him/her on the

..... day of 20..... that he/she died on the day of 20..... at

that, to the best of my knowledge and belief, the cause of his/her death was as stated hereunder.

* Delete whichever is inapplicable.

Cause of Death	Approximate interval between onset and death
I	
Disease or condition directly leading the death*	
(a)
due to (or as a consequence of) Antecedent cause, Morbid conditions, if any, giving rise to the above cause, stating the underlying conditions last	
(b)
due to (or as a consequence of)	
(c)
II	
Other significant conditions contributing to the death, but not related to the disease or contributing causing it.	
.....
.....

* This does not mean the mode of dying, e.g. heart failure, asthenia, etc. It means the disease, injury or complication which cause death.

Witness my hand this day of 20.....

Name : Profession :
(BLOCK LETTERS)

Signature : Residence :

MINISTRY OF HEALTH

Med. F. 111

Certificate of Stillbirth

I hereby certify that.....

was hereby delivered of a male*/female*/ child on.....20.....

at.....and that such child was NOT BORN ALIVE

Date.....20.....

*Strike out whichever is inapplicable

Government Medical Officer

Mortality Data Status in South Africa

Sunelle Cloete-Lubbe

Mediclinic International

The purpose of the presentation is to present the mortality coding process in South Africa and its impact on coding and data/information. South Africa is a fair sized country comprising of 1.221 million km² with a population of 55 million. There are 11 official languages with an equally diverse population of 80% Black, 9% Coloured, 8% Caucasian and 3% Asians. The country has huge rural areas which comprise of farmer communities. There are three capital cities with Cape Town being the legislative capital, Bloemfontein the judicial capital and Pretoria the executive capital and does South Africa live up to the claim of being a rainbow nation. South Africa has not only the Big 5 (Lion, Buffalo, Wildebeest, Rhino and Elephant) but also host one of the 7 wonders of the world – Table Mountain.

South Africa has a mixed economy and the second largest economy in Africa with a Total Health Expenditure as a percentage of GDP of 8.8% (OECD, 2015). There are two health care systems, the private health system service 84% and the private sector 16% of the population which is mostly privately insured. The life expectancy at birth is 56.8 years and the under 5 mortality rate is 41/1000 live births (World Bank, 2016). HIV/AIDS is the leading cause of death followed by Ischemic heart disease (IHD), TB and lower respiratory infections as summarised in Table 1 (GBD, 2015).

Table 1 Global Burden of Disease (2015) ranking of Mortalities per 100'000 for South Africa, both genders, all ages.

	2015 rank
1 HIV/AIDS other	
2 Ischemic heart disease	
3 HIV/AIDS - TB	
4 Lower respiratory infect	
5 Diabetes	
6 Tuberculosis	
7 Hemorrhagic stroke	
8 Ischemic stroke	
9 COPD	
10 Diarrheal diseases	

Source: Global Burden of Disease, 2015

ICD-10 is the diagnostic coding standard for morbidity and mortality coding and resides under the Medical Schemes Act (131 of 1998) for morbidity. Various procedural coding systems are used, and

no uniform standard has been set for procedural coding. Morbidity coding is steered through the Private Health Information Standards Committee but resides under the National Department of Health and managed through the ICD-10 National Task Team. Mortality coding is done using ICD-10 and resides under Statistics South Africa (Stats SA).

Deaths are registered according to the Births and Deaths Registration Act 51 of 1992 and form part of the national vital registration information. Statistics South Africa (StatsSA) collates and code death certificates using ICD-10 mortality coding rules where after data are analysed and made available to the public (Pieterse et al., 2009). Table 2 summarise the death certification, notification and coding process in South Africa.

Table 2 Mortality Coding Process in South Africa



Source: Pieterse et al., 2009

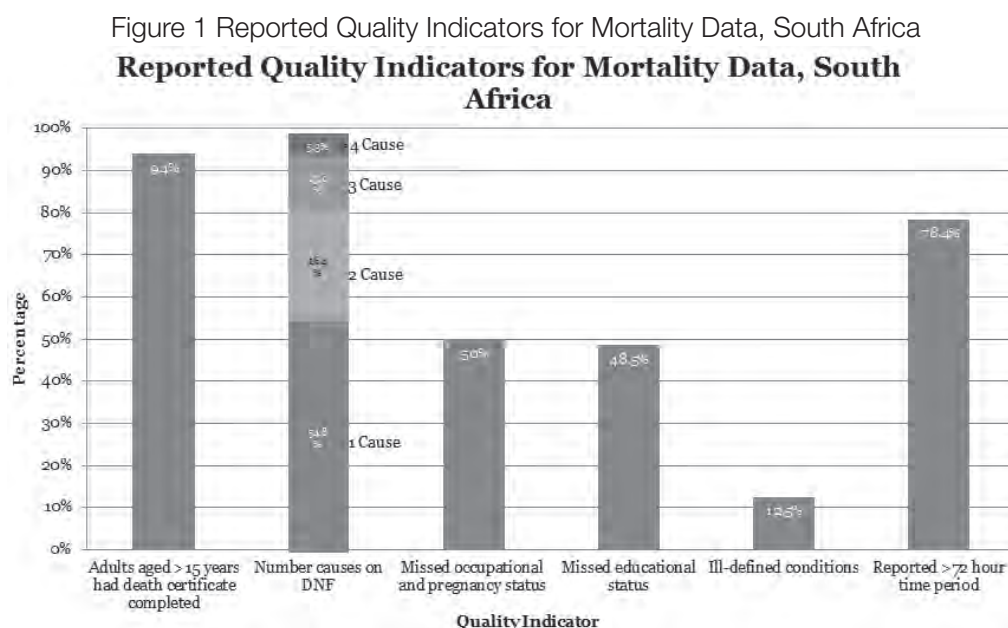
SA followed World Health Organisation (WHO) death certification criteria and implemented DA-1663 in 1998, replacing BI-1663. Both are still used, but variables are comparable except for extension on the perinatal death section found in DHA-1663. The new DHA-1663 comprises of two sections, section A for capturing socio-economic and geographical information and section B cause of death information which should be sealed in an envelope after completion and only opened by StatsSA. 91% mortalities are notified through DHA-1663. Doctors, registered nurses or tribal leaders are legislated to certify natural deaths while unnatural deaths are investigated and certified by forensic pathologists. Registered nurses are legislated to certify stillbirths while tribal leaders have form DHA-1680 to complete when certifying death.

Mortality coding is done using two automate coding systems, ACME2011 and IRIS, under the auspice of experienced coders. ANACoD and CoDEdit are used to evaluate quality (Stats SA, 2015).

The National Health Act, 61 of 2003 prioritises patient information confidentiality on death certificates. However, safeguarding of death certificates are poor and pose major concerns to doctors regarding recrimination, resulting in reluctance to disclose sensitive information like HIV/AIDS (Burger et al., 2012).

On the premises of quality data, the 2014 mortality report indicated a 94% completed death certification rate for adults aged >15 years while 53.7% had only one cause recorded. Missing data were high for occupational and pregnancy status (>50%), educational status (48.5%) and ill-defined conditions (12.5%) while 78.4% cases were reported later than the legislated 72 hour period. These pose challenges regarding timely quality data (Stats SA, 2015). This gives rise to high ill-defined rates (12.5%), compromising the usability of mortality statistics for policy and research purposes (*ibid.*).

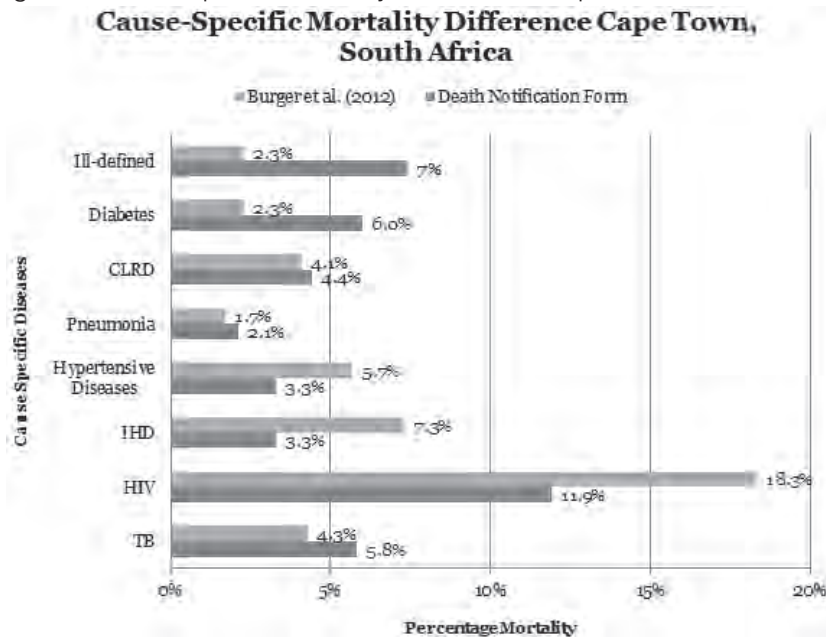
Figure 1 summarises findings from the 2015 Stats SA report.



Source: Stats SA, 2015

A comparative analysis by WHO, indicated South Africa have poor quality death registration data. This was confirmed by the Burger et al. (2012) study which aimed to test the validity of the underlying cause of death data on the death notification forms through a retrospective study in Cape Town, Western Cape. Death certificates were reviewed by two medical doctors after which coding was re-performed. The audit revealed poor agreement with 55% match between diagnosis and WHO mortality tabulation. HIV increased from 11.9-18.3%, Ischaemic heart disease from 3.3-7.3%, hypertension from 3.3-5.7% while diabetes declined from 6.0-2.3% and ill-defined deaths from 7.4-2.3%. Figure 2 summarise findings from the Burger et al. (2012) study.

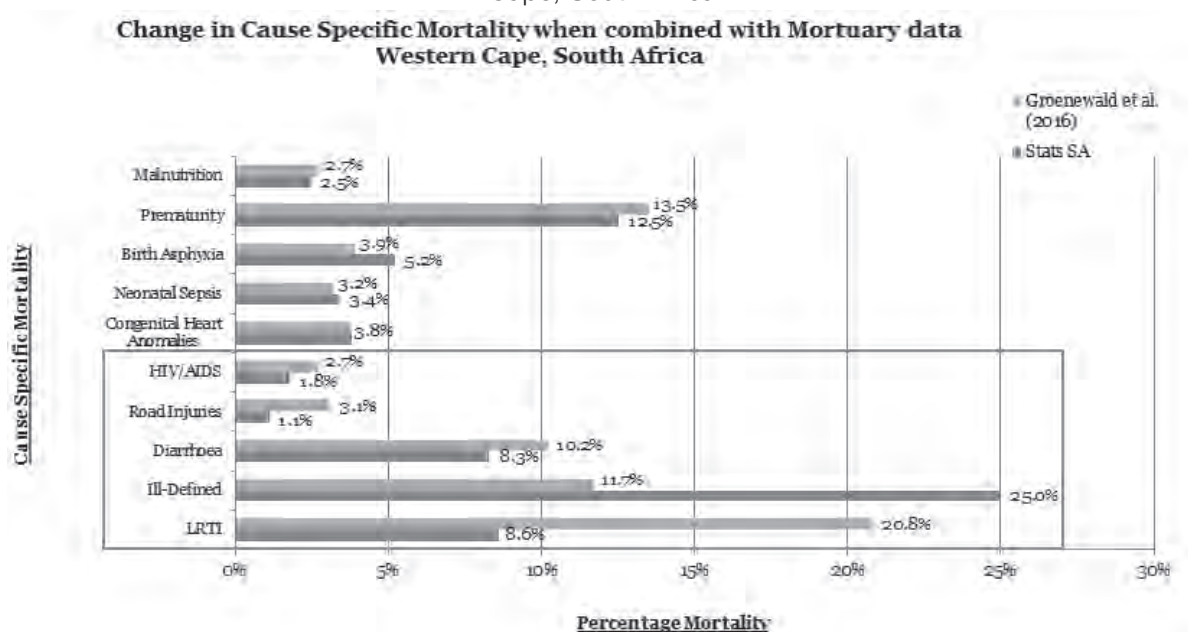
Figure 2 Cause-Specific Mortality differences, Cape Town, South Africa



Source: Burger et al., 2012

Another study by Groenewald et al. (2016), linked mortuary data with mortality surveillance system records in the Western Cape for children who died under five years. Ill-defined causes of death were halved from 25% - 12%, illustrating the importance of accurate and high-quality cause-of-death information. Of particular importance are the shift in HIV, road accident and lower respiratory tract infections (LRTI) mortalities as this information is necessary to understanding South Africa's high under 5 mortality rate of 41/1000 live births and its implication for public health and policy. Figure 3 summarise findings from the Groenewald et al. (2016) study.

Figure 3 Change in cause-specific mortality data when combined with mortuary data in the Western Cape, South Africa



Source: Groenewald et al., 2016

In conclusion enablers to mortality coding in South Africa is the acknowledgement that confidentiality is a priority as stipulated in the National Health Act 61 of 2003. A death notification and coding process are in place with appropriate death certificates and supporting documents while training of doctors is on-going. Barriers to mortality coding are the poor safeguarding of DHA-1663 section B which poses fear to recrimination for physicians in particular when reporting HIV/AIDS as the system does not guarantee confidentiality and non-disclosure to unauthorised third parties. This results in a reluctance to disclose sensitive information like HIV/AIDS (Burger et al., 2012) and gives rise to high ill-defined rates which compromise the usability of mortality statistics for public health programme setting, policy formation, and research purposes.

References:

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- Burger, E. et al. (2012), 'Original Article: Validation study of cause of death statistics in Cape Town, South Africa, found poor agreement', *Journal Of Clinical Epidemiology*, 65, (pp. 309-316), ScienceDirect, EBSCOhost
- Groenewald, P. et al. (2016), 'Linking mortuary data improves vital statistics on cause of death of children under five years in the Western Cape Province of South Africa', *Tropical Medicine & International Health*, 21 (1), (pp. 114-121), Academic Search Complete, EBSCOhost
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- World Bank (2016), Population Total [Online]. Available from: <http://www.worldbank.org/indicators>

Presentation Slides

MORTALITY DATA STATUS SOUTH AFRICA

1

SUNELLE LUBBE

2

South Africa

- Where are we
- Country size
- Population
- Language
- Capital

Economy

- Mixed
- THE of GDP

Health Care System

- Life expectancy
- Public – 84%
- Private – 16%
- Burden of Disease

South Africa
1.2 m km²
Life expectancy 56.8 years
55 m Population
7 Wonders of the World

* Under 5 mortality 41/1000
Both sexes, All ages, Deaths per 100,000

Big 5
Kruger National Park
Johannesburg
Cape Town
THE 8.8%

COUNTRY BACKGROUND

3

South Africa

- Where are we
- Country size
- Population
- Language
- Capital

Economy

- Mixed
- THE of GDP

Health Care System

- Life expectancy
- Public – 84%
- Private – 16%
- Burden of Disease

2015 rank

1	Ischaemic heart disease
2	Alzheimer's disease
3	Lower respiratory infection
4	Diabetes
5	Ischaemic stroke
6	Heart failure
7	Ischaemic heart disease
8	Ischaemic stroke
9	COVID-19
10	Ischaemic heart disease

COUNTRY BACKGROUND

4

DEATH CERTIFICATION & CODING

- Death Certification**
 - Doctors – preferred
 - Registered nurses – still births
 - Tribal leaders – DHA-1680
 - Forensic pathologists – unnatural deaths
- Mortality Coding**
 - Stats SA
 - Coders
 - ACME2011 & IRIS systems
- ICD-10 National coding standard
- No HIM body
- PHISC, ICD-10-NTT

5

DEATH CERTIFICATES

- DHA-1663**
 - Adopted in 1998
 - WHO Standard
 - Perinatal Section
 - 2 Sections
 - Death notification
 - Cause of death
 - 91% Compliance
- BI-1663**
 - Still used
 - Comparable
- DHA-1680**
 - Tribal leaders

6

MORTALITY CODING PROCESS

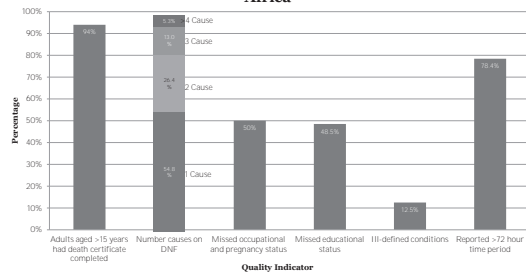
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graph LR
    A[Dr/Nurse/Tribal leader ID & certify death - hand to informant] --> B[Informant completes section D - hand to undertaker]
    B --> C[Undertaker complete section E and hand to DHA]
    C --> D[DHA register death and issue burial notice]
    D --> E[Stats SA collect DHA-1663 documents]
    E --> F[Stats SA capture SE and Geographical info]
    F --> G[Stats SA code underlying cause of death]
    G --> H[Stats SA compile mortality statistics & release to public]
  
```

QUALITY OF MORTALITY DATA

7

Reported Quality Indicators for Mortality Data, South Africa


Mortality and causes of death in South Africa, 2014. Findings from death notification Statistics South Africa. *Provisional Statistics South Africa 2015*. (2016). Available from: www.statso.go.za

QUALITY OF MORTALITY DATA

8

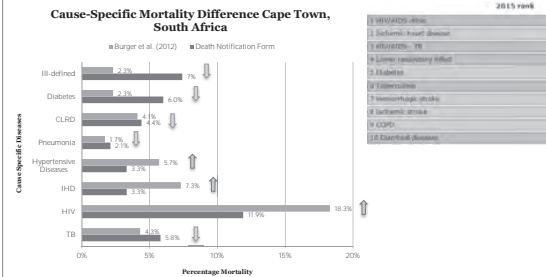
Burger et al. (2012) study


Burger, E. et al. (2012). Original Article. Validation study of cause of death statistics in Cape Town, South Africa, found poor agreement. *Journal of Clinical Epidemiology* 65, pp. 109-116.

QUALITY OF MORTALITY DATA

9

Burger et al. (2012) study


Burger, E. et al. (2012). Original Article. Validation study of cause of death statistics in Cape Town, South Africa, found poor agreement. *Journal of Clinical Epidemiology* 65, pp. 109-116.

QUALITY OF MORTALITY DATA

10

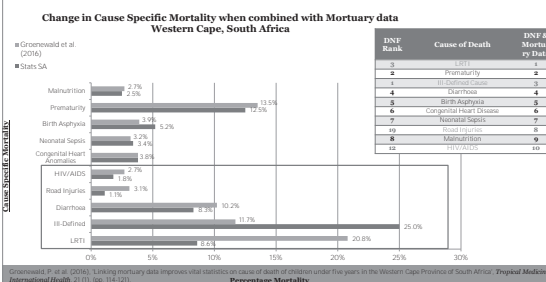
Groenewald et al. (2016) study


Groenewald, P. et al. (2016). Linking mortality data improves vital statistics on cause of death of children under five years in the Western Cape Province of South Africa. *Journal of Clinical Epidemiology* 69, pp. 114-121.

QUALITY OF MORTALITY DATA

11

Groenewald et al. (2016) study


Groenewald, P. et al. (2016). Linking mortality data improves vital statistics on cause of death of children under five years in the Western Cape Province of South Africa. *Journal of Clinical Epidemiology* 69, pp. 114-121.

CONCLUSION

12

Enablers

- Confidentiality is priority
 - National Health Act 61 of 2003
- Process in place
- Appropriate documents
- Training

Barriers

- Poor safeguarding
- Recrimination
 - HIV/AIDS
- Training of doctors

Thank You

13

SUNELLE LUBBE

Death Certificate

G.P.-S. 09/09



REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF HOME AFFAIRS

DHA-1663 A
Page 1 of 3

NOTICE OF DEATH / STILL BIRTH

[Births and Deaths Registration Act 51 of 1992]

[Regulations 11 and 14]

BARCODE

To be completed in full and submitted at the Department of Home Affairs' office by the informant or authorised funeral undertaker. The form to be completed in black ink with **BLOCK LETTERS**. Please mark with ☒ the CORRECT box, where required. **All fields are COMPULSORY.** Incomplete applications and applications that are not legible may be considered invalid. (Note: The fingerprints of the deceased, the informant and the undertaker must be taken by the undertaker)

Serial number

A. PARTICULARS OF THE DECEASED

Instructions: Section A to be filled out by **Authorised Medical Practitioner / Professional Nurse**, who is responsible for examining the body to determine the cause of death. The **Informant** must verify, and where necessary, complete in full the personal particulars and other information of the deceased below.

1. Was this a death or a still birth? ☐ 1.1 Death ☐ 1.2 Still birth

2. Identification of the deceased (tick one box):

☐ 2.1 The deceased was identified with an ID document / passport (if foreigner) produced by the family

☐ 2.2 Still born child

☐ 2.3 The features of the deceased do not seem to match the features on the ID document or passport of deceased

☐ 2.4 ID document or passport of the deceased was not presented. The deceased was identified through word of mouth

☐ 2.5 The deceased was already buried prior to the completion of this form

☐ 2.6 The deceased was unidentifiable: ☐ 2.6.1 Burnt ☐ 2.6.2 Decomposed ☐ 2.6.3 Other (specify) _____

☐ 2.6.4 DNA samples retrieved for identification purposes ☐ 2.6.5 Dental records taken for identification purposes

3. Date of Death / still birth

Y Y Y Y M M D D

4.1 Place of Death/still birth (City/Town/Village)

4.2 Province of Death/still birth

5. Place of Registration of Death / still birth

6. If death occurred within 24 hours after birth, number of hours alive

7. Home telephone no.

8. Identity No. (Passport No. if foreigner)

9. Age at last birthday if DOB is unknown

10. Date of Birth if there is no ID number

Y Y Y Y M M D D

11. Gender

11.1 Male

11.2 Female

11.3 Indeterminable

12. Surname

13. Previous / Maiden Surname

14. Forenames

15. Usual* Residential Address: Street

Town

Province

Postal code

16. Citizenship

16.1 Place of Birth (City / Town / Village)

or Country of Birth, if abroad

16.2 Province of Birth

17. Marital Status of the deceased

17.1 Single

17.2 Married

17.3 Widowed

17.4 Divorced

18. Education level of deceased, (Specify only the highest class completed)

Non e

Gr R

Gr 1

Gr 2

Gr 3

Gr 4

Gr 5

Gr 6

Gr 7

Gr 8

Form 1

Gr 9

Form 2

Gr 10

Form 3

NTC 1

Gr 11

Form 4

NTC 2

Gr 12

Form 5

NTC 3

Univ Tech

Unk

now

n

(mark with a ☒)

19. Usual occupation of deceased (type of work done during most of working life)

20. Type of business / industry: (mark with a ☒)

1. Agriculture, hunting, forestry and fishing	2. Mining and quarrying	3. Manufacturing	4. Electricity, gas and water supply	5. Construction	6. Wholesale and retail trade; repair of motor vehicles, motor cycles and personal and household goods; hotels and restaurants	7. Transport, storage and communication	8. Financial intermediation, insurance, real estate and business services	9. Community, social and personal services	10. Private households, extraterritorial organisations, representatives of foreign governments & other activities not adequately defined
---	-------------------------	------------------	--------------------------------------	-----------------	--	---	---	--	--

21. Was the deceased a regular** smoker five years ago? (mark with a ☒)

21.1 Yes

21.2 No

21.3 Do not know

21.4 Not applicable (minor)

* Where the deceased lived on most days. **Smoking tobacco on most days.

G.P.-S. 09/09



REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF HOME AFFAIRS

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Page 2 of 3

NOTICE OF DEATH / STILL BIRTH

[Births and Deaths Registration Act 51 of 1992]

[Regulations 11 and 14]

BARCODE

To be completed in full and submitted at the Department of Home Affairs' office by the informant or authorised funeral undertaker. The form to be completed in black ink with **BLOCK LETTERS**. Please mark with ☒ the CORRECT box, where required. **All fields are COMPULSORY.** Incomplete applications and applications that are not legible may be considered invalid. (Note: The fingerprints of the deceased, the informant and the undertaker must be taken by the undertaker)

Serial number

B. CERTIFICATE BY ATTENDING MEDICAL PRACTITIONER / PROFESSIONAL NURSE

Instructions: Section B to be filled out by the same Medical Practitioner / Professional Nurse who completed Section A.

- ☐ 22.1 I, the undersigned, hereby certify that the deceased named in Section A, to the best of my knowledge and belief, died solely and exclusively due to **Natural Causes**
- ☐ 22.2 I, the undersigned, am not in a position to certify that the deceased died exclusively due to **Natural Causes**

Particulars of the Medical Practitioner / Professional Nurse who filled out the form:

23. HPCSA Registration No.

24. Surname																					
25. Forenames																					
26. Name of Health Facility / Practice											27. Facility / Practice No.										
28. Business Address: Street																					
Town											Province										
Telephone No. (Office)											Postal Code										

I, the undersigned, hereby certify that I examined the body of the deceased named in section A and declare that the deceased, to the best of my knowledge and belief, died solely and exclusively due to natural or unnatural causes as indicated on paragraph 22 and in case this is not true, I shall be guilty of an offence and on conviction liable to a fine or to imprisonment for a period not exceeding five years or to both such fine and such imprisonment (Section 31(1)(b) of the Act 51 of 1992.)

Place signed

Date signed

Y	Y	Y	Y	M	M	D	D
---	---	---	---	---	---	---	---

Signature

Office stamp of health facility or practice

C. CERTIFICATE BY MEDICAL PRACTITIONER/ FORENSIC PATHOLOGIST

Instructions: Section C to be filled out by Medical Practitioner or Forensic Pathologist, who is conducting medico-legal investigation of death.

29. I, the undersigned, hereby certify that a medico-legal investigation of death has been conducted on the body of the person whose particulars are given in Section A and that the body is no longer required for the purpose of the Inquest Act, 1959 (Act No. 58 of 1959) and the cause of death is:

- ☐ 30.1 Natural ☐ 30.2 Unnatural ☐ 30.3 Under investigation

31. Date of Post-mortem	<table border="1"><tr><td>Y</td><td>Y</td><td>Y</td><td>Y</td><td>M</td><td>M</td><td>D</td><td>D</td></tr></table>								Y	Y	Y	Y	M	M	D	D	33. Mortuary No.								
Y	Y	Y	Y	M	M	D	D																		
32. Name of Medico-legal Mortuary / Mortuary																									
34. Mortuary Reference Number of Deceased																									
35. SAPS Case No.									36. Name of Police Station																

Particulars of the Medical Practitioner / Forensic Pathologist who filled out the form:

HPCSA Registration No.

37. Surname																					
38. Forenames																					
39. Business Address: Street																					
Town											Province										
Telephone No. (Office)											Postal Code										

I, the undersigned, hereby certify that I examined the body of the deceased named in section A and the deceased, to the best of my knowledge and belief, died solely and exclusively due to natural or unnatural causes as indicated on paragraph 29 and in case this is not true, I shall be guilty of an offence and on conviction liable to a fine or to imprisonment for a period not exceeding five years or to both such fine and such imprisonment (Section 31(1)(b) of the Act 51 of 1992.)

Place signed

Date signed

Y	Y	Y	Y	M	M	D	D
---	---	---	---	---	---	---	---

Signature

Office stamp of mortuary

D. PARTICULARS OF INFORMANT

Instructions: Section D to be completed by informant. Informant is responsible for certifying the identity of the deceased.

40. Identity No. (Passport No. if foreigner)											41. Date of Birth	<table border="1"><tr><td>Y</td><td>Y</td><td>Y</td><td>Y</td><td>M</td><td>M</td><td>D</td><td>D</td></tr></table>								Y	Y	Y	Y	M	M	D	D
Y	Y	Y	Y	M	M	D	D																				
42. Citizenship																											
43. Surname																											
44. Forenames																											
45. Residential Address: Street																											
Town											Province																
Telephone No. (Home)											Cellphone No.																

46. The Deceased is my: ☐ 46.1 Parent ☐ 46.2 Spouse ☐ 46.3 Child ☐ 46.4 Other, Specify

I, the undersigned, hereby certify that the identity of the deceased mentioned in section A is to the best of my knowledge and belief true and correct in case it is not true, I shall be guilty of an offence and on conviction liable to a fine or to imprisonment for a period not exceeding five years or to both such fine and such imprisonment (Section 31(1)(b) of the Act 51 of 1992.)

Signature

Date signed

Y	Y	Y	Y	M	M	D	D
---	---	---	---	---	---	---	---

Place signed

Left thumb print of informant

G.P.-S. 09/09



REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF HOME AFFAIRS

DHA-1663 A
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NOTICE OF DEATH / STILL BIRTH

[Births and Deaths Registration Act 51 of 1992]

[Regulations 11 and 14]

BARCODE

To be completed in full and submitted at the Department of Home Affairs' office by the informant or authorised funeral undertaker. The form to be completed in black ink with **BLOCK LETTERS**. Please mark with ☒ the CORRECT box, where required. **All fields are COMPULSORY.** Incomplete applications and applications that are not legible may be considered invalid. (Note: The fingerprints of the deceased, the informant and the undertaker must be taken by the undertaker)

Serial number

E. PARTICULARS OF FUNERAL UNDERTAKER

Instructions: Section E to be completed by **Funeral Undertaker**. The undertaker must take his or her finger print, the finger print of the deceased and the informant. **Authorised Funeral Undertaker or Informant** may submit the completed form to the nearest Home Affairs office.

47. Name of Funeral Parlour

48. DHA Designation No. 49. Company Reg. No.

50. SARS Reg. No. (Income tax reference no.)

Details of Funeral Undertaker or Authorised Representative

51. Identity No. (Passport No. if foreigner)

52. Surname

53. Forenames

54. Business Address Street

Town

Province Postal Code

Telephone No. (Office)

Cellphone No.

55. Date of collection of corpse 56. Date of Cremation (if applicable)

57. Place of Burial (City / Town / Village) Province

58. Date of Burial 59. Grave No. (if available)

Name of person who collected the deceased:

60. Identity No. (Passport No. if foreigner)

61. Surname

62. Forenames

Place signed

Date signed Signature

F. FOR OFFICIAL USE ONLY

Registration of death approved, DHA-1663 received by (particulars of DHA official):

63. Identity No.

64. Surname

65. Forenames

66. Persal No.

Documents included with this notice: ☐ Copy of the deceased's ID ☐ Copy of ID document of the informant

☐ DHA - 6 (if applicable) ☐ DHA - 1680 (if applicable)

DHA-1663 was submitted by: ☐ Informant ☐ Funeral Undertaker




Left thumbprint of funeral undertaker

Office stamp of funeral undertaker

Office stamp of DHA

Notification / register of death / still birth (BI-1663)

 REPUBLIC OF SOUTH AFRICA DEPARTMENT OF HOME AFFAIRS NOTIFICATION / REGISTER OF DEATH / STILL BIRTH in terms of the Births and Deaths Registration Act, 1992 (Act No. 51 of 1992)		BI - 1663 Space for Bar Code								
<p>* Must be completed in black ink (please tick <input checked="" type="checkbox"/> where applicable)</p> <p>* Please refer to instructions</p> <p>FILE No: _____ DATE: _____ SERIAL No: A0 1857265</p>										
A PARTICULARS OF DECEASED INDIVIDUAL <input type="checkbox"/> / STILLBORN CHILD <input type="checkbox"/>		Date of birth <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Y</td><td>Y</td><td>Y</td><td>Y</td> <td>M</td><td>M</td> <td>D</td><td>D</td> </tr> </table> Age at last birthday _____ years Sex _____ If death occurred within 24 hours after birth _____ No. of hours alive _____	Y	Y	Y	Y	M	M	D	D
Y	Y		Y	Y	M	M	D	D		
Identity number of deceased _____ Surname _____ Maiden Name (If female) _____ Forenames _____ Date of death _____										
MARITAL STATUS OF DECEASED Single <input type="checkbox"/> Civil Marriage <input type="checkbox"/> Living as married <input type="checkbox"/> Widowed <input type="checkbox"/> Religious Law Marriage <input type="checkbox"/> Divorced <input type="checkbox"/> Customary Marriage <input type="checkbox"/>										
PLACE OF BIRTH (municipal district or country if abroad) _____ PLACE OF DEATH (City / Town / Village) _____ PLACE OF REGISTRATION OF DEATH _____ CITIZENSHIP OF DECEASED _____										
B PARTICULARS OF INFORMANT		Left thumb print of deceased Left thumb print of informant								
Identity number _____ Initials and Surname _____ Relationship to deceased Parent <input type="checkbox"/> Spouse <input type="checkbox"/> Child <input type="checkbox"/> Other (specify) _____ Postal address _____ Postal Code _____ Dialling Code _____										
Was the next of kin of the deceased a smoker* during the past five years? Yes <input type="checkbox"/> No <input type="checkbox"/> Refuse to answer <input type="checkbox"/> Telephone No. _____ Date _____ Signature _____										
C PARTICULARS OF FUNERAL UNDERTAKER Initials and Surname _____ Designation No. _____ Place of burial / cremation _____ Date _____ Signature _____										
D CERTIFICATE BY ATTENDING MEDICAL PRACTITIONER / PROFESSIONAL NURSE I, the undersigned, hereby certify that the deceased named in Section A, to the best of my knowledge and belief, died solely and exclusively due to NATURAL CAUSES specified in Section G <input type="checkbox"/> I, the undersigned, am not in the position to certify that the deceased died exclusively due to natural causes <input type="checkbox"/> INITIALS AND SURNAME _____ SIGNATURE _____ CERTIFICATE BY DISTRICT SURGEON / FORENSIC PATHOLOGIST I, the undersigned, hereby certify that a medicolegal post-mortem examination has been conducted on the body of the person whose particulars are given in Section A and that the body is no longer required for the purpose of the Inquest Act, 1959 (Act No. 58 of 1959) and that the cause of death is: Unnatural <input type="checkbox"/> Under investigation <input type="checkbox"/> Natural (Cause of Death as indicated in Section G) <input type="checkbox"/> Initials and Surname _____ Date _____ Place of post-mortem _____ Date _____ Signature _____ Date signed _____ SAMDC / SANC Reg. No. _____ Date signed _____ Postal Address _____ Postal Code _____ Mortuary Reference _____ SAMDC Reg. No. _____										
E FOR OFFICIAL USE ONLY Registration of death approved and burial order issued _____ Address _____ Force No. / Designation No. _____ Persal No. _____ Date _____ Signature _____ Office Stamp										

* Someone who smokes tobacco on most days

PHBAGON 225637 0/1

Mortality Reporting System in the Cook Islands October 2016

Tearoa Iorangi

Manager Health Information Unit

Ministry of Health, Cook Islands

tearoa.iorangi@cookislands.gov.ck, Phone: (+682) 22664

Background

Recording and collating information on deaths is important. Death registration facilitates legal processes for families such as land entitlements, tribal titles and access to bank accounts. It is also critical for removing people from official government lists such as electoral rolls and more importantly provides critical statistical information for planning and policy decisions. Accurate data on deaths and causes of death is the most effective way of measuring the disease burden in the population.

Following an initial review meeting of the key representatives from the Ministry of Health, Government Statistics Office and Ministry of Justice, it was identified that although a legislation review will be necessary in order to address emerging issues such as confidentiality and data sharing; overall the system is well supported under the current legislation and the greater concern is rather reviewing and formalising the flow of data both within and between agencies to ensure complete, reliable vital statistics and cause of death data can be generated on an ongoing basis.

Reporting process

All deaths in the Cook Islands are required to be registered with the Ministry of Justice Civil Registration and to have a death certificate issued. This cannot be issued without a medical certificate or coroner's report. If the family reports the death without this, the hospital is contacted to provide the appropriate paperwork. Similarly, if the medical certificate is received but the family does not report, they are contacted and advised to come in. Deaths are entered into a register book and entered into an access database before a death certificate is issued. Penalties apply for late registration.

There are strong social incentives for reporting a death in the Cook Islands, resulting in essentially complete reporting for events on island. Registration of a death is necessary for accessing bank accounts of the deceased, managing land transfers and tribal titles.

Deaths in the Outer Islands (these are Aitutaki, Mangaia, Atiu, Mauke, Mitiaro, Pukapuka, Nassau, Manihiki, Rakahanga, Penrhyn) are reported directly to the civil registrar in each area who follows the same procedure. Copies of the registration sheets are sent to the main office and to the Government Statistics Office. At the main civil registration office in Rarotonga, these copies are filed and are not collated with the Rarotonga data. Data is often slow coming in from the Outer Islands. Each registrar on each island is required to keep a copy of the register book, with the intent being that a copy of each book is sent to the central office.

Figure 1: Death certification process in Rarotonga

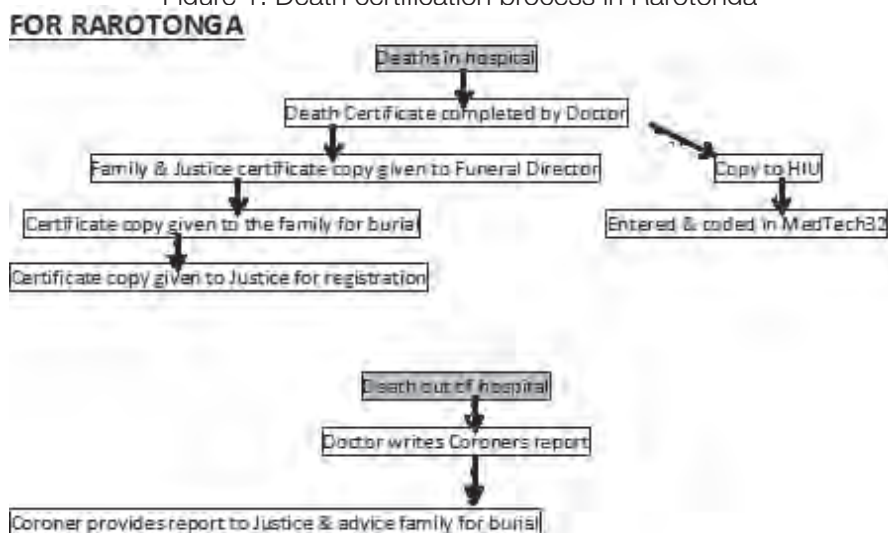
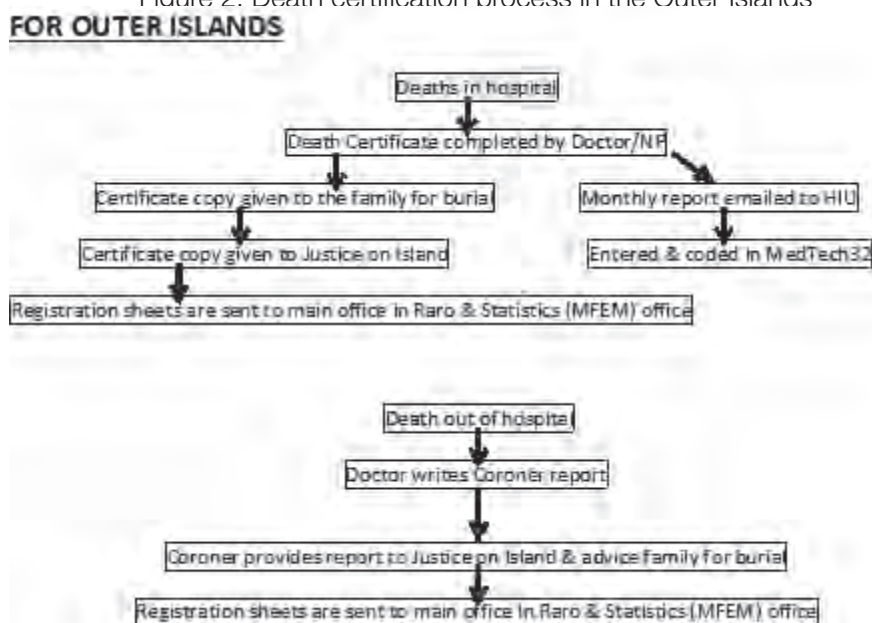


Figure 2: Death certification process in the Outer Islands



For all deaths, either a doctor's or nurse practitioners certificate, or coroner's report is required. Deaths that occur in the hospital and expected deaths that occur in the community are certified by a medical practitioner. For deaths that occur outside the hospital, the body is either brought to the hospital or health centre, or the doctor is required to visit the home. Any unexpected deaths are handled by the police and immediately referred to the coroner. Cases that die within certain time frame of reaching hospital are also referred to the coroner.

Coroner cases

In the event of a death subject to coronial enquiry, a medical officer or nurse practitioner will attend

the site and complete a report for the coroner. These deaths are notified directly by the coroner to the registry office once he receives the report and are subsequently included in the official counts for deaths. It is however possible that these are not adequately included in the reporting and analysis of cause of death.

Medical certificate

The medical certificate is currently being improved to international standard and comprises of three parts, one which remains with the book, as a copy for the hospital kept at the Health Information Unit (HIU), one that is a “burial permit” which is given to the Funeral Director and then to the family and is required by a priest or minister before burial can occur, and a copy of the certificate section which is given to the Funeral Director and is provided directly to the Ministry of Justice civil registration office.

The section of the medical certificate retained by health is periodically collected, coded using ICD10 – 103 cause list, and entered by the HIU into a paper based register, from which it is entered into “Medtech32” the Health patient management system. Deaths are also recorded in the patient module of Medtech32 by noting outcome status on individual records and collecting “primary diagnosis” at time of admission or examination. Coding in the patient record is selected by the doctor themselves using a prioritised menu and the classification tab in the program. However this is inconsistent with the International Classification of Diseases.

Data

Data is shared directly between the Ministry of Health, Government Statistics Office and the Ministry of Justice Civil Registry office supporting a high level of reporting completeness. Data checks are carried out routinely at all agencies. Deaths that occurred off-island cannot be registered, even if brought to the attention of the registrar, following a change of legislation to prevent duplicate registrations between the Cook Islands and New Zealand.

A deaths register book is kept at all hospitals and health centres, and updated from the medical certificate of deaths. These are now electronically kept onto MedTech32. This is being the main data source for mortality statistics, and is being received by the main office especially those in the Outer Islands, through their monthly reporting.


Ministry of Health and National Statistics Office both publish mortality data with causes of death only published by the Health. However all data are checked against each database before the publishing of the publications.

Medical referral cases sent to New Zealand are eligible for support from the NZ government, with the government of the Cook Islands responsible only for the cost of the initial transfer (return flights to New Zealand). Cases are met by a liaison officer in New Zealand who helps complete the paperwork to ensure they are covered under the New Zealand social security system. As such, there is no formal follow-up of outcome once a case is referred. Cook Islanders living in New Zealand on medical transfer are eligible to remain an elector on the Cook Islands electoral rolls for up to 3 years.


Conclusion

It is plausible in the Cook Islands, given the level of expertise on island and infrastructure capabilities, that it is possible to achieve complete reporting for on-island deaths, complete reporting for all events in the resident population, reliable cause of death data for all deaths in residents, and data that is both reported regularly and accessible by appropriate age/sex categories. The Cook Islands is well on the way to having complete death statistics, with key gaps in output relating to off-island events and the quality and accessibility of cause of death data.

Presentation Slides




TE MĀRAE ORA
COOK ISLANDS
Ministry of Health



COOK ISLANDS

Mortality reporting system

Tearoa Iorangi
Manager Health Information Unit
Ministry of Health




COOK ISLANDS

- Comprises of 15 islands spread over 2 million km²
- Climate: 18 – 32 degrees
- Total Population: 17,794 (2011 census)
 - Rarotonga: 13,095 (74%)
- Self-governance in free association with New Zealand
- Major economic activity - Tourism
- Visitors are concentrated on Rarotonga and Aitutaki


Cook Islands Ministry of Health

Mission: To provide accessible and affordable health care of the highest quality, by and for all in order to improve the health status of the people of the Cook Islands


- 2 hospitals – Rarotonga (70 beds), Aitutaki (28 beds)
- Health Centre for other islands with basic services
- Crude Birth rate – 17/1,000 (2015)
- Total fertility rate – 2 per woman
- 93% of deliveries in Rarotonga
- Crude Death rate – 9/1,000
- Infant mortality – 5/1,000
- Maternal mortality – 0



Rarotonga Hospital



Aitutaki Hospital



Penrhyn Health Centre

Current situation

- Registration of deaths is mandated by law, penalties do apply for late registrations
 - Births and Deaths Registration Act 1973
- All deaths in country must be issued a death certificate (if died in a health facility) or a coroner's letter of confirmation of death (if died elsewhere) and before the deceased is being buried
- All deceased are to be identified by a medical officer or nurse practitioner on islands without a medical officer
- Key benefits are:
 - Land entitlements
 - Succession to Tribal titles
- Any unexpected death are handled by the police and immediately referred to the coroner who received medical reports from medical officer, who then advice the family for burial

Death Certificate Sample - OLD

NO. 1002
DEPARTMENT OF JUSTICE
Consent to the use of the Medical Information for the purpose of the Births and Deaths Registration Act 1973

Name of Deceased: _____
Sex: _____
Date of Birth: _____
Place of Birth: _____

CAUSE OF DEATH
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

NOTICE TO FUNERAL DIRECTOR
I hereby certify that the above is a true and correct statement of the cause of death of the deceased as far as I am aware.

Signature of Medical Officer: _____
Date: _____

NO. 1002
DEPARTMENT OF JUSTICE
Form No. 2
Section 20
THE BIRTHS AND DEATHS REGISTRATION ACT 1973

1. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

2. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

3. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

4. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

5. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

6. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

7. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

8. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

9. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

10. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

NO. 1002
DEPARTMENT OF JUSTICE
Form No. 3
Section 20
THE BIRTHS AND DEATHS REGISTRATION ACT 1973

1. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

2. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

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8. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

9. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

10. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

Death Certificate Sample - NEW

DEPARTMENT OF JUSTICE NO. 1002
Consent to the use of the Medical Information for the purpose of the Births and Deaths Registration Act 1973

Name of Deceased: _____
Sex: _____
Date of Birth: _____
Place of Birth: _____

CAUSE OF DEATH
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

NOTICE TO FUNERAL DIRECTOR
I hereby certify that the above is a true and correct statement of the cause of death of the deceased as far as I am aware.

Signature of Medical Officer: _____
Date: _____

DEPARTMENT OF JUSTICE NO. 1002
Form No. 2
Section 20
THE BIRTHS AND DEATHS REGISTRATION ACT 1973

1. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

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8. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

9. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

10. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

DEPARTMENT OF JUSTICE NO. 1002
Form No. 3
Section 20
THE BIRTHS AND DEATHS REGISTRATION ACT 1973

1. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

2. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

3. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

4. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

5. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

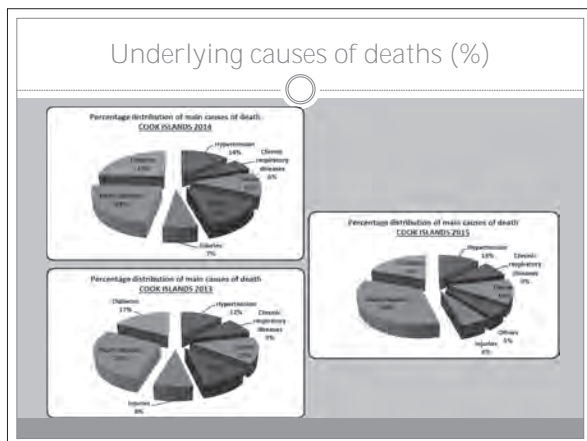
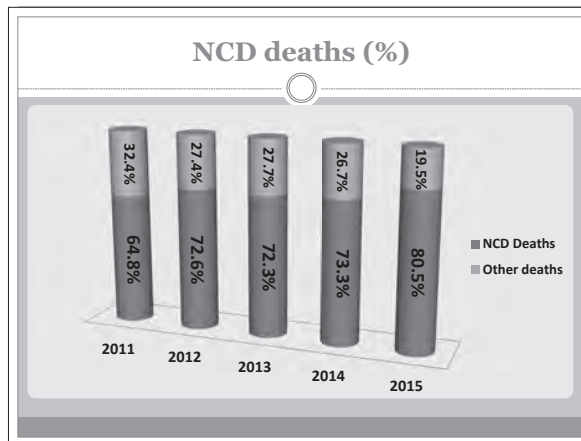
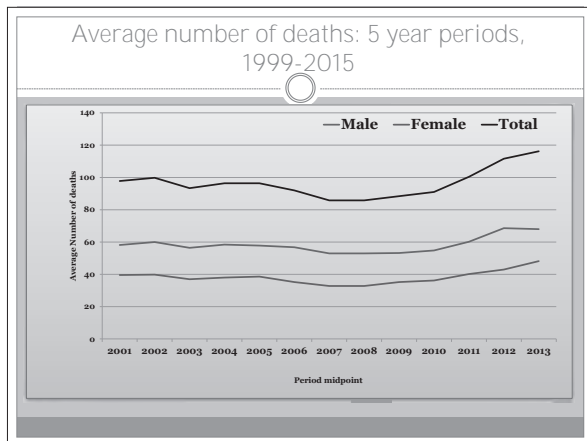
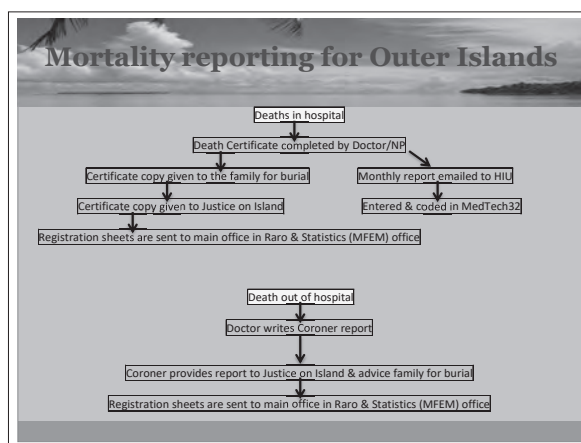
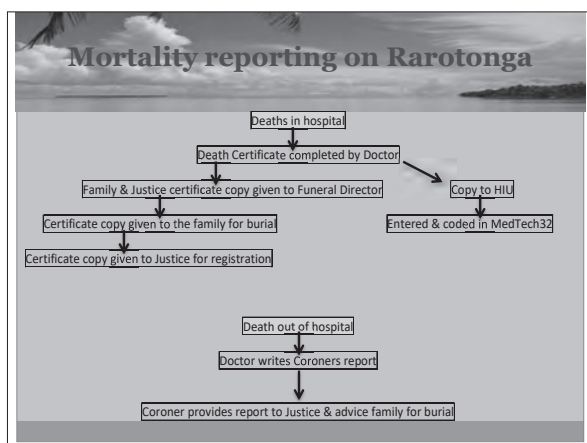
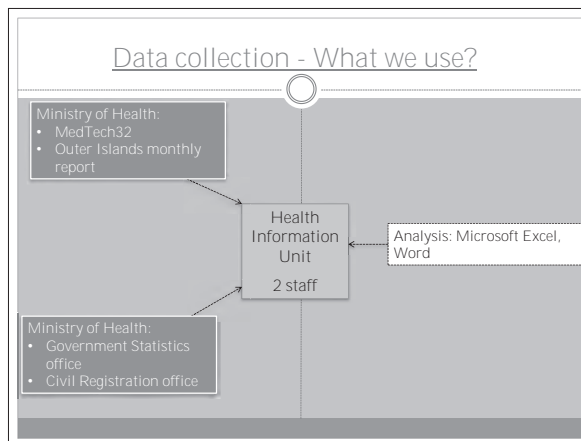
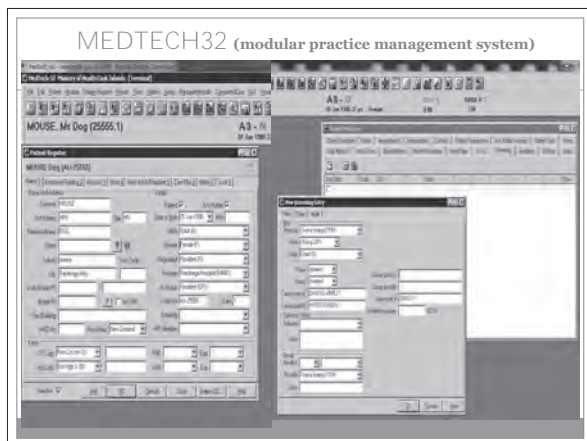
6. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

7. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

8. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

9. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.

10. I am a medical officer or nurse practitioner and I am qualified to issue a death certificate.



Death Certificate

<p>No: 0007</p> <p>DEPARTMENT OF JUSTICE</p> <p>Counterfoil for the use of the Medical Attendant who should in all cases insert full particulars</p> <p>Name of Deceased: _____</p> <p>Age: _____</p> <p>Last Seen: _____</p> <p>Date of Death: _____</p> <p>Place of Death: _____</p> <p style="text-align: center;">CAUSE OF DEATH</p> <p>I. (a) _____ Duration: _____</p> <p>(b) _____ Duration: _____</p> <p>(c) _____ Duration: _____</p> <p>II. _____ Duration: _____</p> <p>NOTICE TO FUNERAL DIRECTOR</p> <p>Date Notice Issued: _____</p> <p>Signature of Medical Officer: _____</p> <p>Date: _____</p>	<p>No: 0007</p> <p>DEPARTMENT OF JUSTICE</p> <p>Form No.5 Section 28</p> <p>NOTICE TO THE FUNERAL DIRECTOR</p> <p>I hereby give notice that I have this day issued to the registrar of Birth and Deaths a Medical Certificate as to the cause of death of: _____ Deceased</p> <p>Signature of Medical Officer: _____ Date: _____</p> <p style="text-align: center;">CERTIFICATE AS TO BURIAL</p> <p>I, _____ of _____ Funeral Director (or other person having charge of the burial do hereby certify that the body of: _____ was on the _____ day of _____ 20 _____ in my presence, duly buried at: _____ (or placed in the crematorium at: _____ for the purpose of cremation).</p> <p>WITNESS my hand this: _____ day of _____ 20 _____</p> <p style="text-align: right;">_____ (or person as aforesaid)</p> <p>NOTICE TO FUNERAL DIRECTOR Pursuant to Sec. 33 of the Births and Deaths Act 1973 you are required to give particulars and sign the Death Register within 3 days after burying the body.</p>	<p>No. 0007</p> <p>DEPARTMENT OF JUSTICE</p> <p>Form No.5 Section 28</p> <p style="text-align: center;">Death Entry</p> <p style="text-align: center;">No: _____ /20 _____</p> <p style="text-align: center;">THE BIRTHS AND DEATHS REGISTRATION ACT 1973</p> <p>To the Registrar of Births and Deaths at _____</p> <p>I, the undersigned, a duly qualified Medical Officer, do hereby certify that I attended _____</p> <p>Deceased _____ in his/her last illness.</p> <p>Date of Death: _____</p> <p>Place: _____ Age: _____</p> <p>I last saw him/her before death/after death. To the best of my knowledge and belief, the cause of death were:</p> <p>1. (a) _____ Duration _____</p> <p>2. (b) _____ Duration _____</p> <p>3. (c) _____ Duration _____</p> <p>4. _____ Duration _____</p> <p>WITNESS my hand this: _____ day of _____ 20 _____</p> <p style="text-align: right;">_____ Medical Officer</p>
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DEPARTMENT OF JUSTICE NO: 144 Counterfoil for the use of the Medical Attendant who should in all cases <u>Insert full particulars</u>	DEPARTMENT OF JUSTICE NO: 144 Form No.5 Section 28 NOTICE TO THE FUNERAL DIRECTOR	DEPARTMENT OF JUSTICE NO: 144 Form No.5 Section 28 THE BIRTHS AND DEATHS REGISTRATION ACT 1973										
Name of Deceased: _____ Age: _____ Last Seen: _____ Place of Death: _____ Place of Death: _____	I hereby give notice that I have this day issued to the Registrar of Birth and Deaths a Medical Certificate as to the cause of death of: _____ Deceased Signature of _____ Date: _____ Medical Officer: _____ CERTIFICATE AS TO BURIAL I, _____ a duly qualified Medical Officer, do hereby certify that I attended Deceased _____ In his/her last illness. Date of Death: _____ Place: _____ Age: _____ I last saw him/her before death/after death. To the best of my knowledge and belief, the cause of death were: 1. (a) _____ Duration _____ 2. (b) _____ Duration _____ 3. (c) _____ Duration _____ 4. _____ Duration _____ WITNESS my hand this: _____ day of _____ 20____ _____ Medical Officer	Death Entry No: _____ /20____ THE BIRTHS AND DEATHS REGISTRATION ACT 1973 To the Registrar of Births and Deaths at _____ I, _____ a duly qualified Medical Officer, do hereby certify that I attended Deceased _____ In his/her last illness. Date of Death: _____ Place: _____ Age: _____ I last saw him/her before death/after death. To the best of my knowledge and belief, the cause of death were: 1. (a) _____ Duration _____ 2. (b) _____ Duration _____ 3. (c) _____ Duration _____ 4. _____ Duration _____ WITNESS my hand this: _____ day of _____ 20____ _____ Medical Officer										
CAUSE OF DEATH <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Cause of Death</th> <th style="width: 40%;">Approximate interval between onset and death</th> </tr> </thead> <tbody> <tr> <td>I Disease or condition directly leading to death* (a) _____ due to (or as a consequence of)</td> <td>duration</td> </tr> <tr> <td>Antecedent causes Morbidity conditions, if any, giving rise to the above cause, (b) _____ due to (or as a consequence of)</td> <td>duration</td> </tr> <tr> <td>stating the underlying condition last (c) _____ due to (or as a consequence of)</td> <td>duration</td> </tr> <tr> <td>(d) _____ due to (or as a consequence of)</td> <td>duration</td> </tr> </tbody> </table> II Other significant conditions () _____ * This does not mean the mode of dying, e.g. heart failure, respiratory failure, It means the disease, injury or complication that caused death.	Cause of Death	Approximate interval between onset and death	I Disease or condition directly leading to death* (a) _____ due to (or as a consequence of)	duration	Antecedent causes Morbidity conditions, if any, giving rise to the above cause, (b) _____ due to (or as a consequence of)	duration	stating the underlying condition last (c) _____ due to (or as a consequence of)	duration	(d) _____ due to (or as a consequence of)	duration	NOTICE TO FUNERAL DIRECTOR Pursuant to Sec. 33 of the Births and Deaths Act 1973 you are required to give particulars and sign the Death Register within 3 days after burying the body. _____ Funeral Director (or person as aforesaid)	NOTICE TO FUNERAL DIRECTOR Pursuant to Sec. 33 of the Births and Deaths Act 1973 you are required to give particulars and sign the Death Register within 3 days after burying the body. _____ Funeral Director (or person as aforesaid)
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(d) _____ due to (or as a consequence of)	duration											
NOTICE TO FUNERAL DIRECTOR Date Notice Issued: _____ Signature of _____ Medical Officer: _____ Date: _____	NOTICE TO FUNERAL DIRECTOR Pursuant to Sec. 33 of the Births and Deaths Act 1973 you are required to give particulars and sign the Death Register within 3 days after burying the body. _____ Funeral Director (or person as aforesaid)	NOTICE TO FUNERAL DIRECTOR Pursuant to Sec. 33 of the Births and Deaths Act 1973 you are required to give particulars and sign the Death Register within 3 days after burying the body. _____ Funeral Director (or person as aforesaid)										

This paper was not presented at the meeting because the author was not able to attend.

The Ill-defined Causes of Death in Kiribati

Tibwataake Baiteke¹, Tebiria Kabiriera¹, Karen Bissell², Sharon Biribo³, Kerri Viney⁴

Health Information Service, Ministry of Health, Kiribati¹, School of Population Health, University of Auckland, New Zealand², Research Unit, College of Medicine Nursing & Health Sciences, Fiji National University³, Australian National University, Australia⁴

Abstract

Background.

The health system covers 33 atolls which are divided into six health districts. Healthcare is provided by the government through 4 hospitals, 22 health centers and 83 health facilities. Medical Officers (Doctors) are responsible for diagnosing and recording the cause of death in hospital and Medical Assistants and public health nurses who are responsible for recording the cause of death from Out-er-islands. The health information Unit is situated at the Tungaru Central hospital, centralizing the collection of all routine data (including all deaths cases) from all of six districts in or outside the hospitals. Ill-defined causes of death (IDCD) are causes of death that are not well reported and include descriptions such as, aged, terminal cases unknown etc.

Method:

Data sources

The Kiribati Health Information System is an electronic system for hospital data. Three Medical Coders perform manual coding of causes of death from wards, and from Monthly statistical form (MS-1) Medical Assistants and Public Health Nurses reported cause of death on a monthly basis from Out-er-islands and coded by Medical Coders and Assistant Statistician.

Results:

According to the Kiribati Annual Report 2011 and 2015, the number of IDCD (I'll define cause of death) is higher and also in the top ten leading causes of death. The number of ill-defined deaths in 2011 was 16.6% and in 2015 20% of all deaths. It shows here that Kiribati is one of the countries with poor reporting of Mortality Certification of Cause of Death according to doctor's and MA's diagnosis. This is worrisome "as they indicate problems related to the access and quality of medical care received by the population, in addition to compromising the reliability of mortality statistics for causes of death. Examining the number of I'll defined causes of deaths (IDCDs) within the causes of death for the year 2010 to 2014 will allow us to classify the most common diagnoses which have need ill-defined.

Conclusion:

In conclusion this study will inform the health care professionals about the common diagnoses which are categorized under I'll define causes of deaths (IDCDs) in Kiribati. It will help or improve health professional's diagnosis to strengthen Death Certification Data. Classifying ill-defined and/or unknown causes of death would inform health care professionals to avoid use of commonly used diagnoses that lead to I'll defined causes of deaths (IDCDs). This will improve the data coding for causes of death resulting in better annual reports on mortality.

Keywords: Poor Mortality Certification Cause of Death in Kiribati (I'll define causes of death).

Introduction

The Republic of Kiribati is a Micronesian Pacific island nation located in the central Pacific Ocean. It is comprised of 33 atolls scattered over a vast area of 3.5 million square kilometres and has a population of 103,070 people.¹ approximately half of the population live on the capital island of Tarawa, a narrow atoll of only 17 square kilometres. Kiribati is classified as a lower middle income country and the main resources are copra and fishing licences. (Ref)

Kiribati faces numerous challenges with regards to the health of its population including a large burden of non-communicable diseases, a persistent burden of infectious diseases and the impending health effects of climate change.(Ref) A number of health statistics are sub-optimal including life expectancy at 70 years for males and 80 years for females and the under-five mortality rate which is 59 per 1000 live births.¹ The crude birth and death rates are 28.7 births per 1,000 population and 4.6 deaths per 1000 people, respectively.²

Morbidity and mortality data are important indicators which allow countries to plan for health resources, health systems, health policies and interventions. In Kiribati, International Classification of Diseases (ICD) -10 is used to code for morbidity and mortality data.³

Despite the adoption of ICD-10 codes, the Ministry of Health and Medical Services (MHMS) in Kiribati has identified that reporting on the causes of death could be improved. For example, there is no cause of death data included in the World Health Organization (WHO) statistical profile for Kiribati.⁴ According to the ICD-10, the codes R00-R99 are used for ill-defined or unknown causes of deaths which have the general classification of "symptoms, signs and abnormal and laboratory findings, not elsewhere classified".⁵ The percentage of ill-defined causes of death has been used as an indicator of the quality of coding and national vital registration systems, with a percentage of over 20% indicating low quality data (reference). In Kiribati the number of ill-defined causes of deaths in 2011 was 16.6% of all deaths recorded, indicating that the data is not low quality but that it could be improved.² These data suggest that health care staff may not be completing death certifications appropriately. In response to this problem, the MHMS organised training in death certification for medical officers in 2015. Further trainings for medical assistants are planned. It is anticipated that improved documentation of causes of death will improve mortality reporting overall and will allow MHMS to better plan health services, programmes and interventions.

To provide up to date and longitudinal information on ill-defined causes of death we undertook a study to describe causes of death over a ten year period (2005 to 2014) including the proportion of ill-defined causes of death in Kiribati, using national mortality data. Our ultimate aim is to strengthen cause of death reporting, ICD-10 coding and reduce the proportion of deaths that are recorded as ill-defined or unknown. Our data will provide a baseline against which future improvements can be measured. The study supports the fifth strategic objective of the Kiribati MHMS National Strategic Plan 2016-2019, i.e. to “address gaps in health service delivery and strengthen the pillars of the health system.”⁵

The specific objectives of our study were to report the total number of deaths per year recorded by hospitals and public health facilities from 2005 to 2014; to determine the number and proportion of ill-defined causes of death stratified by gender, age group and type of health facility where the death was recorded and to report all ill-defined causes of death according to their ICD-10 code categories.

Aim

The aim is to examine the completeness and consistency of the recording of mortality data in hospitals and public health clinics in Kiribati between 2005 and 2014.

Objectives

To assess whether reporting on the cause of death is carried out appropriately by determining the proportion of all deaths that are ill defined, and describing the characteristics of these ill-defined deaths.

Methods

Study Design

This was a retrospective descriptive study using national mortality data from the Health Information Unit, MHMS.

Setting

The Republic of Kiribati is situated in the central Pacific Ocean. The health system is primarily funded by the national Government with very little involvement of the private sector. It covers all 33 atolls which are divided into six health districts. Healthcare is provided by government staff located in 4 hospitals, 34 health centres and 66 health dispensaries.² Medical Officers are responsible for recording the cause of death for people who die in hospitals. In health centres and health dispensaries, Medical Assistants and Public Health Nurses are responsible for recording causes of death for both inpatients and outpatients.

The MHMS head office is located in South Tarawa (the capital island) and has a Health Information Unit which maintains a database of all deaths and causes of death. For deaths that occur in the main referral hospital on South Tarawa (Tungaru Central Hospital) Medical Coders collect information on the cause of death from the patient's medical record and enter this information into the Kiribati Health In-

formation System which is an online system available via the MHMS intranet. For all other deaths in the country, including those that occur at the other three hospitals, at health centres and health dispensaries, Medical Officers, Medical Assistants and Public Health Nurses report deaths and causes of deaths to the Health Information Unit on a monthly basis using a Monthly Statistics 1 (MS1) form. For people who die elsewhere (i.e. at home or in the community) the death is reported on an MS-1 form as an outpatient death. The MS1 is a paper form that is posted or e-mailed to the Health Information Unit. Coding of deaths is then carried out by trained Medical Coders according to whatever is on the MS-1 form. This information is then entered into the MS1 system on the MHMS intranet. Therefore, information on mortality is available in two information systems, both of which are managed by trained staff at the Health Information Unit.

Study Population

Our study population included all people whose deaths were registered in Kiribati between January 2005 and December 2014.

Data Variables

We extracted data from the Kiribati Health Information System and the MS1 System. Data variables extracted were; age group, gender, type of health facility in which the patient died (hospital, health centre, health dispensary), year of death, district of residence for the person who had died (Northern, Tarawa and Banaba, Central, North west, North east, Line and Phoenix), ICD-10 code and causes of death.

Analysis and Statistics

Data were analysed into Epi Info version 7 (Centers for Disease Control and Prevention, Atlanta, USA) and a descriptive analysis was performed. The number and proportion of all deaths for the years 2005 to 2014 were calculated, and the proportion of all deaths that were ill-defined was determined (i.e. deaths in the R code family). For all ill-defined deaths, numbers and proportions were calculated, stratified by year, gender, age group and health facility in which the death was recorded. The ill-defined causes of death were then grouped according to ICD-10 categories and we calculated numbers and proportions of ill-defined deaths per year.

Result:

Between 2005 and 2014 there were 5618 deaths in Kiribati, ranging from 340 -788 deaths per year (Table 1). Of these, the majority of deaths occurred in the hospital setting (n=2588, 46.1%) while one fifth of deaths (n= 1170, 20.8%) occurred in a health centre and (n=1860, 33.1%) in a health dispensary (Table 1). Annual data for the years 2005-2014 on place of death and the type of health facility in which patients died is provided in Table 1.

Of the 5618 deaths, 1049 (18.7%) were classified as ill-defined. The number of ill-defined deaths ranged from 76 - 153 per annum, with a peak in 2012. Of the 1049 ill-defined deaths 576 were male

(54.9%). Those aged 65 years and above has the highest proportion of ill-defined deaths at 40% (n=415), however in children aged 0-15 years almost 30% (29.6%, n=310) were ill-defined. Almost half of all ill-defined deaths (47.7%, n=500) occurred in a health dispensary.

When the causes of ill-defined deaths were categorised according to their R code the largest proportion of cases (30.5%, n=320) had an unknown cause of death, while 29.3% (n=307) had general symptoms and signs. There was missing data, 5.4% (n=57) for all ill-defined causes of death.

Discussion:

This is the first time that the Kiribati MHMS has examined completeness and consistency of the reporting of mortality data by staff from health facilities over a ten year period. We showed that there are approximately 500 deaths per year in Kiribati and of these, almost one fifth of deaths (18.6%) are ill defined or unknown. This confirms our hypothesis that further efforts to improve death certification and reporting on cause of death are needed. We also showed that an ill-defined cause of death is more common among certain groups of people, including the elderly (aged 65 years and above), children (aged 0-14 years) and those whose death was reported by health dispensary staff. In addition, when ill-defined causes of death were further classified, approximately 60% had general signs and symptoms or an unknown cause of death.

The strength of this study was that it included national mortality data from the MHMS over a ten year period. The information on where the death was recorded (i.e. from which health facility) was 100% complete. Another strength is that we reported our study according to STROBE and ReCORD guidelines (REF). There were, however, some limitations. The main limitation was that we did not compare our data with the mortality data from the Kiribati Civil Registration Office (KCRO) system, which is managed by the Ministry of Internal Affairs. The MHMS systems for mortality reporting and the KCRO system are separate systems maintained by different Government Ministries. It may be of interest to compare the mortality data from the two systems to see how they compare. Another limitation is that we attempted to verify some of the missing causes of death against medical records; however, these records were archived and were not able to be accessed.

Deaths reported by staff from health centres and dispensaries are recorded by Medical Assistants and Public Health Nurses who have not undergone Medical Certification of Causes of Death (MCCD) training. In 2015, Medical Officers took part in MCCD training, provided by staff from the World Health Organization (WHO). There are future plans to train and certify Medical Assistants using the same MCCD training. It is anticipated that training will further improve cause of death reporting and death certification. In addition to this, Kiribati will soon implement a system of carbon copy death certificates with three copies of a death certificate - one for the Ministry of Internal Affairs, one for the Health Information Unit, MHMS and one for the family of the deceased. Currently, death certificates are a single sheet of paper.

There are sparse data on the proportion of deaths that are ill defined in other Pacific Islands. However one study, conducted in 2005 estimated the proportion of all deaths that were ill-defined for 115 countries; 12 were Pacific Islands (Ref). Of these, five (42%) had complete data. (Ref) In these coun-

tries, the proportion of all deaths that were ill-defined ranged from 0% in Niue to 35% in Kiribati. (Ref). Other countries with a high proportion of ill-defined deaths were Fiji (29%) and Tuvalu (27%) (Ref). While this study is not directly comparable to ours, it is pleasing to note that the proportion of ill-defined deaths in our study is lower than that reported in the 2005 paper. (Ref) This paper also classified countries into data quality groups (i.e. high, medium and low) based on three main criteria: a) type of cause of death coding used, b) completeness of cause of death data and c) the proportion of deaths that were ill defined. (Ref) Using this classification, Kiribati was classified as having medium data quality. (Ref)

We reported that a large proportion of deaths are ill-defined in Kiribati and therefore reporting on the cause of death needs to be improved. While training of Medical Officers on death certification has begun, Medical Assistants are yet to be trained and there may be a need to train Public Health Nurses as well. In addition, it may be useful to provide feedback to health professional on the completeness of mortality data including new policies regarding death certification.

Conclusion:

In conclusion, almost one fifth of all deaths in Kiribati were ill-defined and this could be improved by the introduction of MCCD training to all the health personnel whom are responsible for certifying deaths. Improved quality of mortality data should allow the MHMS to better target services, programs and interventions. This will improve the data coding for causes of death resulting in better annual reports on mortality.

ACKNOWLEDGEMENTS:

This research was conducted through the Structured Operational Research and Training Initiative (SORT IT), a global partnership led by the Special Programme for Research and Training in Tropical Diseases at the World Health Organization (WHO/TDR). The model is based on a course developed jointly by the International Union Against Tuberculosis and Lung Disease (The Union) and Medicines sans Frontiers (MSF/Doctors Without Borders). The current training was run in the South Pacific by the International Union Against Tuberculosis and Lung Disease (The Union) and the Public Health Division of the Pacific Community (SPC), New Caledonia. Additional support for the course was provided by the School of Population Health, The University of Auckland, New Zealand; the Research Unit, College of Medicine, Nursing and Health Sciences, Fiji National University; Regional Public Health, Hutt Valley District Health Board, New Zealand; University of Melbourne, Australia; The Victorian Tuberculosis Program, Melbourne; Australian National University; Pacific Island Health Officers' Association.

FUNDING

Funding for the course was provided by The Union and SPC. Costs for open access publication were funded by La Fondation Veuve Emile Metz-Tesch. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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eke@gmail.com).

Ethics Issues:

Permission for the study will be sought from Health Information Unit, Kiribati (HIS Kiribati) first and then local ethics approval will be sought from Ministry of Health (MHMS Kiribati).

Ethics approval:

Ethics approval was obtained from the Ethics Advisory Group of the International Union against Tuberculosis and Lung Disease, Paris, France. The Government of Kiribati does not have a human research ethics committee; however, the MHMS provided approval for the study.

CONFLICT OF INTEREST

No conflict declared.

Additional files

Additional file 1

TABLES / BOXES

Box 1. Categories of ICD-10 codes for ill-defined causes of death

R00-R09	Symptoms and signs involving the circulatory and respiratory systems
R10-R19	Symptoms and signs involving the digestive system and abdomen
R20-R23	Symptoms and signs involving the skin and subcutaneous tissue
R25-R29	Symptoms and signs involving the nervous and musculoskeletal systems
R30-R39	Symptoms and signs involving the genitourinary system
R40-R46	Symptoms and signs involving cognition, perception, emotional state and behavior
R47-R49	Symptoms and signs involving speech and voice
R50-R69	General symptoms and signs
R70-R79	Abnormal findings on examination of blood, without diagnosis
R80-R82	Abnormal findings on examination of urine, without diagnosis
R83-R89	Abnormal findings on examination of other body fluids, substances and tissues, without diagnosis
R90-R94	Abnormal findings on diagnostic imaging and in function studies, without diagnosis
R97-R97	Abnormal tumor markers
R99-R99	Ill-defined and unknown cause of mortality

Additional file 2

Box 2 : Data Collection Instrument for I'll defined causes of deaths(IDCDs) in Kiribati.

Variable		Type
ID Number (of IDCD Death)	1-x,xxx	Numerical
Report year	20--	Numerical
Island	Code	Nominal
HC/Dispensary	Code	Nominal
Doctor/MA/NURSE	Code	Nominal
Age	0-99	Numerical
Age - Group	Range 10	Ordinal
Sex	M/F	Nominal
Family code (ICD 10)	A-Z	Nominal
Cause of death, or presenting symptoms before death	Diagnosis	Nominal
Code	A00-Z99	Nominal
District	Code	Nominal

Additional file 3

Table 1: Number and proportion of total deaths in Kiribati by year (2005-2014) and type of health facility in which the death was recorded

Year of death	Death in hospital		Death in health centre N (%)		Death in health dispensary N (%)		Total N	
	All Deaths N (%)	Ill-defined N (%)	All Deaths	Ill-defined N (%)	All Deaths N (%)	All Deaths N (%)	All Deaths N (%)	Ill-defined N (%)
2005	266 (44.0)	23 (3.8)	132 (21.9)	37 (29.1)	206 (34.1)	67 (52.8)	599	127 (21.20)
2006	277 (45.0)	25 (4.1)	139 (22.6)	39 (35.8)	200 (32.5)	45 (41.3)	616	109 (17.69)
2007	174 (37.7)	13 (2.8)	112 (24.2)	20 (26.3)	176 (38.1)	43 (56.6)	462	76 (16.45)
2008	201 (39.6)	21 (4.1)	112 (22.1)	34 (28.8)	195 (38.4)	63 (53.4)	508	118 (58.70)
2009	71 (20.9)	38 (11.2)	102 (30.0)	26 (29.9)	167 (49.1)	49 (56.3)	340	87 (25.58)
2010	365 (61.9)	38 ()	85 (14.4)	22 (23.9)	140 (23.7)	32 (34.8)	590	92 (15.59)
2011	281 (57.2)	21 (4.3)	72 (14.7)	16 (20.3)	138 (28.1)	42 (53.2)	491	79 (16.08)
2012	347 (44.0)	52 (6.6)	178 (22.6)	37 (24.2)	263 (33.4)	64 (41.8)	788	153 (19.41)
2013	235 (44.2)	31 (5.8)	104 (19.6)	26 (25.0)	193 (32.4)	47 (45.2)	532	104 (19.54)
2014	371 (54.0)	21 (3.1)	134 (19.5)	21 (20.2)	182 (26.5)	48 (46.2)	687	104 (15.13)
Total	2588 (46.1)	283(05.03)	1170 (20.8)	278(04.94)	1860 (33.1)	500(08.8)	5618	1049 (18.67)

Additional file 4

Table 2: Number and proportion of all deaths that are ill defined in Kiribati by year (2005-2014), gender, age group and type of health facility where the death was recorded

Number and proportion of all deaths that are ill defined										
2005 N (%)	2006 N (%)	2007 N (%)	2008 N (%)	2009 N (%)	2010 N (%)	2011 N (%)	2012 N (%)	2013 N (%)	2014 N (%)	Total N
72 (56.7)	52 (47.7)	39 (51.3)	59 (50)	40 (6.9)	47 (51.1)	47 (59.5)	98 (64.1)	66 (63.5)	56 (53.9)	576 (54.9)
55 (43.3)	57 (52.3)	37 (48.7)	58 (49.2)	47 (10.0)	43 (46.7)	31 (39.2)	54 (32.3)	38 (36.5)	48 (46.2)	468 (44.6)
0 (0)	0 (0)	0 (0)	1 (0.9)	0 (0)	2 (2.2)	1 (1.3)	1 (0.7)	0 (0)	0 (0)	5 (0.1)
14 (11.2)	1 (0.9)	0 (0)	1 (0.9)	2 (2.3)	6 (6.5)	7 (8.9)	15 (9.8)	8 (7.7)	12 (11.5)	66 (6.3)
10 (7.9)	5 (4.6)	7 (9.2)	3 (2.5)	5 (5.8)	2 (2.2)	2 (2.5)	8 (5.2)	9 (8.7)	1 (0.1)	52 (5.0)
2 (11.8)	3 (2.8)	0 (0)	0 (0)	3 (3.5)	1 (1.1)	1 (1.3)	3 (2.0)	1 (0.1)	3 (2.9)	192 (18.3)
25 (19.7)	26 (23.9)	9 (11.8)	23 (19.5)	16 (18.4)	15 (16.3)	13 (16.5)	29 (19.0)	19 (18.3)	17 (16.4)	121 (11.5)
13 (10.2)	14 (12.8)	10 (13.2)	12 (10.2)	13 (14.9)	14 (15.2)	5 (6.3)	18 (11.8)	10 (9.6)	12 (11.5)	17 (1.6)
18 (14.2)	11 (10.1)	9 (11.8)	11 (8.9)	14 (16.1)	9 (9.8)	15 (19.0)	17 (11.1)	13 (12.5)	7 (6.7)	124 (11.8)
45 (35.4)	40 (36.7)	34 (44.7)	46 (39.0)	34 (39.1)	39 (42.4)	32 (40.5)	58 (37.9)	37 (35.6)	50 (48.1)	415 (40.0)
0 (0.0)	9 (8.3)	7 (9.2)	22 (18.6)	0 (0.0)	6 (6.5)	4 (5.1)	5 (3.3)	7 (6.7)	2 (1.9)	62 (6.0)
23 (18.1)	25 (22.9)	13 (17.1)	21 (7.8)	12 (3.8)	38 (41.3)	21 (26.6)	52 (34.0)	31 (29.8)	21 (20.2)	257 (24.5)
37 (29.1)	39 (35.8)	20 (26.3)	34 (28.8)	26 (29.9)	22 (23.9)	16 (20.3)	37 (24.2)	26 (25.0)	35 (33.7)	292 (27.8)
67 (52.8)	45 (41.3)	43 (56.6)	63 (53.4)	49 (56.3)	32 (34.8)	42 (53.2)	64 (41.8)	47 (45.2)	48 (46.2)	500 (47.7)
127	109	76	118	87	92	79	153	104	104	1049

Additional file 5

Table3: Proportion of ICD-10 categories of code of ill-defined death in Kiribati by year, 2005 - 2014

Year	Symptoms and signs - circulatory and respiratory systems R00-R09	Symptoms and signs - digestive system and abdomen R10-R19	Symptoms and signs - skin and subcutaneous tissue R20-R23	Symptoms and signs - genitourinary system R30-R39	Symptoms and signs - speech and voice R47-R49	General symptoms and signs R50-R69	Abnormal findings on examination of blood, without diagnosis R70-R79	Abnormal findings on diagnostic imaging and function studies, without diagnosis R80-R84	Unknown cause of mortality R99	Missing	TOTAL
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N
2005	26 (20.5)	25 (19.7)	2 (1.6)	1 (0.8)	0 (0)	41 (32.3)	2 (1.6)	0 (0)	24 (18.9)	6 (4.7)	127
2006	8 (7.3)	22 (20.2)	2 (1.8)	0 (0)	0 (0)	26 (23.9)	2 (1.8)	1 (0.9)	37 (33.9)	11 (10.1)	109
2007	7 (9.2)	13 (17.1)	2 (2.6)	0 (0)	0 (0)	23 (30.3)	0 (0)	0 (0)	24 (31.6)	7 (9.2)	76
2008	20 (17.0)	12 (10.2)	4 (3.4)	0 (0)	0 (0)	37 (31.4)	1 (0.9)	0 (0)	39 (33.1)	5 (4.2)	118
2009	10 (11.5)	15 (17.2)	0 (0)	0 (0)	0 (0)	25 (28.7)	3 (3.5)	0 (0)	28 (32.2)	6 (6.9)	87
2010	18 (19.6)	20 (21.7)	0 (0)	1 (1.1)	1 (1.1)	23 (25.0)	2 (2.2)	0 (0)	19 (20.7)	8 (8.7)	92
2011	11 (13.9)	9 (11.4)	2 (2.5)	0 (0)	0 (0)	26 (32.9)	3 (3.8)	0 (0)	25 (31.7)	3 (3.8)	79
2012	23 (15.0)	25 (16.3)	4 (2.6)	1 (0.7)	2 (1.3)	38 (24.8)	3 (2.0)	0 (0)	49 (32.0)	8 (5.2)	153
2013	11 (10.6)	17 (16.4)	0 (0)	0 (0)	1 (0.1)	29 (27.9)	1 (0.1)	0 (0)	45 (43.3)	0 (0)	104
2014	13 (12.5)	15 (14.4)	1 (1)	0 (0)	0 (0)	39 (37.5)	3 (2.9)	0 (0)	30 (28.9)	3 (2.9)	104
Total	147 (14.0)	173 (16.5)	17 (1.6)	3 (0.3)	4 (0.4)	307 (29.3)	20 (1.9)	1 (0.1)	320 (30.5)	57 (5.4)	1049

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Presentation Slides

Ohayo gozaimasu and Mauri from Kiribati

I'LL DEFINED CAUSES OF DEATH IN KIRIBATI

Prepared by Ms. Tibwataake Baiteke

Background

The Republic of Kiribati is situated in the central Pacific Ocean. The health system is primarily funded by the national Government with very little involvement of the private sector. It covers all 33 atolls which are divided into six health districts. Healthcare is provided by government staff located in 4 hospitals, 34 health centres and 66 health dispensaries. Medical Officers are responsible for recording the cause of death for people who die in hospitals. In health centres and health dispensaries, Medical Assistants and Public Health Nurses are responsible for recording causes of death for both inpatients and outpatients.

Methods

Adequate description of the type of study, study sample and statistical methods used.

Results

Between 2005 and 2014 there were 5618 deaths, of these 1049 were ill-defined aggregated by age group, gender and type of health facility.

Number and proportion of all deaths that are ill defined in Kiribati by year (2005-2014), by age-group and sex.


Characteristics	2005 N (%)	2006 N (%)	2007 N (%)	2008 N (%)	2009 N (%)	2010 N (%)	2011 N (%)	2012 N (%)	2013 N (%)	2014 N (%)	Total N
Gender											
Male	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
Female	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
Age Group											
0-4	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)	14 (17.1)
5-14	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
15-44	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
45-64	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
65+	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
Health Facility											
Hospital	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
Health Centre	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
Health Dispensary	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)	22 (26.7)
Total	107	107	107	107	107	107	107	107	107	107	107

Conclusion

Almost one fifth of all deaths in Kiribati were ill-defined. Cause of death reporting should be improved through Medical Certification on Causes of Death training and other means. Improved quality of mortality data should allow the Government to better target health services, programs and interventions. This will improve the data coding for causes of death resulting in better annual reports on mortality.

Domo arigatou gozamashta and Kam bati n rabwa!

Death Certificate

		DEATH NOTIFICATION AND MEDICAL REGISTRATION OF CAUSE OF DEATH									
		Births and Deaths Registration Act 1996 Section 10(1)									
Patient MRN:						Personal Identification No:					
Source of Notification											
<input type="checkbox"/> Medical Practitioner		<input type="checkbox"/> Medical Assistant		District: _____							
If from a Health Facility: Hospital/Facility: _____ Hospital Ward: _____											
Information of Deceased											
1. Father's name:				Mother's name:				First & Middle names:			
2. Date of Death		Day	Month	Year		3. Date of Birth		Day	Month	Year	
										Age (if DOB unknown)	
4. Sex (please tick)		5. Nationality		6. Ethnicity		7. Religion					
<input type="checkbox"/> M <input type="checkbox"/> F <input type="checkbox"/> Other		<input type="checkbox"/> Kiribati National <input type="checkbox"/> Non-National		<input type="checkbox"/> Micronesian <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> Melanesian <input type="checkbox"/> Polynesian _____		<input type="checkbox"/> Catholic <input type="checkbox"/> Seventh-day <input type="checkbox"/> KUC <input type="checkbox"/> Baha'i <input type="checkbox"/> Mormons <input type="checkbox"/> Other _____					
8. Marital Status				9. Place of Death:							
<input type="checkbox"/> Never Married <input type="checkbox"/> Divorced <input type="checkbox"/> Married <input type="checkbox"/> Widowed <input type="checkbox"/> De Facto				10. Place of Burial Village: Cemetery/Village/Don't Know							
11. Occupation				12. Current Address:				13. Home Address:			
				Village: _____ District: _____				Village: _____ District: _____			
Cause of death								ICD Code		Approximate interval between onset and death	
(Only to be filled by a Registered Medical Practitioner or a Medical Assistant)								(Only for Coder)			
I		(a) Immediate cause									
		(b) Due to (or as a consequence of)									
		(c) Due to (or as a consequence of)									
		(d) Due to (or as a consequence of)									
II		Contributory causes									
Whether a Maternal Death or not										Tick "✓" relevant box	
										Yes No	
(1) Was she pregnant at the time of death?											
(2) <u>If no</u> , Did she deliver a baby within 6 weeks (42 days) before the date of death?											
(3) <u>Or</u> , Did she have an abortion within 6 weeks (42 days) before the date of death?											
(4) What is the length of time (No. of days) from delivery or abortion to death?											
Declaration: I do hereby declare the above to be a true and correct statement.											
Print Name:				Designation:		Signature:			Date:		
Declarer Address:								Phone:			

MED/F/A4/900-7-15

OFFICIAL DOCUMENT

Please turn over for instructions

DEATH NOTIFICATION AND MEDICAL REGISTRATION OF CAUSE OF DEATH

Overview of Mortality Statistics in Jamaica for the Period 2010-2014

Veronica R. Miller-Richards,

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Jermaine Martin, Jamaica Medical Records Association

Introduction

Surveillance of mortality data is vital to the development of regional and national health policies and aids in the prevention and control of diseases in public health settings. Mortality statistics, compiled from medical certificates of death, are the only disease-related data collected on a routine basis that is population based (Kircher and Anderson 1987). The knowledge of the size and characteristics of a country's population on a timely basis is a prerequisite to socioeconomic planning. Because a population increases by the addition of live births and decreases by the subtraction of deaths, information about the number of live births and deaths occurring in a population is crucial for estimating the natural increase (or decrease) and the annual change in population size and structure for that population (United Nations, Principles and Recommendations for a Vital Statistics System, Revision 2).

In spite of limitations with respect to data quality, as a health indicator, mortality is easier to measure than morbidity and is historically more often complete. Mortality data are very useful for monitoring trends, making comparisons between and within countries and regions and estimating the burden of premature death.

The Vital Statistics Commission of Jamaica, in collaboration with the Pan American Health Organization (PAHO), Caribbean Community and Common Market (CARICOM), and the Centers for Disease Control (CDC), performed an assessment or audit of the processes utilized to collect, process, and disseminate national vital statistics data (Audit of Vital Registration and Vital Statistics Systems, 2005). The audit included the review of pertinent laws, rules, regulations, and policies.

Policy issues arising from analysis of these data covered areas of health service delivery (organization of the service, mortality surveillance, auditing and quality of care) and health management systems (manpower development and deployment, and information system).

This paper provides an overview of the assessment of mortality data/statistics for the period 2010-2014 at four major regional hospitals across the island to identify gaps in the data collection process/system.

The study

Jamaica, the largest English-speaking island in the Caribbean Sea, has a population of 2,847,232 (2010 est.). The Ministry of Health is responsible for ensuring the provision of an adequate, effective and efficient health service for the population of Jamaica. Services are provided through the government's network of 23 hospital and approximately 350 health centres and specialized institutions. The services of primary, secondary and tertiary health care are administered through four Regional Health Authorities. There are approximately 1678 doctors and 168 health records personnel in Jamaica.

Goal of the study

The goal of this study was to assess the responsibility, authority, and accountability of the relevant personnel managing mortality statistics and to determine the efficiency of the collection, collation and dissemination of the data to key stake holders such as the Ministry of Health in order to improve efficiencies.

Preparation

An extensive literature review was conducted to address questions such as: What policy guidelines cover the processes of the Medical Certificate of Death (MCCD), discharge summaries and the coding of mortality data? How frequent is the assessment of the MCCD and the coding of all deaths done? How does the collation and dissemination of mortality data impact the country? How reliable is the mortality data collected, collated and disseminated? The objective was not only to benefit from the experience of others in deciding what questions and observations to include in the study but also to have supporting evidence when meeting with clinicians and health information staff.

Taking into account the information gained in the literature review, two instruments were developed, a questionnaire to be used when meeting with selected clinicians and health records personnel and one to be used by the individual conducting the observations.

Four regional hospitals were included in the study. They were randomly selected.

The selected regional hospitals were stratified by the number of persons directly involved in the processes of the Death Registry. The sample size consisted of a total of 12 Health Records personnel who worked in the Death Registry and 8 doctors who completed the Medical Certificate of Cause of Death. All participants selected participated in the interview schedule.

Ethics is a major factor that must be considered when conducting research and prior to beginning this study the researchers sought informed consent. The individuals involved were informed of the purpose, benefits and the potential harm if any, that may arise from conducting the research. They will also have a chance to examine the results of the study. They were also informed that the identity of participants will be kept confidential and no personal information will be revealed.

Execution

The retrospective study of mortality statistics from the selected health facilities was conducted between March and July 2016 and covered a five year period: 2010, 2011, 2012, 2013, and 2014. These years were selected as they reflected the most complete years of data for review at the time of the study.

At each facility the researcher observed and assessed:

- Inpatient and outpatient statistical reports to obtain the number of deaths occurring during the period
- The death register to observe the level of compliance with Ministry of Health (national) policy which dictates that a death is entered when advised of the deaths by the health records personnel that occurred in the hospital on the (notification is received from the ward or ER, and

information is updated daily as the deaths occur

- Death certificate counterfoil which contains selected data from death certificate that was submitted
- The health records of deceased patients were selected at random, 5 for each of the years included in the study – a total of 25 records at each facility. Each record was reviewed for presence of a discharge summary, completeness of documentation, legibility, use of abbreviations, coding of deaths and diagnoses.

The interviews with the selected individuals were conducted before the observations to ascertain their knowledge of the policies and procedures governing the completion of the MCCD and death notifications, the timeliness in the preparation of discharge summaries and death certificates.

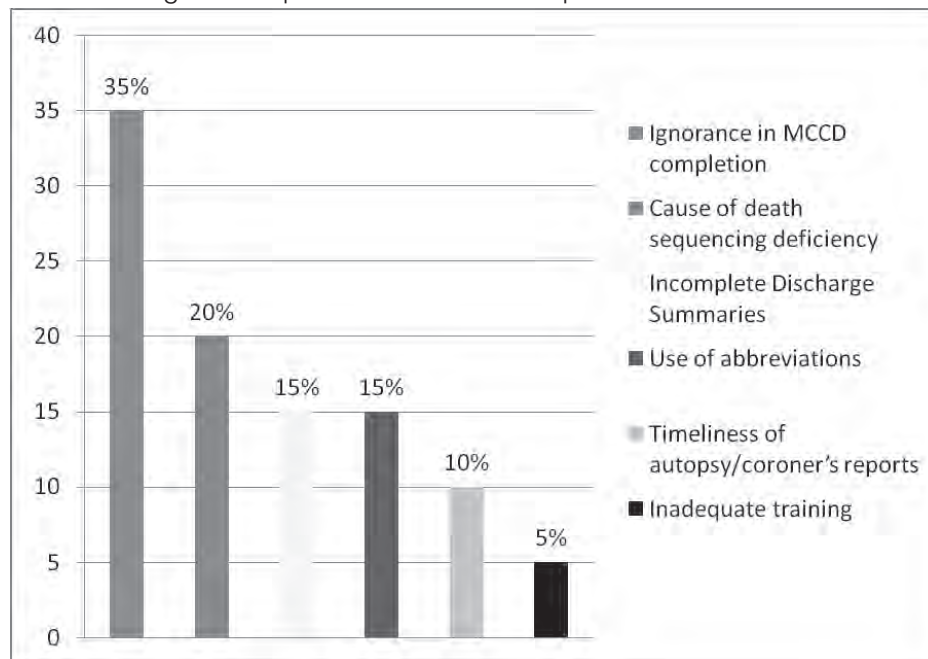
Results

All the facilities involved in the study indicated that 95 percent of the deaths occurring within the facilities each month has been registered or reported to the Registrar General Department. The 5 percent not reported refers to mainly coroner's cases requiring autopsies/coroner's inquest which take time based on police department and court proceedings. *Timeliness* standards established by Jamaica's Vital Statistics Commission (VSC) (2010) required that data be made available for analysis and dissemination within three months of death, but not later than March 31 the following year to generate provisional estimates for the prior year. Jamaican estimates are updated only once, 12 months later. Currently there are still delays in having the autopsies/coroner's inquest done on time and as such the basic standards of reporting these deaths are delayed. Notwithstanding those issues the basic standards in terms of timeliness has improved.

The study revealed that respondents opined that there were mixed reactions as to whether the standard operating procedures were been maintained in the completion of the MCCD. Of the respondents, 50 percent said a definitive no, 40 percent said yes. The remaining 10 percent was evenly split between sometimes and most times, indicating that, at best, the practice is inconsistent.

Respondents were also of the view that the major gaps identified ignorance in the completion of the MCCD appropriately which accounted for 35 percent, 20 percent of the causes of death were poorly sequenced based on WHO standards, 15 percent included medical abbreviations which are often misinterpreted while 15 percent accounted for by incomplete discharge summaries, 10 percent insufficient time to complete and 5 percent cited inadequate training.

Figure 1 Gaps identified in the completion of the MCCD



Based on the literature addressing the accuracy of the diagnoses on the MCCD in which the physician's diagnosis in the medical record was considered the gold standard (Lahti RA, Penttilä A. 2001, Lloyd and Rissing 1985), the challenges relating to the timeliness in the completion of discharge summaries is a major issue. An alarming 75 percent of respondents posited that the summaries are not completed in the appropriate manner and on a timely basis. Only 10 percent said yes while 15 percent said they were done most times.

The major issues involving coroner's cases, is the time it takes to have an autopsy done by the government pathologist and preparation of autopsy reports. 55 percent of the health staff within the death registry at the respective facilities indicated that it takes a long time for an autopsy to be done and the report submitted to the relevant personnel.

Vital Statistics Commission–VSC (2005) in its study revealed that the cause of death is often readily apparent and easily determined from a post mortem, whereas determination of the manner of death often requires more extensive and sometimes lengthy investigation. In some cases, because of problems in garnering cooperation with witnesses, investigations into the manner of deaths have taken up to five years to be completed. The study further stated that an amendment to the Coroner's Act was passed and should address some problems in the information collection process. Of importance is the time interval in which the police are required to report to the Coroner.

The notification of death to the Coroner must be done within 48 hours of discovery and a report of their investigation within 21 days of notification (or seek an extension). In addition, a medical practitioner contracted to do the post mortem is given 48 hours to provide a report to the Coroner. In light of this, the effect of increasing the timeliness of the reporting of the death and even perhaps the cause of death to the Coroner should see some improvement. Data not only have to be correct and complete; they also have to be accessible to those who need them and be sufficiently timely for their in-

tended purpose (World Health Organization 2013).

A medical abbreviation can represent more than one condition (e.g., CVA – cerebrovascular accident or cardiovascular accident). At best, it is time-consuming to arrive at the correct condition and it is easily possible that the correct condition is missed. It was also observed that 51 percent of MCCD's included medical abbreviations while 49 percent were completed appropriately. There were inconsistencies in the appropriateness of the guidelines used in the completion of the MCCD according to the WHO guidelines.

The findings of this study are in keeping with the VSC's findings and recommendations issued in August 2005. This indicated that "a lack of coherent and coordinated government policies with regard to vital statistics, a lack of effective and efficient communication and collaboration between and within agencies and Ministries, and the absence of a standard definition of vital statistics serve as significant obstacles to the production of valid and reliable national statistics". The WHO, Geneva (1979) stated that emphasis must be placed on the appropriate completion of the MCCD.

Illegibility of clinician's documentation is a significant challenge; 57 percent of the records assessed revealed illegible documentations, only 43 percent of the records had legible documentation.

O'Malley KJ (2005) stated that the illegibility of clinician documentation can provoke possible quality issues with the care of the patient. Poor handwriting in medical records results in illegible documentation creating liability and has adverse medico-legal implications for hospitals and physicians.

Supply of ICD Manuals

A major challenge in most hospital is the problem of an inadequate supply of coding manuals. This has significantly exacerbated the problem resulting in backlog coding of mortality patient records over time. A computerized Patient Administrative system (PAS) is currently in use at these hospitals however the limitations exist in the assignment of the codes.

Seventy percent of the respondents opined that they do not have adequate coding manual, 30 percent of the respondents stated that there was an adequate supply of coding manuals. WHO (2004) states that The ICD is used to translate diagnoses of diseases and other health problems from words into an alphanumeric code, which permits easy storage, retrieval and analysis of the data. The impact of non-compliance often reveals the underestimation of mortality rates mainly because the total number of deaths is too small based on the codes assigned to the quantity of health records completed appropriately.

Mortality coding

Although the death certificates are coded at the Registrar General's Department (RGD), the advantage of coding mortality at the hospital level on the health record is that it should help improve the quality of the certification on the death certificates.

An almost unanimous 90 percent of the respondents indicated that the coding of mortality data based on the World Health Organization (WHO) guidelines. 10 percent of the respondents were not coding mortality deaths according to the WHO guidelines.

The lack of trained Health Information Management personnel/workforce has resulted in deficiencies in data accuracy and integrity. In supporting this factor, Colin D Mathers et al. (2005), opined that trained personnel are needed, to ensure that, the information about the medical condition leading to death is coded appropriately so that the underlying cause of each death can be identified.

On observation of the health records used in the study, the guidelines for ICD 10 coding of mortality data were for the most part observed: 51 percent of the health records showed the utilization of the guidelines while 47 percent did not utilize the guidelines; a meager 2 percent had most of the guidelines assigned for coding. This shows the need for better consistency.

Validation of the International Classification of Disease codes (ICD-10) saw 50 percent of the health records examined as correctly coded while the remaining 50 percent had coding errors. These errors were as a result of the use of garbage codes due to the inclusion of trivial and ill-defined medical conditions by the clinician on the medical cause of death certificate. The Vital Statistics Commission (2005) concurred that coding of the underlying cause of death is done manually, using the Tenth Revision of the International Classification of Diseases (ICD-10).

Lloyd and Rissing (1985) in a study stated that the certainty, or accuracy, of a diagnosis depends upon multiple factors such as the patient, clinician, and medical staff, disease type, current state of medical knowledge and technology, context within which the diagnosis is made, and translation of coding changes into practice.

The assignment of ICD-10 Codes to mortality patients' records was observed as been done mainly by senior trained health records staff. 52 percent of the assigned codes were done by the Health Records Administrators while 48 percent were done by Health Records Technicians.

Training

Vital Statistics Commission–VSC (2005) study stated that training of physicians in proper cause of death certification is and should be an ongoing effort. We found that some efforts are underway to address this in Jamaica. The study also opined that there is no formal training of medical record staff, only on-the-job training, and no established competency model for these staff. In Jamaica however, one of the major universities offer an Associate Degree in Health Information Technology and a Bachelors Degree in Health Information Management which includes mortality training on ICD 10 coding.

The research findings revealed that 55 percent of the respondents indicated that training and development of staff are done only when necessary, 20 percent indicated that there was no training done at all in mortality coding, 15 percent indicated that it is done annually within their facility and 10 percent stated that training was done bi-annually.

Recommendations


In order to improve the challenges associated with the compilation of Mortality Statistics within the Jamaica's health care delivery system the researchers proposed the following recommendations:

Improvement in the quality of mortality data should have these key factors:

- Establishment of Regional Quality Assurance Committees. The main focus would be to identify

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Presentation Slides





OVERVIEW OF MORTALITY STATISTICS IN JAMAICA 2010-2014

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JAMAICA

- Jamaica is the largest English speaking island in the Caribbean Sea, 90 miles (145 km) south of Cuba and 100 miles (161 km) west of Haiti.
- There are 14 parishes.
- Population (2010 est.): 2,847,232
- Ethnic groups: African, East Indian, Chinese, White, mixed




BRIEFING ON THE MINISTRY OF HEALTH

- The Ministry of Health is responsible for ensuring the provision of an adequate, effective and efficient health service for the population of Jamaica.
- Services provided through the government's network of 23 hospitals and approximately 350 health centres and specialized institutions.
- The services of primary, secondary and tertiary health care merged to be administered through four Regional Health Authorities (RHAs).




INTRODUCTION

- Vital statistics are critical elements in the planning and development of health programs.
- The Vital Statistics Commission of Jamaica, in collaboration with the Pan American Health Organization (PAHO), Caribbean Community and Common Market (CARICOM), and the Centers for Disease Control (CDC), performed an assessment or audit of the processes utilized to collect, process, and disseminate national vital statistics data (Audit of Vital Registration and Vital Statistics Systems, 2005). The audit included the review of pertinent laws, rules, regulations, and policies.



PURPOSE

- The goal of this study was to assess the responsibility, authority, and accountability of the relevant personnel managing mortality statistics and to determine the efficiency of the collection, collation and dissemination of the data to key stake holders such as the Ministry of Health in order to improve efficiencies.
- The study provides an overview of the assessment of mortality data/statistics for the period 2010-2014 at four major regional hospitals across the island to identify gaps in the data collection process/system.



METHODOLOGY

- **Instrument Design**
A retrospective study, structured interview and observation schedules were used.
- **Data Collection Procedures**
 - Hospitals were randomly selected.
 - 20 structured interviews and 100 observation schedules were administered on death health records.

FINDINGS/DISCUSSION

RESPONDENTS' VIEWS ON MCCD COMPLETION

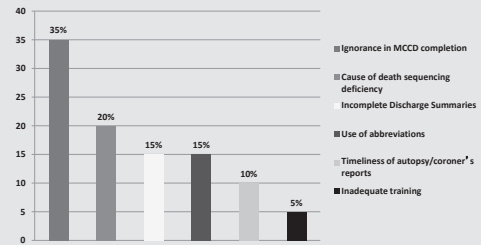


OBSERVATION OF APPROPRIATE MCCD GUIDELINES



Based on the standard operation procedures been maintained for the completion of the Medical Certificate of Cause of Death

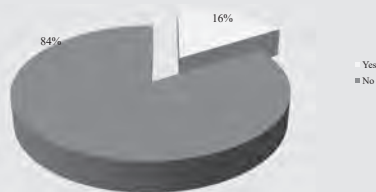
FINDINGS/DISCUSSION



Respondents' views on gaps currently identified for incomplete MCCD

FINDINGS/DISCUSSION

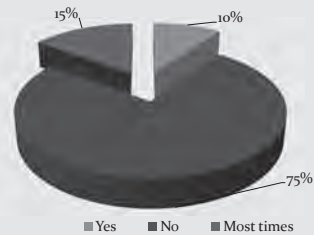
COMPLETED DISCHARGE SUMMARIES



Observation based on discharge summary completed for the health record

FINDINGS/DISCUSSION

DISCHARGE SUMMARIES



Respondents' views on completion and timeliness of the discharge summaries

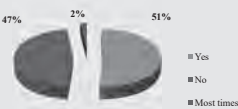
FINDINGS/DISCUSSION

WHO MORTALITY CODING GUIDELINES



Respondents' views on the observation of WHO guidelines in relation to the ICD 10 mortality coding

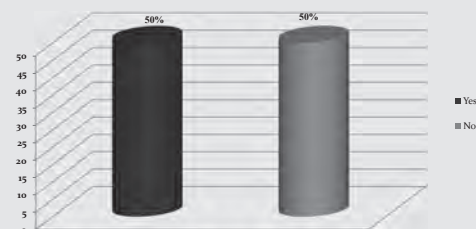
ICD 10 GUIDELINES



Observation based on guidelines in relation to the ICD 10 mortality coding

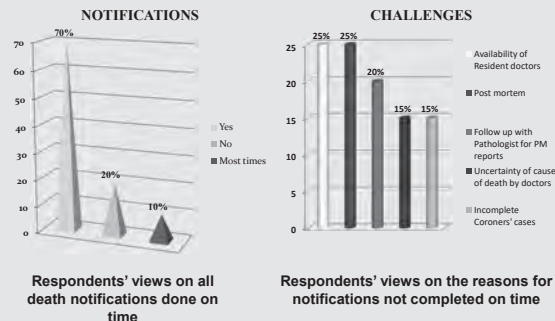
FINDINGS/DISCUSSION

CODING ERRORS

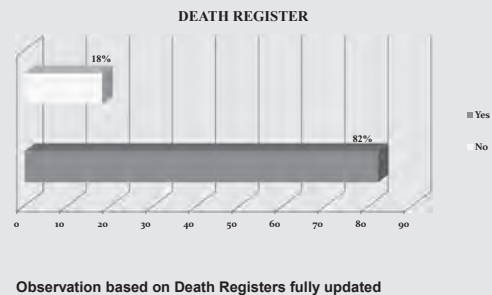


Observation based on errors in the application of the ICD 10 mortality codes

FINDINGS/DISCUSSION



FINDINGS/DISCUSSION



CONCLUSION

- Death registers in most cases were maintained
- There is a lack of a trained HIM/HIT workforce
- Training and re-training of HIM personnel in mortality coding is of paramount importance.
- The compliance rate for the appropriate completion of MCCD and discharge summaries by clinicians in the hospital facilities is still a major challenge.
- Data collection processes for vital events in the health facilities must be improved.

RECOMMENDATIONS

- Establishment of Regional Quality Assurance Committees to monitor documentation processes to identify and address current deficiencies.
- Mandatory staff training and development for medical and HIM personnel in proper documentation and International Classification of Disease (ICD-10) mortality coding.
- A comprehensive training programme on documentation practices for junior doctors should be developed with the support of the hospital administration and senior medical staff.

THANK YOU

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Death Certificate



COUNTERFOIL for the use of the Medical Attendant, who should fill it up.

Name of Deceased

Age _____
Last seen _____
Died on _____
At _____

Cause of Death:—

(a) _____
(b) _____
(c) _____
(d) _____

Signed _____
Date _____

If FEMALE (tick the statement that best describes the decedent)

Pregnant at time of death ☐
Not pregnant, but pregnant within 43 days to 1 year before death ☐
Not pregnant, but pregnant within 42 days of death ☐
Unknown if pregnant within the past year ☐

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N^o 0198408



REGISTRATION (BIRTHS AND DEATHS) ACT
MEDICAL CERTIFICATE OF THE CAUSE OF DEATH

To be given by the Medical Attendant to the person whose duty it is to give it with information of the Death, to the Registrar of the District in which the Death took place and TO NO OTHER PERSON.

I HEREBY CERTIFY that I attended _____ whose age was stated to be _____, that I last saw him _____ on the _____ day of _____, 20____, that he / she died* _____ at _____ and that to the best of my knowledge and belief the cause of his / her death was hereunder written.

IF FEMALE (tick the statement that best describes the decedent) Not pregnant within past year <input type="checkbox"/> Not pregnant, but pregnant within 42 days of death <input type="checkbox"/> Not pregnant, but pregnant within 43 days to 1 year before death <input type="checkbox"/> Unknown if pregnant within the past year <input type="checkbox"/> Date pregnancy ended (DD/MM/YYYY) _____ Gestation pregnancy ended? < 22 weeks <input type="checkbox"/> 22-4 weeks <input type="checkbox"/>		Approximate interval between onset and death Years _____ Months _____ Days _____ Hours _____		For use by Registrar ICD Code _____
Disease or condition directly leading to death Antecedent Causes Morbid condition, if any, giving rise to the above cause stating the underlying condition last.		CAUSE OF DEATH (a) _____ due to (or as a consequence of) _____ (b) _____ due to (or as a consequence of) _____ (c) _____ due to (or as a consequence of) _____ (d) _____ due to (or as a consequence of) _____		For use by Registrar ICD Code _____

† This does not mean mode of dying e.g. heart failure, asthma, etc. It means the disease, injury or complication which caused death.
 I attended the deceased during illness ☐ I did not attend the deceased during last illness, the doctor who did is unable to certify the death ☐
 Post mortem has been done and information is included above ☐ Post mortem information will be available later ☐ No post mortem is necessary ☐
 Witness my hand this _____ day of _____, 20____

Name _____
Signature _____

CONDITION (Married—Widow— Bachelor—Spinster— Infant)	FOR USE BY PUBLIC INSTITUTIONS RESIDENCE Tel. No. of person causing body to be buried _____ OCCUPATION For married women or widows—name and occupation of husband _____ For children—name and occupation of father or mother _____		For Children under 1 year enter here— Age at death at time of death and live birth order of deceased child.
	PARISH OF BIRTH _____		For Children under 1 year enter here— Age at death at time of death and live birth order of deceased child.

THIS CERTIFICATE IS INTENDED SOLELY FOR THE USE OF THE REGISTRAR to whom it should be delivered by the person giving information to him of the particulars required by law to be registered concerning the death. Penalty of Four Dollars for neglect of informant to deliver this certificate to the Registrar. The Registrar-General cautions all persons against accepting or using this certificate for any purpose whatever, except that of delivering it to the Registrar.

N^o 0198408

NOTICE

BY SECTION 36 OF THE REGISTRATION (BIRTHS AND DEATHS) ACT, IT IS ENACTED THAT:

"In case of the death of any person who has been attended during his last illness by a registered medical practitioner, that practitioner shall sign and give to some person required by this Act to give information concerning the death a certificate stating to the best of his knowledge and belief the cause of death, and such person shall, upon giving information concerning the death, or giving notice of the death, deliver that certificate to the registrar, and the cause of death as stated in that certificate shall be entered in the register, together with the name of the certifying medical practitioner".

The cause of death shall in such certificate be stated as nearly as may be in plain English.

* * * * *

"If any person to whom a medical certificate is given by a registered medical practitioner in pursuance of this section fails to deliver that certificate to the registrar, he shall be liable to a penalty not exceeding Four Dollars."

Persons qualified to be Informants for the Registration of Death and to whom only this Certificate Should be given:

1. The nearest relatives of the Deceased present at the Death or in attendance during the last illness: and, in their default, any other relative residing in the same District as the Deceased.

In default of all such relatives:

2. Each person present at the Death and the Occupier of the House in which the Death occurred.

In default of all the persons abovementioned:

3. An inmate of the House in which the Death occurred, and the person causing the Body to be Buried.

Analysis of Mortality in the Republic of Srpska for the Period from 2004 to 2013

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Abstract

In the period from 2004 to 2013, the overall mortality rate of the population of the Republic of Srpska, Bosnia and Hercegovina, ranged from 9,0 to 9,8 promille; the infant mortality rate 5,7 to 3,5 promille, while the rate on the 10000 inhabitants for accidents were from 1,86 to 2,14; for suicide from 1,32 to 1,99 and homicide from 0,13 to 0,26.

More than half of deaths in the Republic of Srpska were due to illness of circular system with a fall of around 10 percent in the period from 2013 to 2004. In the second place as the cause of death were neoplasms which caused fifth of deaths with an increase in the reporting period by 32, 6 percent. Group of diseases from R00 to R99 is among the top three leading causes of death. Among the top three leading causes of infant death is also a group of diseases from R00 to R99, which in the reporting period ranged from 4,0 percent in 2006 to 17,9 in 2005. In accidents in the highest percentage is a represented group other causes, which occupy an important place in suicides and in homicides.

In 2005, the Institute for Public Health of the Republic of Srpska received approval to control the causes of death in the department of social medicine. That year we made training of doctors in primary health care and hospital doctors regarding the major causes of death among infants and adults. The purpose of education was to educate doctors who fill death certificates with basic and immediate causes of death in accordance with the tables of causes of death ICD10 by the World Health Organization and to detect the most common mistakes made when filling the same. Education has not included filling death certificates in cases of accidents, suicides and homicides in which recording were noted a series of shortcomings. Education supposed to take place again in 2010 but the same did not happen.

Through the analysis of mortality in the Republic of Srpska in the mentioned period, we identified the main causes for the incomplete and inadequate information regarding the cause of death and mortality.

Keywords: Mortality statistics, certificate a death, causes of death

1. Introduction

Data on causes of death is an important data for monitoring, research, design of public health and medical interventions and decisions on funding for research and development. While the death certifi-

icate is a legal document and used for legal, family and insurance purposes, and can't be the only useful format, because in some cases, the death certificates can only be permitted as evidence of death (1).

Method of collecting data about the death that we use in the Republic of Srpska (B&IH) has existed since 1950 years, and dates from the time of former Yugoslavia, and each ex-Yugoslav country has developed its own system of collecting data about the death. Since 1992 in the Republic of Srpska, the Institute of Statistical of Republic of Srpska collects data about dying on the death certificate form, that completed by the home offices of municipalities in accordance with the laws of the Republic of Srpska, which are: the Law of registry books (Official Gazette of Republic of Srpska No 111 / 09); The Law on Amendments to the Law of registry books (Official Gazette of Republic of Srpska No43/13) and the Law on records and statistical surveys in the area of health care (Official Gazette of Republic of Srpska No 53/07).

Based on data contained in the statistical form the event of death (which is part of the Statistical report on the death-form DEM2) is determined and encrypts the underlying cause of death, and the obligation of completing the information on dead based on the Law on Statistics of the Republic of Srpska (2).

An integral part of the form and the report on the cause of death, completed by health institutions, which contains information about diseases or conditions which directly cause death and then conditions that can cause the immediate cause of the condition or disease and diseases or conditions which caused the immediate cause of death on deaths according to the place where the death occurred (3).

Because of the extreme importance of mortality data as the most trusted sources of health statistics and taking responsibility for the quality of data on causes of death in 2005 by the Department of social medicine with organization and economics of health care in the Institute of Public Health of the Republic of Srpska took over the duties of control coding underlying cause of death.

A similar system of monitoring mortality statistics is in neighboring countries while the countries of the European Union by Eurostat (the statistical office of the European Union) have developed standards and instruments to control the quality of the data statistics of causes of death that all Member States should apply (4). A National Center for Health Statistics (NCHS) of America has developed automatic encryption causes of death and it is applied in most developed countries (5).

2. The aim

To be on the basis of information routine mortality statistics to analyze mortality in the time period (from 2004 to 2013) and to be analyze and allocate the problems that occur in guided and monitoring mortality.

3. Method

A retrospective analysis of mortality and causes of death in the Republic of Srpska has been prepared on the basis of the data of the Institute of Statistical of Republic of Srpska (B&H), in the period

2004-2013 years. To determine the rates was used population estimates from the Institute of Statistical of Republic of Srpska, for each analyzed year, with the processing of data suitably for this statistical analysis

4. Results

In the period from 2004 to 2013, the general mortality rate of the population of the Republic of Srpska, Bosnia and Herzegovina, ranged from 9.0 to 9.8 promille; the infant mortality rate from 5.7 to 3.5 promille, while the rate on the 10000 inhabitants for accidents were from 1.86 to 2.14; for suicide from 1.32 to 1.99 and homicide from 0.13 to 0.26. (Table 1)

More than half of deaths in the Republic of Srpska were due to diseases of circular system with a fall of around 10 percent in the period from 2013 to 2004. In the second place as the cause of death were neoplasms which caused fifth of deaths with an increase in the reporting period by 32.6 percent. Group of diseases from R00 to R99 is among the top three leading causes of death. (Table 2 and Table 3)

Among the top three leading causes of infant death is also a group of diseases from R00 to R99, which in the reporting period ranged from 4.0 percent in 2006 to 17.9 in 2005. Conditions in the perinatal period (P00-P96) were distributed in the range from 50 percent (2008) to 83.7 percent (2011); and congenital malformations, deformations and chromosomal abnormalities (Q00-Q99) ranged from 8.0 percent (2006) to 25.0 percent (2008). (Table 4)

In accidents in the highest percentage is represented groups and other causes, ranging from 32.8 percent (2010) to 54.8 percent (2005), then mortality due to traffic accidents, from 15.1 percent (2005) to 41.8 percent (2006) . (Table 5)

In the highest percentage of the suicides are common causes of death Hanging (X70) in the range from 30.3 percent (2005) to 58.1 percent (2012), then Firearms (X72-X75), containing fifth (1/5) of the causes of suicide and Other types of suicide that was from 27.4 percent (2005) to 7.4 percent (2013). (Table 6)

In the group of Homicide in the largest percentage are represented Firearms and explosive that ranged from 26.9 percent (2006) to 61.6 percent (2012), then other non-specified from 16.7 percent (2012) to 73.1 percent (2006). (Table 7)

5. Discussion and Conclusions

In 2005, the Public Health Institute, actually the Department of Social Medicine, received approval to control the causes of death; since then diseases E00-E88 have been found to be leading causes of death. Training of doctors in primary health care and hospitals was conducted that year regarding the major causes of death among infants and adults. The purpose of education was to educate doctors filling death certificates to write down basic and immediate causes of death in accordance with the World Health Organization ICD10 causes-of-death tables and to detect the most common mistakes when filling them.

Education was supposed to be held again in 2010 but it was not held. In 2005, training of doctors

was not carried out on filling death certificates in cases of accidents, suicides and homicides, and thus being full of failures noticed from the analyzed data.

The causes of incomplete information regarding the cause of death in our country are as followed:

- Currently existing death certificate is not in accordance with the needs for complete monitoring of causes of death,
- When completing death certificates, it happens that it be filled in such a way that the direct or indirect cause of death is not provided for, or that several diagnoses are provided for the causes of death, out of which more than one can be direct or immediate cause of death;
- Education on filling the death certificate should be conducted more often in order to avoid a huge number of R (unknown) causes of death;
- Insufficient monitoring and analysis of mortality by physicians, and the lack of feedback information to health facilities about mortality, and the most common physician mistakes when writing causes of death;
- Lack of development of computer equipment and software which would facilitate the work of the healthcare institutions;
- The death certificates upon accidents, homicides and suicides are to be better defined in terms of the manner and cause leading to death.

6. References

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Annex

Table 1 Rates of general mortality, infant mortality, accident, suicide and homicide in the Republic of Srpska in the period 2004 – 2013

Years	General mortality rate /000 population (‰)	Infant mortality rate / 000 live births (‰)	The rate of		
			Accidents /0000 population	Suicide /0000 population	Homicide /0000 population
2004	9,0	5,7	1,86	1,73	0,20
2005	9,5	3,6	2,14	1,86	0,26
2006	9,2	4,8	2,10	1,99	0,17
2007	9,8	3,8	2,17	1,95	0,26
2008	9,4	3,9	2,12	1,75	0,19
2009	9,6	4,8	2,10	1,80	0,17
2010	9,4	4,3	1,83	1,60	0,13
2011	9,6	4,5	2,10	1,97	0,14
2012	9,7	3,7	2,00	1,59	0,13
2013	9,8	3,5	1,98	1,32	0,14

Population -estimated

Table 2 The most common groups of diseases as the causes of death in the Republic of Srpska in the period 2004 - 2013 years

Years	The group of diseases										Other		Total	
	I00–I99		C00–D48		R00–R99		E00–E88		S00–T98					
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2004	7340	56,1	2330	17,8	1462	11,2	160	1,2	552	4,2	1238	9,5	13082	100
2005	7002	50,7	19,2	2551	1249	9,0	727	5,3	618	4,5	1553	11,3	13802	100
2006	6463	48,8	2551	19,3	1200	9,1	790	6,0	615	4,6	1613	12,2	13232	100
2007	7097	50,2	2733	19,3	1288	9,1	791	5,6	634	4,5	1603	11,3	14146	100
2008	6965	51,6	2733	20,2	945	7,0	764	5,7	584	4,3	1511	11,2	13502	100
2009	7014	50,9	2822	20,5	953	6,9	891	6,5	581	4,2	1514	11,0	13775	100
2010	7211	53,3	2700	20,0	877	6,5	691	5,1	511	3,8	1527	11,0	13517	100
2011	7339	53,7	2802	20,5	681	5,0	654	4,8	600	4,4	1582	11,6	13658	100
2012	7625	55,3	2937	21,3	612	4,4	561	4,1	538	3,9	1523	11,0	13796	100
2013	6687	47,8	2937	21,3	1231	8,8	800	5,7	504	3,6	1666	11,9	13978	100

The group of diseases -ICD 10: I00–I99-Diseases of the circulatory system; C00–D48- Neoplasm; R00–R99- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; E00–E88- Endocrine, nutritional and metabolic diseases; S00–T98- Injuries, poisoning and consequences of external causes

Table 3 Directional index movement of the most common causes of death in the Republic of Srpska in the period 2004 – 2013

Index	The group of diseases					Other	Total
	(C00–D48)	(E00–E88)	(I00–I99)	(R00–R99)	(S00–T98)		
2013/2004	132,6	*500,0	91,1	84,2	91,3	134,6	106,8
2013/2005	116,5	110,0	95,5	98,6	81,6	107,3	101,3
2013/2006	121,1	101,3	103,5	102,6	82,0	103,3	105,6
2013/2007	113,1	101,1	94,2	95,6	79,5	103,9	98,8
2013/2008	113,1	104,7	96,0	130,3	86,3	110,3	103,5
2013/2009	109,5	89,8	95,3	129,2	87,7	110,0	101,5
2013/2010	114,4	115,8	92,7	140,4	98,6	109,1	103,4
2013/2011	110,3	122,3	91,1	180,8	84,0	105,3	102,3
2013/2012	105,2	142,6	87,7	201,1	93,7	109,4	101,3

The group of diseases -ICD 10: **I00–I99**-Diseases of the circulatory system; **C00–D48**- Neoplasm; **R00–R99**- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; **E00–E88**- Endocrine, nutritional and metabolic diseases; **S00–T98**- Injuries, poisoning and consequences of external causes

Table 4 The most common causes of infant deaths in the Republic of Srpska in the period 2004-2013

Years	The group of diseases						Other		Total	
	P00-P96		Q00-Q99		R00-R99					
	n	%	n	%	n	%	n	%	n	%
2004	38	60.3	10	16,0	8	12,7	7	11.0	63	100
2005	27	69,2	4	10,3	7	17,9	1	2,6	39	100
2006	39	78,0	4	8,0	2	4,0	5	10,0	50	100
2007	27	71,1	5	13,2	3	7,9	3	7,9	38	100
2008	20	50,0	10	25,0	5	12,5	5	12,5	40	100
2009	34	66,7	10	19,6	4	7,8	3	5,9	51	100
2010	29	65,9	4	18,2	4	9,1	7	15,9	44	100
2011	36	83,7	5	11,6	2	4,7	0	0,0	43	100
2012	29	78,4	3	8,1	4	10,8	1	2,7	37	100
2013	21	63,6	4	12,1	5	15,2	3	9,1	33	100

The group of diseases-ICD 10: **P00-P96**- Certain conditions originating in the perinatal period; **Q00-Q99**- Congenital malformations, deformations and chromosomal abnormalities; **R00-R99**- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified

Table 5 Accidents as causes of death in the Republic of Srpska in the period 2004 – 2013

		V00-V99	Accident						
			W00-W19; W20-W49; W50-W64	W65-W84	W85-W99	X00-X09; X10-X19; X20-29	X30-X39; X40-X49	X50-X59	Total
2004	n	100	10	23	11	5	13	117	279
	%	35,8	3,6	8,2	3,9	1,8	4,6	41,9	100
2005	n	49	26	18	17	16	21	178	325
	%	15,1	8,0	5,5	5,2	4,9	6,5	54,8	100
2006	n	131	10	23	9	8	22	110	313
	%	41,8	3,2	7,3	2,9	2,6	7,0	35,1	100
2007	n	126	15	19	9	12	15	117	313
	%	40,3	4,8	6,1	2,9	3,8	4,8	37,4	100
2008	n	108	10	16	6	11	12	142	305
	%	35,4	3,3	5,2	1,9	3,6	3,9	46,6	100
2009	n	104	16	19	4	13	18	125	299
	%	34,8	5,4	6,4	1,3	4,3	6,0	41,8	100
2010	n	92	20	23	6	9	26	86	262
	%	35,1	7,6	8,8	2,3	3,4	9,9	32,8	100
2011	n	119	17	17	9	17	13	106	298
	%	39,9	5,7	5,7	3,0	5,7	4,4	35,6	100
2012	n	95	15	19	4	14	22	119	288
	%	33,0	5,2	6,6	1,4	4,9	7,6	41,3	100
2013	n	117	16	14	1	9	8	117	282
	%	41,5	5,7	4,9	0,4	3,2	2,8	41,5	100

The group of diseases-ICD 10: **V00–V99**- Traffic accidents; **W00–W19**- Falls; **W20-W49**- Exposure to inanimate mechanical forces; **W50-W64**- Exposure to animate mechanical forces; **W65-W74**- Strangulation and drowning; **W75-W84**- Other respiratory obstructions; **W85-W99**- Electrical power, radiation and high temperature; **X00-X09**- Smoke, fire, flame; **X10-X19**- Contact with heat and hot substances; **X20-X29**- Contact with poisoned herbs and animals; **X30-X39**- Exposure to forces of nature; **X40-X49**- Accidental poisonings by toxic substances; **X50-X59**- All other external causes

Table 6 Suicides in the Republic of Srpska in the period 2004 – 2013

		Suicide							Total
		X60-X65 X68-X69	X70	X71	X72-X75	X76 X78-X79	X80	X81 X83-X84	
2004	n	14	113	6	67	0	1	53	254
	%	5,5	44,5	2,4	26,4	0,0	0,4	20,9	100
2005	n	27	83	18	66	4	1	75	274
	%	9,8	30,3	6,6	24,1	1,4	0,4	27,4	100
2006	n	18	126	15	75	2	2	56	293
	%	6,1	43,0	5,0	25,6	0,7	0,7	19,0	100
2007	n	24	141	14	60	5	0	37	281
	%	8,5	50,2	5,0	21,4	1,8	0,0	13,2	100
2008	n	18	127	16	56	2	0	33	252
	%	7,1	50,4	6,3	22,2	0,8	0,0	13,1	100
2009	n	28	118	19	55	1	0	37	258
	%	10,9	45,7	7,4	21,3	0,4	0,0	14,3	100
2010	n	11	102	17	69	1	0	30	230
	%	4,8	44,3	7,4	30,0	0,4	0,0	13,0	100
2011	n	24	145	13	69	6	0	25	282
	%	8,5	51,4	4,6	24,5	2,1	0,0	8,9	100
2012	n	8	132	18	45	6	0	20	227
	%	3,5	58,1	7,9	19,8	1,7	0,0	8,8	100
2013	n	6	97	10	59	4	0	14	190
	%	3,2	51,1	5,3	31,1	2,1	0,0	7,4	100

The group of diseases-ICD 10: **X60–X69**- Poisoning by solid and liquid substances; **X70**- Hanging; **X71**- Suffocation; **X72–X75**- Firearms; **X76**-Smoke, fire, flame **X78-X79** Sharp and blunt object; **X80**- Jump; **X81**-Jumping or lying in front of the moving object;**X83–X84**- Other and unspecified means

Table 7 Homicides as causes of death in the Republic of Srpska in the period 2004 – 2013

		Homicide									Total
		X91	X92	X93-X96	X99	Y00	Y03	Y04	Y06	Y07-Y09	
2004	n	1	1	15	0	0	0	0	0	15	32
	%	3,1	3,1	46,9	0,0	0,0	0,0	0,0	0,0	46,9	100
2005	n	2	0	22	0	1	0	0	1	14	40
	%	5,0	0,0	55,0	0,0	2,5	0,0	0,0	1,1	35,0	100
2006	n	0	0	7	0	0	0	0	0	19	25
	%	0,0	0,0	26,9	0,0	0,0	0,0	0,0	0,0	73,1	100
2007	n	1	0	17	1	0	1	0	0	18	38
	%	2,6	0,0	44,7	2,6	0,0	2,6	0,0	0,0	47,4	100
2008	n	1	0	8	0	1	0	0	0	17	27
	%	3,7	0,0	30,0	0,0	3,7	0,0	0,0	0,0	63,0	100
2009	n	1	0	13	0	1	0	0	0	9	24
	%	4,2	0,0	54,2	0,0	4,2	0,0	0,0	0,0	37,5	100
2010	n	1	0	9	1	0	0	0	0	8	19
	%	5,3	0,0	47,4	5,3	0,0	0,0	0,0	0,0	42,0	100
2011	n	1	0	7	2	2	0	0	0	8	20
	%	5,0	0,0	35,0	10,0	10,0	0,0	0,0	0,0	40,0	100
2012	n	0	0	11	0	1	0	3	0	3	18
	%	0,0	0,0	61,1	0,0	5,6	0,0	16,7	0,0	16,7	100
2013	n	0	0	9	0	2	0	1	0	7	20
	%	0,0	0,0	45,0	0,0	15,0	0,0	5,0	0,0	35,0	100

The group of diseases-ICD 10: **X91-** Hanging, strangulation and suffocation;**X92-** Strangulation and drowning; **X93–X96-** Firearms and explosive; **X99-** Sharp objects; **Y00-** Blunt object; **Y04-** Violence inflicted by use of bodily force; **Y06-** Neglect and abandonment; **Y07-Y09-** Other adverse and unspecified actions

Presentation Slides

Analysis of mortality in the Republic of Srpska for the period from 2004 to 2013

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Introduction

- Data on causes of death is an important data for monitoring, research, design of public health and medical interventions and decisions on funding for research and development. Although the death certificate is a legal document used for legal, family and insurance purposes, it can't be the only useful document, because in some cases, the death certificates can only be permitted as evidence of death (1).
- Method of collecting death data in the Republic of Srpska (BIH) has existed since 1950, including the period of ex Yugoslavia; each ex-Yugoslav country has developed its own system of collecting death data. Since 1992, in the Republic of Srpska, the Institute of Statistics of the Republic of Srpska has collected death data in the death certificate form completed by the registry offices of the municipalities in accordance with the laws of the Republic of Srpska, which are as followed: the Law of registry books (Official Gazette of the Republic of Srpska, No 111 / 09), the Law on Amendments to the Law of registry books (Official Gazette of the Republic of Srpska, No 43/13) and the Law on health records and statistical surveys (Official Gazette of the Republic of Srpska, No 53/07).

- The underlying cause of death is determined and coded on the basis of the data contained in the statistical form on the death event (which is a part of the Statistical Report on Death - DEM-2 form) and the death certificate, and then entered to the statistical form on the death event. The obligation of completing the death information is pursuant to the Law on Statistics of the Republic of Srpska (2).
- Death certificate fulfilled by health institutions contains information about diseases or conditions causing death immediately, then diseases or conditions that might be an indirect cause, and diseases or conditions that might be a direct cause of death. The Institute of Statistics of the Republic of Srpska is in charge of public health researches on death cases according to the place of death (3).

- Because of the extreme importance of mortality data as the most trusted sources of health statistics and taking responsibility for the quality of data on causes of death, in 2005, the Department of Social Medicine, Economics and Organization of Health Care within the Public Health Institute of the Republic of Srpska took over the duties of coding underlying causes of death.
- A similar system of monitoring mortality statistics is in neighboring countries while the European Union countries through Eurostat (the statistical office of the European Union) have developed standards and instruments to control the quality of the statistics of causes of death that all Member States should apply (4). A National Center for Health Statistics (NCHS) of America has developed automatic coding of causes of death and it is applied in most developed countries (5).

The aim

- The aim is to analyze mortality on the basis of routine mortality statistics (from 2004 to 2013) and to analyze and discover the problems in registering and monitoring mortality.

Method

- A retrospective analysis of mortality and causes of death in the Republic of Srpska has been prepared on the basis of the data of the Institute of Statistical of Republic of Srpska (B&H), in the period 2004-2013 years.
- Population estimate was used to determine the rate by the Institute of Statistics of the Republic of Srpska, for each analyzed year, with the data processing suitable for this statistical analysis.

Results

Table 1 Rates of general mortality, infant mortality, accident, suicide and homicide in the Republic of Srpska in the period 2004 – 2013

Years	General mortality rate /000 population (%)	Infant mortality rate / 000 live births (%)	The rate of		
			Accidents /0000 population	Suicide /0000 population	Homicide /0000 population
2004	9,0	5,7	1,86	1,73	0,20
2005	9,5	3,6	2,14	1,86	0,26
2006	9,2	4,8	2,10	1,99	0,17
2007	9,8	3,8	2,14	1,95	0,26
2008	9,4	3,9	2,12	1,75	0,19
2009	9,6	4,8	2,10	1,80	0,17
2010	9,4	4,3	1,86	1,60	0,13
2011	9,6	4,5	2,10	1,97	0,14
2012	9,7	3,7	2,00	1,59	0,13
2013	9,8	3,5	1,98	1,32	0,14

Population-estimated

Table 2 The most common groups of diseases as the causes of death in the Republic of Srpska in the period 2004 - 2013 years

Years	The group of diseases										Other		Total	
	100-199		C00-D48		R00-R99		E00-E88		S00-T98					
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2004	7340	56,1	2330	17,8	1462	11,2	160	1,2	552	4,2	1238	9,5	13082	100
2005	7002	50,7	2653	19,2	1249	9,0	727	5,3	618	4,5	1553	11,3	13802	100
2006	6463	48,8	2551	19,3	1200	9,1	790	6,0	615	4,6	1613	12,2	13232	100
2007	7097	50,2	2733	19,3	1288	9,1	791	5,6	634	4,5	1603	11,3	14146	100
2008	6965	51,6	2733	20,2	945	7,0	764	5,7	584	4,3	1511	11,2	13502	100
2009	7014	50,9	2822	20,5	953	6,9	891	6,5	581	4,2	1514	11,0	13775	100
2010	7211	53,3	2700	20,0	877	6,5	691	5,1	511	3,8	1527	11,0	13517	100
2011	7339	53,7	2802	20,5	681	5,0	654	4,8	600	4,4	1582	11,6	13658	100
2012	7625	55,3	2937	21,3	612	4,4	561	4,1	538	3,9	1523	11,0	13796	100
2013	6687	47,8	2937	21,3	1231	8,8	800	5,7	504	3,6	1666	11,9	13978	100

The group of diseases-ICD 10: 100-199-Diseases of the circulatory system; C00-D48- Neoplasms; R00-R99- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; E00-E88- Endocrine, nutritional and metabolic diseases; S00-T98- Injuries, poisoning and consequences of external causes

Table 3 Directional index movement of the most common causes of death in the Republic of Srpska in the period 2004 - 2013

Index	The group of diseases					Other	Total
	(C00-D48)	(E00-E88)	(100-199)	(R00-R99)	(S00-T98)		
2013/2004	132,6	*500,0	91,1	84,2	91,3	134,6	106,8
2013/2005	116,5	110,0	95,5	98,6	81,6	107,3	101,3
2013/2006	121,1	101,3	103,5	102,6	82,0	103,3	105,6
2013/2007	113,1	101,1	94,2	95,6	79,5	103,9	98,8
2013/2008	113,1	104,7	96,0	130,3	86,3	110,3	103,5
2013/2009	109,5	89,8	95,3	129,2	87,7	110,0	101,5
2013/2010	114,4	115,8	92,7	140,4	98,6	109,1	103,4
2013/2011	110,3	122,3	91,1	180,8	84,0	105,3	102,3
2013/2012	105,2	142,6	87,7	201,1	93,7	109,4	101,3

The group of diseases-ICD 10: 100-199-Diseases of the circulatory system; C00-D48- Neoplasms; R00-R99- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; E00-E88- Endocrine, nutritional and metabolic diseases; S00-T98- Injuries, poisoning and consequences of external causes

Table 4 The most common causes of infant deaths in the Republic of Srpska in the period 2004-2013

Years	The group of diseases					Other		Total	
	P00-P96	Q00-Q99	R00-R99			n	%	n	%
	n	%	n	%	n	%		n	%
2004	38	60,3	10	16,0	8	12,7	7	63	100
2005	27	69,2	4	10,3	7	17,9	1	39	100
2006	39	78,0	4	8,0	2	4,0	5	50	100
2007	27	71,1	5	13,2	3	7,9	3	38	100
2008	20	50,0	10	25,0	5	12,5	5	40	100
2009	34	66,7	10	19,6	4	7,8	3	51	100
2010	29	65,9	4	8,2	4	9,1	7	44	100
2011	36	83,7	5	11,6	2	4,7	0	43	100
2012	29	78,4	3	8,1	4	10,8	1	37	100
2013	21	63,6	4	12,1	5	15,2	3	33	100

The group of diseases-ICD 10: P00-P96- Certain conditions originating in the perinatal period; Q00-Q99- Congenital malformations, deformations and chromosomal abnormalities; R00-R99- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified

Table 5 Accidents as causes of death in the Republic of Srpska in the period 2004 - 2013

		Accident										total
		V00-V99	W00-W19	W65-W84	W85-W99	X00-X09	X10-X19	X20-X29	X30-X39	X40-X49	X50-X59	
2004	n	100	10	23	11	5	13	117	279			
	%	35,8	3,6	8,2	3,9	1,8	4,6	41,9	100			
2005	n	49	26	18	17	16	21	178	325			
	%	15,1	8,0	5,5	5,2	4,9	6,5	54,8	100			
2006	n	131	10	23	9	8	22	110	313			
	%	41,8	3,2	7,3	2,9	2,6	7,0	35,1	100			
2007	n	126	15	19	9	12	15	117	313			
	%	40,3	4,8	6,1	2,9	3,8	4,8	37,4	100			
2008	n	108	10	16	6	11	12	142	305			
	%	35,4	3,3	5,2	1,9	3,6	3,9	46,6	100			
2009	n	104	16	19	4	13	18	125	299			
	%	34,8	5,4	6,4	1,3	4,3	6,0	41,8	100			
2010	n	92	20	23	6	9	26	86	262			
	%	35,1	7,6	8,8	2,3	3,4	9,9	32,8	100			
2011	n	119	17	17	9	17	13	106	298			
	%	39,9	5,7	5,7	3,0	5,7	4,4	35,6	100			
2012	n	95	15	19	4	14	22	119	288			
	%	33,0	5,2	6,6	1,4	4,9	7,6	41,3	100			
2013	n	117	16	14	1	9	8	117	282			
	%	41,5	5,7	4,9	0,4	3,2	2,8	41,5	100			

The group of diseases-ICD 10: V00-V99- Traffic accidents; W00-W19- Falls; W20-W49- Exposure to inanimate mechanical forces; W50-W64- Exposure to animate mechanical forces; W65-W74- Strangulation and drowning; W75-W84- Other respiratory obstructions; W85-W99- Electrical power, radiation and high temperature; X00-X09- Smoke, fire, flame; X10-X19- Contact with heat and hot substances; X20-X29- Contact with poisoned herbs and animals; X30-X39- Exposure to forces of nature; X40-X49- Accidental poisonings by toxic substances; X50-X59- All other external causes

Table 6 Suicides in the Republic of Srpska in the period 2004 - 2013

		Suicide								Total
		X60-X69	X70	X71	X72-X75	X76	X78-X79	X80	X81	
		X68-X69							X83-X84	
2004	n	14	113	6	67	0	1		53	254
	%	5,5	44,5	2,4	26,4	0,0	0,4		20,9	100
2005	n	27	83	18	66	4	1		75	274
	%	9,8	30,3	6,6	24,1	1,4	0,4		27,4	100
2006	n	18	126	15	75	2	2		56	293
	%	6,1	43,0	5,0	25,6	0,7	0,7		19,0	100
2007	n	24	141	14	60	5	0		37	281
	%	8,5	50,2	5,0	21,4	1,8	0,0		13,2	100
2008	n	18	127	16	56	2	0		33	252
	%	7,1	50,4	6,3	22,2	0,8	0,0		13,1	100
2009	n	28	118	19	55	1	0		37	258
	%	10,9	45,7	7,4	21,3	0,4	0,0		14,3	100
2010	n	11	102	17	69	1	0		30	230
	%	4,8	44,3	7,4	30,0	0,4	0,0		13,0	100
2011	n	24	145	13	69	6	0		25	282
	%	8,5	51,4	4,6	24,5	2,1	0,0		8,9	100
2012	n	8	132	18	45	4	0		20	227
	%	3,5	58,1	7,9	19,8	1,7	0,0		8,8	100
2013	n	6	97	10	59	4	0		14	190
	%	3,2	51,1	5,3	31,1	2,1	0,0		7,4	100

The group of diseases-ICD 10: X60-X69- Poisoning by solid and liquid substances; X70- Hanging; X71- Suffocation; X72-X75- Firearms; X76-Smoke, fire, flame; X78-X79 Sharp and blunt object; X80- Jump; X81-Jumping or lying in front of the moving object; X83-X84- Other and unspecified means

Table 7 Homicides as causes of death in the Republic of Srpska in the period 2004 - 2013

		Homicide									total
		X91	X92	X93-X96	X99	Y00	Y03	Y04	Y06	Y07-Y09	
2004	n	1	1	15	0	0	0	0	0	15	32
	%	3.1	3.1	46.9	0.0	0.0	0.0	0.0	0.0	46.9	100
2005	n	2	0	22	0	1	0	0	1	14	40
	%	5.0	0.0	55.0	0.0	2.5	0.0	0.0	1.1	35.0	100
2006	n	0	0	7	0	0	0	0	0	19	25
	%	0.0	0.0	28.0	0.0	0.0	0.0	0.0	0.0	76.0	100
2007	n	1	0	17	1	0	1	0	0	18	38
	%	2.6	0.0	44.7	2.6	0.0	2.6	0.0	0.0	47.4	100
2008	n	1	0	8	0	1	0	0	0	17	27
	%	3.7	0.0	30.0	0.0	3.7	0.0	0.0	0.0	63.0	100
2009	n	1	0	13	0	1	0	0	0	9	24
	%	4.2	0.0	54.2	0.0	4.2	0.0	0.0	0.0	37.5	100
2010	n	1	0	9	1	0	0	0	0	8	19
	%	5.3	0.0	47.4	5.3	0.0	0.0	0.0	0.0	42.0	100
2011	n	1	0	7	2	2	0	0	0	8	20
	%	5.0	0.0	35.0	10.0	10.0	0.0	0.0	0.0	40.0	100
2012	n	0	0	11	0	1	0	3	0	3	18
	%	0.0	0.0	61.1	0.0	5.6	0.0	16.7	0.0	16.7	100
2013	n	0	0	9	0	3	0	1	0	7	20
	%	0.0	0.0	45.0	0.0	15.0	0.0	5.0	0.0	35.0	100

The group of diseases-ICD 10: X91- Hanging, strangulation and suffocation; X92- Strangulation and drowning; X93-X96- Firearms and explosive; X99- Sharp objects; Y00- Blunt object; Y04- Violence inflicted by use of bodily force; Y06- Neglect and abandonment; Y07-Y09- Other adverse and unspecified actions

Discussion and Conclusions

- In 2005, the Public Health Institute, actually the Department of Social Medicine, received approval to control the causes of death; since then diseases E00-E88 have been found to be leading causes of death.
- Training of doctors in primary health care and hospitals was conducted that year regarding the major causes of death among infants and adults.
- The purpose of education was to educate doctors filling death certificates to write down basic and immediate causes of death in accordance with the World Health Organization ICD10 causes-of-death tables and to detect the most common mistakes when filling them.
- Education was supposed to be held again in 2010 but it was not held. In 2005, training of doctors was not carried out on filling death certificates in cases of accidents, suicides and homicides, and thus being full of failures noticed from the analyzed data.

- The causes of incomplete information regarding the cause of death in our country are as followed:

- Currently existing death certificate is not in accordance with the needs for complete monitoring of causes of death,

- When completing death certificates, it happens that it be filled in such a way that the direct or indirect cause of death is not provided for, or that several diagnoses are provided for the causes of death, out of which more than one can be direct or immediate cause of death;

- Education on filling the death certificate should be conducted more often in order to avoid a huge number of R (unknown) causes of death;

- Insufficient monitoring and analysis of mortality by physicians, and the lack of feedback information to health facilities about mortality, and the most common physician mistakes when writing causes of death;

- Lack of development of computer equipment and software which would facilitate the work of the healthcare institutions;

- The death certificates upon accidents, homicides and suicides are to be better defined in terms of the manner and cause leading to death.

A death certificate in the local language
(The Official Gazette Republic of Srpska No.65/10-Sl.Glasnik Republika Srpska br.65/10)

6 СЛУЖБЕНИ ГЛАСНИК РЕПУБЛИКЕ СРПСКЕ-бр 65 8.07.2010 Прилог бр 1.

Презиме и име мртвогосника		Потврда о смрти
1. Презиме и име умрлог, презиме прије закључења брака		2. Пол М / Ф
3. Датум смрти: _____ у _____ часова (дан, мјесец и година) (0-24)		
4. Мјесто смрти:	Мјесто: _____ Општина: _____	
5. Датум рођења _____ у _____ часова (дан, мјесец и година) (0-24, само за новорођенчад до 7 дана)		
6. Мјесто рођења:	Мјесто: _____ Општина: _____	
7. Мјесто пребивалишта:	Мјесто: _____ Општина: _____ Адреса: _____	
8. Држављанство:	9. Брачно стање:	
10. Име оца:	Име мајке:	Име брачног друга:
11. Непосредни узрок смрти:		
12. Стање које је довело до непосредног узрока смрти:		
У _____, дана _____		Потпис љекара: _____
Забјелешка матичара: Овај случај смрти уписан је у матичну књигу умрлих која се води		
За мјесто: _____		За општину: _____
Под текућим бројем: _____		За годину: _____
МП _____		Потпис матичара: _____

A death certificate in the English language
(The Official Gazette Republic of Srpska No.65/10-Sl.Glasnik Republika Srpska br.65/10)

1. Surname and name of the deceased, surname before marriage 2. Gender M / F

3. Date of death: _____ in _____ hours
(day, month and year) (0-24)

4. Place of death: _____ Place: _____
Municipality: _____

5. Date of birth _____ in _____ hours
(day, month and year) (0-24, only for infants up to 7 days)

6. Place of birth: _____ Place: _____
Municipality: _____

7. Place of residence: _____ Place: _____
Municipality: _____
Address: _____

8. Nationality: _____ 9. Marital Status: _____

10. Father's name: _____ Mother's name: _____ Name of spouse: _____

11. The immediate cause of death: _____

12. Condition which led to the immediate cause of death: _____

In _____, day _____ Signature physician: _____

Notes registrar: case of death was entered in the death register which is kept
Place: _____ Municipality: _____
Under the current number: _____ Year: _____ PS _____ The signature of the registrar: _____

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A death certificate in the local language
(The Official Gazette Republic of Srpska No.65/10-Sl.Glasnik Republika Srpska br.65/10)

Прилог бр 1.

(Презиме и име мртвогосника)		Потврда о смрти
1. Презиме и име умрлог, презиме прије закључења брака		2. Пол М / Ж
3. Датум смрти: _____ у _____ часова (дан, мјесец и година) (0-24)		
4. Мјесто смрти:	Мјесто: _____ Општина: _____	
5. Датум рођења _____ у _____ часова (дан, мјесец и година) (0-24, само за новорођенчад до 7 дана)		
6. Мјесто рођења:	Мјесто: _____ Општина: _____	
7. Мјесто пребивалишта:	Мјесто: _____ Општина: _____ Адреса: _____	
8. Држављанство:	9. Брачно стање:	
10. Име оца:	Име мајке:	Име брачног друга:
11. Непосредни узрок смрти:		
12. Стање које је довело до непосредног узрока смрти:		
У _____, дана _____		Потпис љекара: _____
Забјелешка матичара: Овај случај смрти уписан је у матичну књигу умрлих која се води		
За мјесто: _____		За општину: _____
Под текућим бројем: _____		За годину: _____
МП _____		Потпис матичара: _____

Death Certificate

A death certificate in the English language

(The Official Gazette Republic of Srpska No.65/10-Sl.Glasnik Republika Srpska br.65/10)

1. Surname and name of the deceased, surname before marriage		2. Gender M / F	
3. Date of death: _____ in _____ hours (day, month and year) (0-24)			
4. Place of death:		Place:	
		Municipality:	
5. Date of birth _____ in _____ hours (day, month and year) (0-24, only for infants up to 7 days)			
6. Place of birth:		Place:	
		Municipality:	
7. Place of residence:		Place:	
		Municipality:	
		Address:	
8. Nationality: _____		9. Marital Status; _____	
10. Father's name: _____ Mother's name: _____		Name of spouse: _____	
11. The immediate cause of death:			
12. Condition which led to the immediate cause of death:			
In _____, day _____		Signature physician:	
Notes registrar: case of death was entered in the death register which is kept			
Place: _____		Municipality: _____	
Under the current number: _____		Year: _____	
PS		The signature of the registrar:	

6

СЛУЖБЕНИ ГЛАСНИК РЕПУБЛИКЕ СРПСКЕ - Број 65

8.07.2010.

Прилог број 1.

Потврда о смрти

(Презиме и име мртвозорника)

1. Презиме и име умрлог, презиме прије закључења брака		2. Пол М / Ж
3. Датум смрти:	у _____ часова (дан, мјесец и година) (0-24)	
4. Мјесто смрти:	Мјесто: _____ Општина: _____	
5. Датум рођења	у _____ часова (дан, мјесец и година) (0-24, само за новорођенчад до 7. дана)	
6. Мјесто рођења:	Мјесто: _____ Општина: _____	
7. Мјесто пребивалишта:	Мјесто: _____ Општина: _____ Адреса: _____	
8. Држављанство:	9. Брачно стање:	
10. Име оца:	11. Име мајке:	12. Име брачног друга:
11. Непосредни узрок смрти:		
12. Стање које је довело до непосредног узрока смрти и друга значајна стања:		
Потпис љекара:		
У,	_____ , дана	М. П.

Забилешка матичара: Овај случај смрти уписан је у матичну књигу умрлих која се води

За мјесто: _____ За општину _____

Под текућим бројем: _____ За годину _____

М.П. _____ Потпис матичара



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Abstract only**Project Scope: Key to Electronic Health Record System Implementation Usability Challenges**

Susan W Carey

Norton Healthcare, KY USA

Health informatics is a specialized field supporting the use of information technology to improve the quality of care and patient safety. Electronic health records are a form of information technology relied upon by caregivers to provide care and treatment. There are significant usability challenges with electronic health record systems because many do not define the scope of the project prior to implementing electronic health records. Project scope is a technique used by project managers to define the work that needs to be done to ensure the project is successful. Part of the project scope is conducting a current state/future state design session to identify the new processes needed to support the caregivers with use of electronic health records. If a future state is not defined, most often all that will be accomplished as a result of the implementation of electronic health records is automation of existing care and treatment processes. This is NOT providing benefit to the caregivers. To provide benefit to the caregivers, all processes impacted by the implementation of electronic health records must be identified and analyzed. Each process must be separated into component parts to discover the true nature or inner relationships of those components. Then, breakdowns, bottlenecks and issues with the current process need to be vetted. Once this has been done caregivers need to be interviewed to identify gaps between the current process and expectations. The gaps need to be addressed so that the electronic health record system is built to eliminate the chasm between reality and expectations. The challenge with defining project scope fully is the time involved in inventorying processes and documenting the current state/future state. Many organizations want to implement electronic health records quickly, assuming that the system and guidance provided by the service vendor will be sufficient. However, this is typically not the case. Although many service vendors espouse implementing a basic version of an electronic health record system then optimizing after the implementation many organizations do not ever start the optimization phase. Thoroughly defining the project scope will lead to stakeholder satisfaction and will mitigate usability issues.

Abstract only**Improving Data Entry Quality through Text Prediction**

Yang Gong

UTHealth

Reporting patient safety events is a highly recommended useful mechanism for the detection of patterns, discovery of underlying factors, and generation of solutions if events are collected in a properly structured format. As a source of the adverse event repository, such systems could allow patient

safety researchers to categorize, trend, and analyze data, increasing knowledge about medical mistakes and generating common solutions. However, there is a clear dissatisfaction with the current voluntary systems where incomplete and inaccurate reports are misleading and not usable for further analysis. To understand the current status of the reporting systems in term of completeness, accuracy and degrees of expressiveness, we studied a set of voluntary reports acquired from a University Health Care System, Web MM and MAUDE database. Human factors, an important role in the reporting systems, greatly affect the reporting rate, completeness and accuracy of the incidents. For example, classification and definition used in incident reporting systems to determine whether an event is recognized or ignored. Results indicate that the people, who report, are generally working under time critical and multi-tasking conditions, and often do not have either the time or sufficient information to create a complete and meaningful report of the incident. If other or miscellaneous is offered as an option, it is often chosen. Moreover, the information collected for each type of incident can be different. It is critical to know what the needed categories are and how they would promote the quality of reports, users' acceptance in voluntary reporting systems where text prediction would play a key role. User-centered analyses show that the pre-defined reporting categories could serve well for the voluntary reporting need if reporters' tasks were better represented on user friendly interfaces and enhanced by intelligent features, such as auto-completion, auto-suggestion, context specific questions, etc. A user centered, knowledge-based system design for voluntary event reporting is feasible, which could help improve the completeness, accuracy, and interoperability between national and international **WHO** standards. The presenter will lead discussion on how intelligent ext prediction features could facilitate voluntary reporting. Concrete examples and recommendations will be included for inspiring audiences discussion. The entire design aims at sharing the knowledge learned through event reporting and promoting the interoperability of the invaluable data stored in the system for quality improvement.

Abstract only

Electronic Health Record Status in AIIMS New Delhi

Ramesh Kumar Kaul

JPNATC- AIIMS - New Delhi

Electronic Health Record Status in AIIMS New Delhi Ramesh Kumar Kaul Jr Medical Record Officer Dr S K Bhoi. All India Institute of Medical Science New Delhi is apex Medical University in India, under University of Delhi established in 1956. With 03 main objectives to provide: Education & Training Research and Services to the people of India and its neighboring countries. Serves near about 3.2Million patients annually. Introduction: Electronic Health Record EHR it is a systematic, sequential and chronological ordered patients health information in electronic form, in a given time frame in any healthcare centre. EHR systems are designed to store, retrieve, transfer, share data safely, efficiently and accurately at low cost maintenance. EHR can improve the efficiency and quality of medical care and can minimize the repetition of work done. EHR will help in reducing a bit in Carbon Emission into atmo-

sphere. consequently; will put affect on reducing Global Warming or Climate Change. AIM: To introspection the progress achieved in Medical Record Department in developing and transforming medical record documents into Digital Forms within AIIMS. METHODOLOGY: The range of digitization of documents is set as where :Y = 26 -30 Access through Internet application Y =21- 25 Full Digitization (FD), Y= 16-20 Semi-Digitization (SD), Y=11-15 Progress Achieved (A), Y=06-10 Progress under Process (UP), Y=01-05 Initiated (I), Y= 00 Not Initiated (N) RESULT: The Centre wise statistics is indicated below, Super Specialty Centre, Percentage D/C form, Result,Percentage of Medical Record Documents Centre wise in Digital Form I/r/t Whole AIIMS. JPNATC 67 SD 24,AIIMS (Main Hospital) 60SD 22, IRCH 27UP 10,RPC 27UP 10, NSC 17 I 06, CTC 17 I 06, CDER 03 I 06, NDDTC 03 I 06,CRHS 06 I 04, OUT-REACH OPD 06 I 02,Over all AIIMS Performance 24 UP .It also becomes essential for every healthcare centres nowadays to store Data in Electronic Form for hospital safety and patients health information purposes. It can be stored and retrieve at a very low cost maintenance. CONCLUSION: AIIMS had initiated the process of Digitizing patients health information, Pending areas needs digitization Such areas have identified through this Study and needs to Transform paper document into Digital Form.

Abstract only

A New Chapter for the Health Information Management Profession

Kathy Giannangelo

Kathy Giannangelo Consulting

Objectives 1. Describe the changes occurring in the health information management (HIM) environment 2. State the skill sets HIM professionals need in this changing environment 3. Name the common challenges HIM professionals face during the transition 4. Identify the HIM opportunities Session Outline 1. What are the environmental changes impacting HIM? 2. What is the impact of these trends on HIM? 3. What skills sets are needed going forward? 4. What are the challenges facing HIM professionals? 5. What are the HIM opportunities? Abstract The healthcare environment is changing quickly with the move away from paper to electronic health records (EHRs). Particularly, changes in healthcare technology are having a major impact on HIM processes and management. The I in HIM has traditionally meant information. But what about another I term, that is Informatics? What connection does it have to HIM? Becoming a player in the EHR environment where informatics knowledge is key requires the need for certain skills to move forward and remain relevant, recognition of challenges that must be overcome and identification of opportunities. Using the results of an AHIMA environmental scan that looked at technology/science trends, this session will briefly describe a technological change occurring in the healthcare environment and then delve into the HIM skill sets, challenges and opportunities related to that change. For example, computer-assisted coding (CAC) is a change that is impacting the role of coders and their workflow. Increased critical thinking skills will be necessary to perform validation, as the shift is away from reading medical records and assigning codes. Challenges, such as managing productivity expectations, and opportunities, such as the potential to use CAC as a re-

cruiting tool, with CAC implementations will materialize.

Abstract only

Development of Document-based Electronic Medical Record and Its Role in Medical Record Management

Toshihiro Takeda¹, Kanayo Ueda², Ayumi Fujii², Yoshie Shimai¹, Taizo Murata², Shiro Manabe¹, Naoki Mihara¹, Yasushi Matsumura¹

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In recent years, electronic medical record (EMR) system has been widely introduced in Japanese hospitals and clinics. EMR system is usually composed of a core system and a large number of departmental systems. Each system has its own database, in which various data were stored. Unlike paper medical records (PMR), the Medical Practitioners Law does not clearly define which part of data in EMR system should be treated as medical records. When medical professionals need to comprehend a patient's history by viewing several documents of the patient, multiple windows must be launched to browse medical documents stored in different databases, because each document requires its own viewing software. This makes it difficult to collect patients' information efficiently.

To manage medical records as we did in PMR, we developed a document-based EMR system. The documents generated by each system in EMR system are transformed into file types, such as PDF, DocuWorks, etc., that can be read by free universally available software and are aggregated in one archive server. We named Document Archiving and Communication System (DACS) in this system, because the concept of DACS is similar to PACS (Picture Archiving and Communication System).

The need for introducing DACS is to assure lifelong readability of medical records by transforming all documents to universally readable formats. After introduction of DACS, it was revealed to be useful in terms of medical records management. First, by registering the documents that should be treated as medical records, DACS clearly defined medical records in EMR. When the medical record of a patient is requested for disclosure, the medical clerk can download the documents and prints them in a short time. Second, it is possible to browse all medical records by a single viewer. By regarding document registration as occurrence of event, for example, registration of surgery report as performing operation, patient's events can be displayed on DACS viewer. This contributes to collect patients' information efficiently and to prevent from oversight of important records. Third, DACS can be used to audit medical records. By a registration of a document related to a certain patient event, DACS can check the presence of other documents related to the event in the patient and provides a non-created document list quickly.

In conclusion, DACS, document-based EMR system, contributes to prominent management of the medical records in EMR system.

Abstract only**Assessing Intention and Usage of Computer Based Information Systems in Primary Health Cares: Applying Unified Theory of Acceptance and Use of Technology****Hosizah Markam***The University of Esa Unggul Jakarta, Indonesia*

The Computer Based Information System (CBIS) is adopted by almost all of us in the health care setting, including the Primary Health Care in East Java Indonesia. Some of softwares available are Simpus, Simpustronik, Sikda Generik, e-puskesmas, etc. Unfortunately, they are not successfully implemented by most of the primary health cares. This study applied the Unified Theory of Acceptance and Use of Technology (UTAUT) to assess the intention and behavior of CBIS usage in East Java Province. It was a cross-sectional survey, conducted from February to March, 2015. A total of 30 CBIS users were identified and questioners were distributed and 100% completed. The user of CBIS intention was significantly influenced by Performance Expectancy, Effort Expectancy and Social Influence. The CBIS usage was significantly influenced by User Intention and Facilitating Conditions. UTAUT results indicated that Facilitating Conditions have a major impact to the Use of CBIS in the Primary Health Cares. The results of this study can be helpful for the East Java Provincial Health Office to adjust its program strategies and tactics in providing CBIS users facilities in order to implement CBIS successfully.

Abstract only**The System to Audit Medical Documents by Detecting Patient Events from Document Registration Information****Yoshie Shimai¹, Toshihiro Takeda¹, Kanayo Ueda², Ayumi Fujii², Taizo Murata², Shiro Manabe², Naoki Mihara¹, Yasushi Matsumura¹***Osaka University Graduate School of Medicine, Japan¹, Osaka University Hospital, Japan²*

Quantitative audit of medical records are still important to improve the quality of medical records even after introduction of electronic medical record (EMR) system. In quantitative audit of medical records, non-created documents list have to be feedback to the doctors.

EMR system is usually composed of a core system and some departmental systems. Thus the documents, that should be audited, are generated by many systems. In order to check the presence of target documents, several windows need to be opened because each document requires its own viewing software. In order to make a list of unregistered documents, the system have to grasp target event. For example, to check the presence of a surgery report, the system need to search an operation event. Because the data is stored in the operation order system, it is not easy to access this data.

We introduced a document-based EMR system. We named this system Document Archiving and

Communication System (DACS). The documents generated by each EMR systems are transformed into file types, such as PDF, DocuWorks, etc., that can be read by free universal available software and are aggregated in DACS server. All medical documents can be viewed with single DACS viewer. We developed an “audit system” based on DACS. The audit system detects patient events by checking certain documents which is surely registered when the event is happened, then it searches the relevant documents with the event. In case of surgery, consent form, check list before surgery, surgery report, nursing report, and anesthesia record have to be made. These are generated by different systems. Among them nursing report or anesthesia record is surely created after surgery, thus the audit system detects the occurrence of operation by the registration of these documents. Then it checks the presence of other documents related to the operation. By setting the creation deadline for each document, the audit system denotes the document creation status such as unwritten, nearing of the deadline, expired the deadline, written. These status can be seen in real time in wards.

This system contribute not only to audit medical records effectively but also to prevent from skipping creation of medical documents.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Electronic Medical Records Implementatio in The Eastern Province:Challenges and Opprtunities

Amal Mohammad Al Aswad¹, Amgad Ali Badewi²

The University of Sheffield¹, The University of Cranfield,UK²

This research aims to investigate the status and level of implementation of EMR in the Eastern province as well as to identify the main challenges facing it and the opportunities it may offer. The literature indicates that few studies to date have explored the current situation regarding EMR implementation at a national level in Saudi Arabia. What is known is that there is evidence of negative attitudes towards EMR systems. This begs the question as to whether such attitudes are due to the vendor or because of other factors. This research is based on a survey of 23 hospitals and a focus group consisting of parties from different hospitals in the Eastern Province. None of the hospitals in the Eastern Province has fully implemented EMR although there is a positive attitude towards EMR, there is belief that the current medical processes are compatible with the EMR system, there is also a strong belief that EMR can increase the quality of the provision of health care services, and there is a general support from hospital heads to implement EMR. However, the main reasons why hospitals are showing different levels of performance are the level of belief in EMR as being able to enhance the quality of the services provided and the level of support on the part of top management to implement EMR. The main challenges include: the level of funding needed to support EMR in the post-implementation phase; the need for users (i.e., doctors, nurses and administrative staff) to receive continuous training on the system; and the dedication of management teams to assure the benefits of EMR are identified,

planned, reviewed and realised so that top management support is ongoing. This research showed that positive attitudes towards EMR are not the main motivator in fully implementing EMR. Without a systematic approach to the implementation of EMR, its benefits will not be realised. Furthermore, without the perception that the benefits of EMR can be realised, top management commitment will be reduced, leading to breaks in the implementation of EMR.

Management of Clinical Indicators using Diagnosis Procedure Combination (DPC)

Kiyomi Hiraoka

NHO Himeji Medical Center, Hyogo-city, Japan

Introduction and Objects:

The DPC data include discharge abstract and administrative data. The unique advantage of the DPC data is the inclusion of detailed process data and several clinical data that can be applied to clinical studies.

The National Hospital Organization (NHO) has performed evaluation of the quality medical care, involving comparison among other hospitals.

The results indicated the necessity of evidence and guideline of the timing to start after surgery of proximal femoral fracture early rehabilitation within 4 days. The outcome measure was Activities of Daily Living (ADL) in leaving hospital.

Methods:

This study intended to clarify the 64patients (discharge day:1 April 2014 - 30 November 2015) after surgery of proximal femoral fracture using DPC data and clinical data(CRP, TP, ALB) by SPSS statistics ver.23.0. All tests were 2-tailed, with differences reported as significant if $p < 0.05$.

Results:

A moderate correlation can be seen between early rehabilitation within 2 days, sex and Activities of Daily Living(ADL)<math>r=0.347^{**}-0.359^{**}>^{**}p<0.001. As for the timing of rehabilitation factors, there were significant differences (Odds ratio) between the two groups. A positive correlation can be seen between low albumin(ALB), independence degree of elderly person with dementia and ADL.<math>r=0.292^{**}-0.526^{**}>^{**}p<0.001. As for the ALB rate factors, there were significant differences (Odds ratio) between the two groups.

I examined univariate and multiple regression analysis in Table1.

Table1

	95% Confidence Interval		
Factor	Odds Rate	lower-upper	p value
Sex	8.089	1.366 – 47.915	0.021
Rehabilitations			
within 2 days	20.078	1.907 – 211.336	0.013
Low ALB	88.886	3.350 – 2358.144	0.007

Conclusion and Discussion:

The results of study indicated the management of NHO Clinical Indicators (CI) using DPC and clinical data(after surgery of proximal femoral fracture).

It was suggested that the timing to start after surgery of proximal femoral fracture early rehabilitation within 2days and nutritional management(ALB) has influence on patient QOL.

We have controlled to end prophylactic use of 100.0% antimicrobial agents within 3days by clinical pathway in committee administration. The rehabilitation at least 6 months after the surgery will consider effective for patients using regional alliance pathway. ALB is utilized as a point of view for the nourishment meal instruction in the medical fee revision in FY 2016 (1,300 yen/time →2,600 yen/time and more).

After this study, we NHO hospitals have continued and aimed at the improvement and standardization of medical care quality, medical safety and team medical care by benchmark evaluation, activity of Quality Management Committee using management of using DPC data.

The Future of Health IT and Health Information Manager in Japan

**Rie Misawa, Seiya Kobayashi, Katsuhiko Sato, Keiichi Sakai,
Kaname Yoshizawa, Junichi Kikuchi, Masuyo Sakurai, Masako Aida, Atsushi
Kubota**

National Hospital Organization Shinsyu Ueda Medical Center, Japan

ABSTRACT

The social security and tax number system called My Number was started this year in Japan. My Number system will integrate health care information in the near future. Health IT and the Health Information Manager(HIM) will play important roles in this. If an efficient, accurate, and secure health IT system can be implemented in the health care system, it can offer tremendous benefits to everyone. For example, bring the cost of health care down, improve the quality of healthcare and treatment, the prevention of medical errors, increased patient satisfaction and so on. Also, everyone is able to use the same information at every time on various occasions. But, if health IT isn't used properly, it can pose many risks to patients and others. This is why the HIM must be able to manage a Team Approach to Health Care. We collect and coordinate many kinds of health care information about patients, who are being treated by doctors and other clinicians. HIM's are the hub for all data between staff in the medical facility. They must coordinate between doctors, nurses, radiologists, reception, accounting and so on to have smooth and accurate information sharing. This organized data can become a part of the IT cloud. HIM's are hoped to have the skill of total coordination about many kinds of efficient and accurate health information in hospital. HIM's and health IT's existence will become more important as Japan's Health Care system becomes a part of the My Number system.

1. INTRODUCTION

The social security and tax number system, known as My Number, started this year in Japan. In fiscal year 2018, this number identification system in conjunction with healthcare systems will start in a graded manner, reaching complete implementation in fiscal year 2020. This system was first approved by our government in 2014, and is a part of the "Measures related digitization and ICT use associated with medical, nursing, and health care". In the revision of medical service fees in fiscal year 2016, the "Assessment of electronic transmission and reception, including image information and test results", was added as a new item to promote medical care coordination using information and telecommunications technology (ICT) and to improve collection and utilization of healthcare data. The new measures indicate the necessity for further standardization of healthcare information, and IoT in healthcare and for the time for revolution of HIM's in Japan. The goals of HIM's need to be assessed and reassessed by clarifying and revising the current status of healthcare IT in medical institutions, as well as the current job requirements of both HIM's, and their staff. As the primary personnel in medical institutions dealing with medical information, including the basis of healthcare IT, HIM's will have to reconfirm and revise their status and current job requirements in order to connect with not only domes-

tic, but also with worldwide medical communities for the globalization of healthcare IT.

2. METHODS

1.1 Check The Problem of Electronic Medical Record

We determined the type of electronic medical record (EMR) system and division system in hospitals, examined the differences in data collection between the systems, and verified the tasks. First, we were introduced to the system by the system engineers of the hospital, and then the system type and the name of the vendor were identified. To compare the information stored by the EMR system and that acquired by the accounting systems, the number of inpatients stay outside of the hospital was determined as an item for input and verification. We chose to analyze the number of inpatients stay outside of the hospital. Because HIM's participate in conferences and in committees to inform the number of inpatients stay outside of the hospital. In addition to the differences in the number of inpatients stay outside of the hospital based on the data, the screen of entering patient treatment was confirmed, the data entry operators were interviewed, and the system types provided by the vendors were identified.

1.2 The Presentation and A Questionnaire Survey

We research hospital staff's understanding about health information management and the status of their use of health information in our hospital. First, we made presentation about the method for utilizing the information. Next, we provided a questionnaire survey on the information sharing and usage at a meeting of head doctors. The presentation and the questionnaire survey were similarly given to the committee for medical records management. That was consisted of doctors and managers of health-care professionals. The committee for medical records management was a requirement standard for hospitals applying to DPC/PDPS.

1.3 Observe Staff Working in The Wards

We observed staff working in the wards. And we had discussions with the staff to examine the possibility of differences between actual medical procedures/treatments and the data was recorded by staff in the EMR system. We also researched the possibility that problems with the medical fees were caused by an insufficient understanding between the medical professionals and the accounting staff. We had a meeting with head nurse to decide the items about the data with possible discrepancies.

1.4 Collect The Data of Health Information Manager

We collected the data on the number of certified HIM's in Japan. And we also collected their job requirements to understand the characteristics.

3. RESULTS

The Diagnosis Procedure Combination/Per-Diem Payment System (DPC/PDPS) in the Japanese healthcare system is explained before demonstrating the verifying method for identifying problems. DPC/PDPS is a system involving a standardized payment per day based on diagnostic group category.

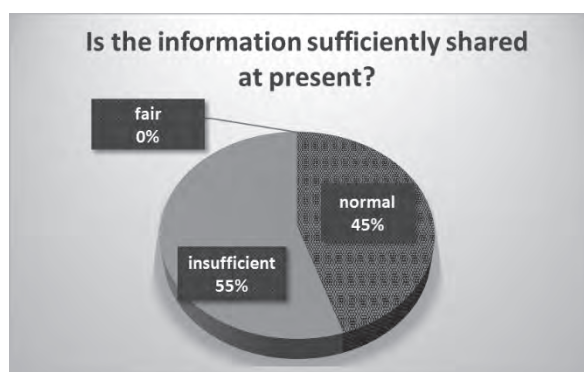
ries. The DPC/PDPS system was established by cabinet approval in April 2003 and was then introduced to the Special Functioning Hospitals. As of April 1, 2016, 1,667 hospitals (0.49 million beds) were estimated to be in the DPC/PDPS and accounted for 55% of all general hospital beds. Hospitals applying for DPC/PDPS are required to have assigned medical records managers and to provide standardized acute hospital care. The requirements for acceptance into the system are shown below.

1.1 The Differences in Data Collection between Systems

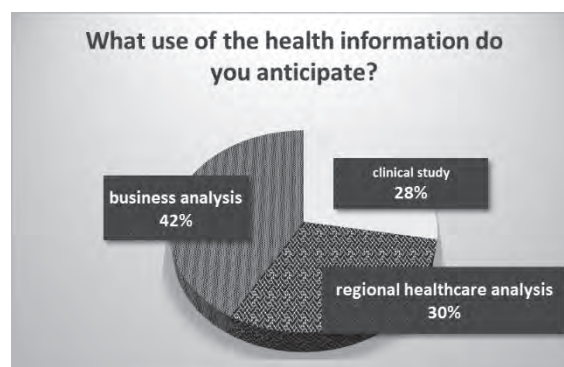
Our hospital identified 25 medical data recording systems obtained from 16 vendors, and the information by division was transmitted to the EMR system and to the medical accounting system in order to combine the data. The data stored in the EMR system were extracted by the data warehouse application, and the data acquired in the medical accounting system were also extracted by the statistic function of the data warehouse application. The number of inpatients stay outside of the hospital, used as a verification item, was found to differ between the EMR system and the medical accounting system. The screen for a nurse to enter orders in the EMR system for an inpatient who was permitted to stay outside of the hospital. The system consists of many different entry items, and the nurse must make a decision based on the “time”, i.e., “stay outside of the hospital” or “temporary release from the hospital”. The time to decide the stay outside of the hospital in the EMR system was different from the time in the medical accounting system. This fact indicates the possibility that the data extracted by the system about not only the stay outside of the hospital but also possibly about other items may differ between the two systems.

1.2 The Outcome of Questionnaire Survey

Two graphs show the outcomes of the questionnaire survey about both the information sharing and the status of using health information in our hospital. Graph 1 shows the outcomes with regard to the question “Is the information sufficiently shared at present?”. The answer “fair” was 0%, “normal” was 45%, and “insufficient” was 55%. For the question “How much do you know about the health information that is extracted from the data?”, the answer “most” was 0%, “half” was 14%, “little” was 86%. Graph 2 shows the outcomes with regard to the question “What use of the health information do you anticipate?” (multiple answers were allowed), the answer “clinical study” was 28%, “regional health-care analysis” was 30%, and “business analysis” was 42%. The respondents included physicians, nurses, pharmacists, radiologic technologists, clinical engineers, clinical laboratory technicians, physical therapists, occupational therapists, registered dietitians, and clerks.



Graph 1.



Graph 2.

1.3 The Difficulty Knowing Correct Information

We mostly use health information which was transmitted electronic media transmitted with complicated criteria for coding and accounting. We didn't get the information by directly observing the medical activities in wards. And, we found that sometime information was incomplete. For example, it is not always considered necessary to treat of postoperative wounds, but such treatment is included in the standard items to determine the necessary level of nursing care. That is very important information. However, these activities are difficult to understand from the health information obtained only from the data. Thus, it is difficult to know the correct information with only the recorded health data.

1.4 About Health Information Manager in Japan

There were 31,625 certified HIM's (excluding 1,015 who passed the test to promote from medical record coordinator to HIM) as of May 2016. The job requirements of HIM's are described in the "Scope of work" in the Guidelines for HIM's (2011 version) prepared by the Japan Society of Health Information Management as follows: (1) Work to systematically manage health information in an integrated manner, (2) Work to manage health information in a safe manner, (3) Work to evaluate health information, (4) Work to use health information effectively, and (5) Work to provide health information. The above suggests that the tasks of a HIM range widely and include management, analysis, statistics, auditing, coding, cancer registration, and disclosure of patient's charts. Our hospital "National Hospital Organization Shinsyu Ueda Medical Center" is located in Nagano. Graph 3 shows the data of "additional fee for medical records management system 1 or 2" about Nagano. Nagano was the second-best position in Japan. That result shows HIM's importance and activity in Nagano.



Graph 3.

4. DISCUSSION

1.1 Human Resource Development

Health information is maintained by various systems, including EMR and medical accounting systems. And, that information is compiled as health/treatment data. It is necessary to develop human resource who can determine correct or incorrect information that is included in the data on clinical information, medical actions, and medical fees. And, who can identify system problems and failures from the extracted data, too.

1.2 To Share Information and To Meet Expectations

Healthcare staff have various interests with different viewpoints and require further information sharing in our hospital. Therefore, HIM's must meet their expectations.

1.3 To Be Trained Many Things About Medical

HIM's should be trained to know the medical procedures, devices, and materials used in clinical practice in order to record health information more correctly.

1.4 The Tasks of Health Information Manager

The tasks of HIM vary considerably. However, the number of HIM's depends on the medical institutions, resulting in the differences in work burden.

5. CONCLUSION

A goal has been set by the Japanese government to have electronic medical records in use for 90% of patients in general beds by fiscal year 2020. This is a very ambitious and giant task that will need cooperation from government, hospitals, doctors, nurses, technicians, receptionists and so on. In order to make safe, reliable, and useful health IT, who will play a major role in this? As the main hub of document communication between hospital staff, The HIM will play a major role in shaping the future of health IT in Japan. Only HIM's determine the health IT. Only HIM's determine the health IT system based on knowledge of health and medical affairs, perform data management, audit and analysis, and play a leading role by cooperating with other professionals using the health information. HIM's as data

analysts must learn health information technology, educate healthcare professionals in practice, and support not only in-hospital but also local cooperation via health information exchange. Furthermore, it is necessary to let medical institutions and governments know the role and significance of HIM's. The HIM more than anyone else can build the cooperation of health IT and lead it to united one worldwide.

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Title of presentation: Submission of The Results of Several Studies and the Strategy to Advance the HIM Profession in Canada

**Canadian Health Information Management Association (CHIMA)
Strategies to Advance the Health Information Management (HIM)
Profession in Canada**

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CHIMA - Canada¹, Alberta Health Services²

Thank you for accepting this abstract for presentation at the 2016 IFHIMA Congress.

This paper will identify the initiatives CHIMA has underway as part of their Strategic Plan for HIM that will support health information professional practice and advance the HIM profession in Canada. This was achieved by participating and conducting several industry studies that have assisted the Board of Directors in its development.

CHIMA, Canada's national health information management association, was established in 1942 and currently has over 5,000 certified members. Figures A and B identify CHIMA's current strategic directions, mission and vision, and domains of practice.

Canada also has Articles of Incorporation for the Canadian College of Health Information Management (CCHIM). This Association is the certifying body for HIM in Canada.

There is a national college and national certification exam. Members must maintain 36 continuing education credits in a 3 year cycle to maintain their certification. There are two and three year college programs, four year degree programs and a pilot Master's Program.

CHIMA along with the United States' American Health Information Management Association (AHIMA) were two of the founding members that established IFHIMA.

In 2009, CHIMA responded to industry by identifying six initiatives:

- Long Range Scenario Planning (LRSP):
 - As a long-time supporter of CHIMA and the HIM skill-sets, the Ontario Ministry of Health and Long-Term Care (MoHLTC) were instrumental in providing limited dollars to advance the LRSP process and build on the key themes stakeholders saw as emerging in health-care:
 - Individual at the centre (full integration and linear health information sharing across sectors – including the patient)
 - Collaboration with all healthcare sectors/groups/associations
 - Transformation and the pace of change.
- Key priorities for CHIMA included:
 - To listen to the voices of our future, not our past.
 - Keep company with the front-runners.
 - Spend time with those who are designing (and funding) the jobs that will replace us.
 - Merge for strength – connect with others who are keen to change.
 - Where is CHIMA's value?
 - Stop: What can we stop doing?
 - Protect: What is most precious amongst all that CHIMA does?
 - Invest: What has a future?
 - Pick and occupy only those spots where the voice of CHIMA adds value.

The six (6) priorities identified in the LRSP Report were reviewed and synthesized into two strategic directions that the Board of Directors concentrated on including:

- Merge for Strength
- Develop HIM's for the Future

In addition, CHIMA commenced the development of education and training to help prepare HIM professionals for the future within CHIMA's three Domains of Practice with the emphasis on transitioning

our jobs into the electronic environment.

- **HI/HIM Sector Studies**

- CHIMA, with key Canadian healthcare partners, completed two workforce studies for both Health Information (HI)/HIM. The first study in 2009 was on supply and demand. The results of the first study, was the impetus to do the second more in depth study in 2014. One of the central conclusions from the 2009 study indicated “there was a serious risk that labour shortages and skill shortages will constrain the successful implementation of Electronic Health Information Systems (EHIS) technologies in Canada” and that a systems-based human resources planning measures should be a priority to ensure that the substantial investments that governments at all levels are making in EHIS technologies deliver the promised benefits. The study in 2014 concentrated on “supply and demand” for Information Technology(IT)/Health Informatics (HI) and HIM. Sector Studies are very expensive and need input from many stakeholders. COACH (Canada’s Informatics Group) and CHIMA lobbied several Healthcare partners to contribute to the cost of the studies, and to be part of the Steering Committee that would develop the criteria for the study, interpret the results and make the recommendations. This study identified current employment of HI and HIM professionals in the public and private sectors is estimated at 39,900 professionals and over the next 5 years, the combination of replacement demand and growth demand will generate hiring requirements ranging from 6,200 to 12,200 professionals. This report has been used extensively in our Strategic and Tactical plans.

Recommendations included:

- Systematically monitor trends in supply and demand for professionals in HI/HIM;
- Principle challenge facing public sector in next five years with a loss of experienced HI/HIM human resources as a result of retirements;
- Public sector procurement strategies for e-Health expertise to align with strategic human resources goals;
- Expand the range of structured and certified skills upgrading and skills broadening opportunities; and
- Expand the opportunities for clinical professionals to acquire clinical informatics and HIM skills.

- **Learning Outcomes for HIM**

- The original Learning outcomes were established in the early 1970’s and served as the guidelines for College Programs in Canada to apply for recognition with CHIMA. In the 1990’s and into early 2000, the CCHIM (college) committees with input from the Board of Directors began discussions to develop Learning Outcomes for both undergraduate and master’s degree in HIM. There was input from the Program co-ordinators to contin-

uously update Learning Outcomes for HIM, however in 2008/9 CHIMA hosted a pan-Canadian task team, with industry stakeholders, and employers to do a fulsome review of the Learning outcomes. Because of the changing landscape and the need for timely, robust clinical data, it was felt that new learning outcomes need to be considered, for future graduates. This work was finished and in 2010 all Colleges/Universities that teach HIM in Canada updated their curriculum to meet these new standards. The Learning Outcomes are again up for review.

Below are the current learning outcomes:

Learning Outcomes For Health Information Management (LOHIM)



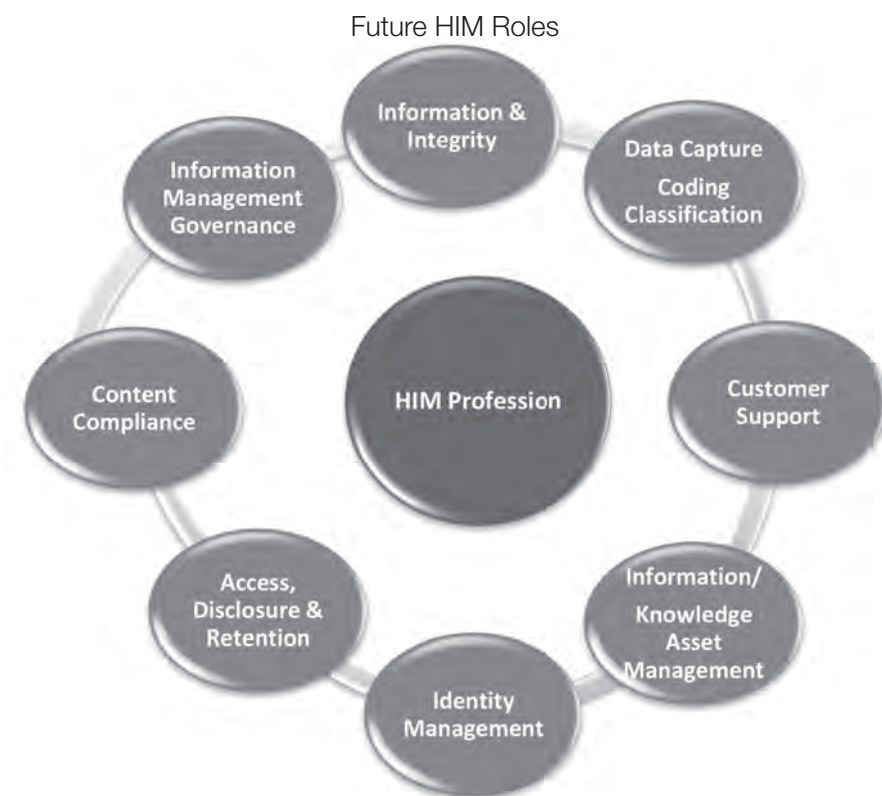
The learning outcomes will most likely be very similar to other countries. Canada has already done a curriculum review with AHIMA, many years ago, and have a reciprocal agreement in place for members in both countries to challenge each other's exam and to be certified in both countries. At this conference CHIMA signed a similar agreement with the Health Information Management Association of Australia (HIMAA).

- **Workforce Transformation and Evolve the College**

- The workforce transformation initiative was a joint project with Alberta Health Services, a single provincial health services delivery organization and CHIMA. A Think Tank session was held in Alberta to look at current HIM roles, and then an exercise to determine the

industry needs for “future roles”. Again, this was a pan-Canadian Task Team with key stakeholders from the healthcare industry. The final report (on the CHIMA website) has been used by CHIMA to look at current roles, with strategies to transition to future roles. Alberta Health Services has been leading the way with new roles, and from this work CHIMA has developed a “Career Matrix” for our members. The career matrix outlines what competencies are required for each role, as well as job titles and descriptions; along with a “map” of where courses are taught in Canada, should an HIM professional wish to move into a new role.

Below is an example of some of these roles:



- **Advanced Certifications**

- In 2010 following the LOHIM review, the Workforce Transformation report and the Sector Study reports, another pan-Canadian Committee called Evolve the College was struck. Representatives included senior HIM Professionals, HI/HIM Educators, College and University representatives, Ministry of Health, Canada Health Infoway, CIHI and Employers from across the country. Two major recommendations from this committee was that CHIMA should consider developing Advanced Certifications in 4 areas of HIM (i.e. Terminology Standards, Coding Classifications, Clinical Documentation improvement and Decision Support) and to develop HIM Life Cycle guidelines for Canada.
- Each Advanced Certification has a pan-Canadian Task Team, a value proposition and

business case, a survey to identify the need for such a certification and if a need is identified, a curriculum development committee. Once Programs are in place an Exam Sub-committee will be established to develop the certification exam. The Terminology advanced certification is completed, the coding classification is at the business case stage and the Clinical Documentation Improvement (CDI) white papers and workshops have been developed with Decision Support in its early stages.

- **HIM Lifecycle Guidelines**

- While lots has been written about records management and lifecycle in Canadian HIM textbooks and professional practice briefs, CHIMA did not have official Guidelines for the HIM Lifecycle. Again, a pan-Canadian Task Team was struck.



The CHIMA initiatives have always had two “audiences in mind” for all of their initiatives – the future graduates and new members and members currently working in the field:

1. To ensure the learning outcomes and curriculum for students and new members will meet industry needs; and
2. To ensure strategies are developed for upskilling for our current certified members, and to;
3. To develop a web-based interactive career matrix tool for members to advance themselves within the profession. This tool will be available in early 2017.

Figures A and B



Strategic Plan 2015-18

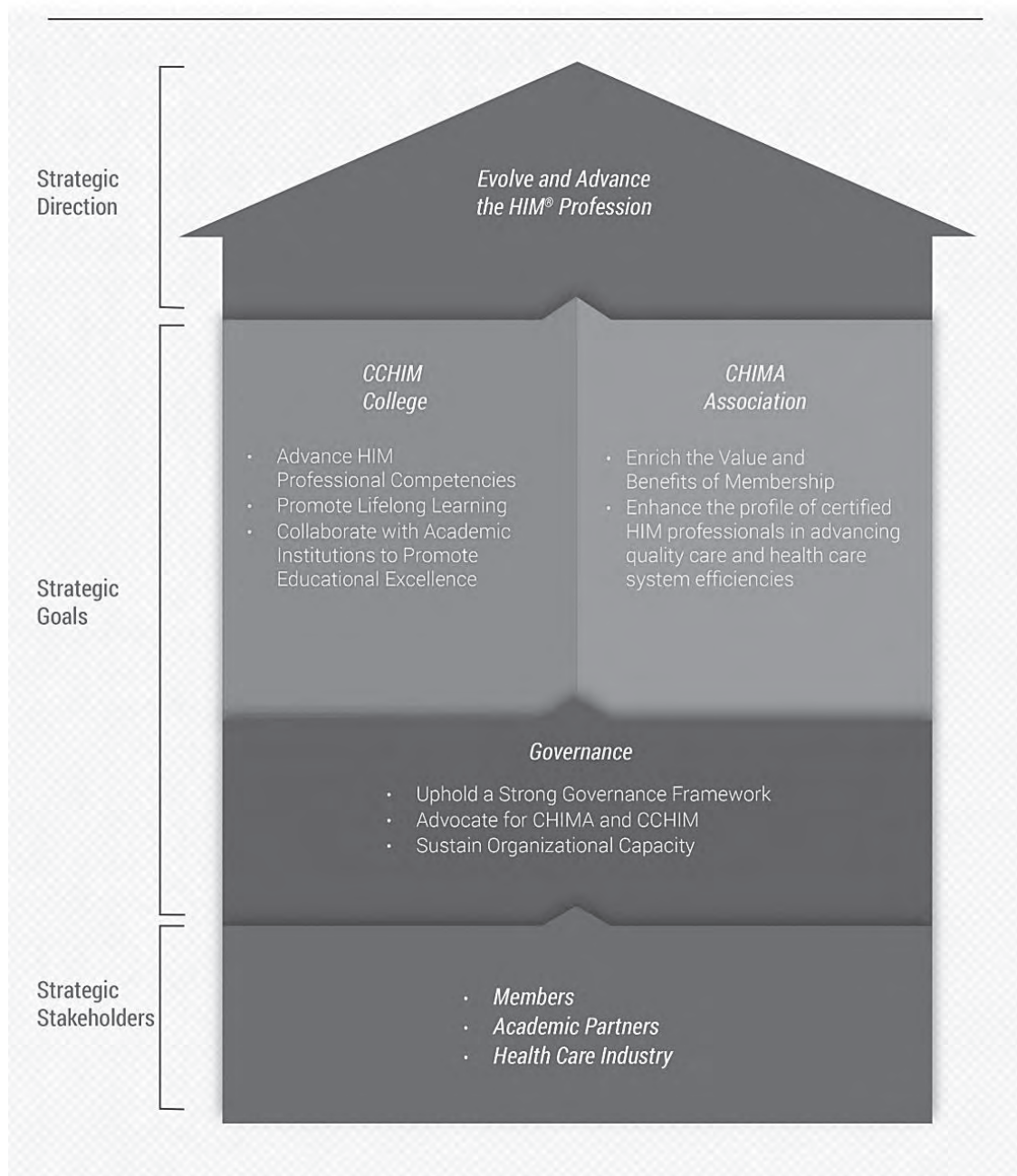
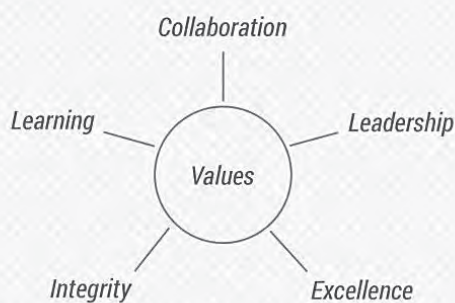


Figure A

Vision

Advancing the health care system as the change leader in health information management

Values



Domains of Practice



Mission

CHIMA is the national organization that represents leadership and excellence in health information management.

As a national association, we:

- support continuing education and professional practice of HIM professionals
- develop strategic partnerships to advance the development and integration of electronic HIM
- advocate for and strengthen the HIM role in health care settings across the continuum of care

As a federally chartered college, we:

- are the single source of credentialed Health Information Management Professionals
- partner with educational institutions, our members, industry, and employers to develop the competencies, skills and knowledge for the HIM profession
- provide essential research and expertise in health information standards and best practice

As a profession, we:

- contribute to care, outcomes and safety through the provision of accurate, complete, timely and accessible health information
- support the Canadian public by advocating for and monitoring the privacy, security and confidentiality of personal health information

HIM® is a registered trademark of CHIMA

Figure B

Abstract only

Compliance to Hospital Health Information Management Manual Standards: Evidence from Selected Philippine Government National Hospitals

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By attaining quality documentation, maintenance, appropriate storage and management of health information, the quality of patient care is ensured. Evidenced-based clinical decisions, quality improvement and hospital policies could be well implemented. To provide guidance to hospital health information managers, the Philippine Department of Health (DOH) through the Health Facility Development Bureau (HFDB) previously known as National Center for Health Facility Development (NCHFD) issued 7th Edition Hospital Health Information Management Manual Standards last 2010. Since then there was no attempt to evaluate the compliance of hospitals to the manual standards. Hence, this paper assesses the compliance of selected National Hospitals Managed by the Philippine Department of Health. The paper focused on the compliance to standards on adequacy of filing area, functional medical records committee, staff qualifications, substantial quantitative and qualitative analysis of records performed, disease and operation code assignment, updated registers and indexes, timely completion of records and timely submission of hospital statistical reports. Direct observations, interview and review of records including patient charts were used to gather the data. It was found that there are moderate to high percentage of compliance to standards performed by DOH Hospitals. Though monitoring should be strengthen and done regularly. A self-assessment tool could be developed to determine the needs for technical assistance and capacity building needed by staff should also be continued and regularly conducted to ensure updated information received.

Title of presentation: Closed Medical Record Review about Cancer Patient Based on MCI 19.1

Standard KARS Accreditation of 2012

Closed Medical Record Review on Cancer Patient Using MCI 19.1 Standard Accreditation 2012 of KARS

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ABSTRACT

Based on Minister of Health Republic of Indonesia (2015) cancer is one of the leading cause of death in the world. In 2012, about 8.2 million deaths were caused by cancer. Based Risesdas (2013) the prevalence of cancer in the population of all ages in Indonesia amounted to 1.4%. Special man-

agement is needed to cope the increase of the number of death due to cancer.

Strengthening medical recorder competence in the management of cancer patient data recording can be one of the ways to help medical personnel in the treatment of cancer patients. Based on Acts no. 44 of 2009 on the hospital, it was mentioned that every hospital has obligations, one of them is performing medical record. The contents of medical records are one of the aspects that reviewed quantitatively in KARS 2012 accreditation standards.

Preliminary study on identity analysis to 11 files of cancer showed that it hadn't fulfilled the determined standard because the percentage of completeness reached only 46.71%. This research aims to do closed medical record review about cancer-based on MCI 19.1 Standard KARS Accreditation of 2012. This research is a descriptive study with qualitative approach case study research design. Targets in this research are 100 medical record files of cancer at 2013.

The specific content medical record has been assigned by RSUP Dr. Sardjito in the form of procedures, but these aren't socialized at Tulip installation. Based on closed medical record review about patient identification, diagnosis support information, and service justification reach the score of 10 or fully reached. While the result of closed medical record review about course information and medication result from reaches score of 5 or partially reached.

Recommendations: [1] Socialization of existing procedures in the Medical Record Installation to Tulip Installation; [2] Analysis of medical records jobs in the Installation Tulip; and [3] Leadership support to enable the medical record management activities in Tulip Installation.

Keywords: Closed medical record review, Management of Communication and Information (MCI), KARS accreditation, Cancer.

Introduction

Based on Minister of Health Republic of Indonesia (2015) cancer is one of the leading cause of death in the world. In 2012, about 8.2 million deaths were caused by cancer. Based on Riskesdas (2013) the prevalence of cancer in the population of all ages in Indonesia amounted to 1.4%. Special management is needed to cope the increase of a number of death due to cancer.

In the case of cancer patients, patients are required to perform the routine treatment or medication, then the whole service given by doctors to patients and the development of the patient's condition should be recorded in the medical record. This serves as an evidence of service is given to the patient and as a communication tool for practitioners of health service so that the patient's condition can be controlled and the continuity of service between various service practitioner to the patient can be created.

Based on Acts no. 44 of 2009 on Hospital, hospital has an obligation to provide health services that are safe, high quality, anti-discrimination, and effective, with the interests of the patient in accordance with hospital service standard. Therefore, the government requires the hospital to conduct periodic accreditation at least 3 (three) years as mentioned in the Acts No. 44 of 2009.

Based on the Minister of Health Regulation No. 12 of 2012 on Hospital Accreditation, accreditation is a recognition of the hospital given by independent institute which organizes accreditation set by the

minister, after it is judged that the hospital meets the hospital service standard in order to improve the quality of hospital service continuously. In the implementation of hospital accreditation in 2012, the medical record becomes one of the basic assessment. Ratings of medical record were based on the content of the information inside.

According to the Regulation of the Minister of Health No. 269 of 2008 on Medical Record, the medical record is a file containing records and documents about patient identity, examination, treatment, action and other services that have been given to patients. The medical record must be made by the doctor and completed immediately after the patient receiving the service. The medical record, at least, contains the results of the examination, medication, action, and other services that have been given to patients.

In the hospital accreditation in 2012, there were several standards related to the content of the medical record, found in the group of hospital management standard. There are six chapters in this group while the chapter which tells about the content of the medical record is chapter 6, about Management of Communication and Information (MCI). Standard MCI 19.1 about medical record contains sufficient information to identify the patient, support the diagnosis, basic justification of medication, document examination and medication outcomes, and improve the sustainability of service among health care practitioners.

According to the preliminary study on identity analysis of 11 cancer patient's medical record files, the result showed that it had not reached the standard yet since the average completeness was only 46.71%. The minimum standard to be achieved is 80%.

The aim of this study is to examine the medical records of cancer patients especially based on MCI 19.1 standard accreditation KARS 2012. The specific objectives of this study: [1] knowing the determination of the specific content of the cancer patient's medical record file. [2] undertakes a closed medical record review on the identification of cancer patients. [3] undertakes closed medical record review about information of diagnosis support; information of service and medication justification; and information of course documentation and treatment outcome.

METHODS

This research is a descriptive study with qualitative approach case study research design. The research subjects were one cancer-expert doctor, one nurse and one medical record administrator, and one cancer registration administrator. The object of this study is 372 files of cancer patient's medical record in 2013. The research sample to be studied were taken using purposive technique. The number of samples is calculated using Slovin formula as follows: $n = N / (N(d)^2 + 1)$, where n = number of sample; N = population; d = the value of precision (desired error rate), in this study the error rate is 10%, the total population (N) = 372. The result of the calculation of the formula is 79 files that is rounded up to 100 cancer patient's medical record files.

This research used some data collection techniques such are interviews, observation and documentation study. Data were analyzed using data reduction, data presentation and conclusion making. Source triangulation was used to test the data validation.

RESULTS

1. Determination of Specific Content of Cancer Patient's Medical Record Files

Tulip Installation is one of the installations that provides outpatient service of a cancer patient at RSUP Dr.Sardjito. Implementation of the medical record in the Tulip Installation has been done manually while the patient registration has already been done using a computerized system that is connected with the application of information systems of RSUP Dr.Sardjito.

File management at Tulip Installation is managed in a decentralized manner because the cancer patients need long treatment and regular visit so that it will be more effective to manage medical record file.

Based on observations in the Tulip Installation RSUP Dr. Sardjito, there are not Decree, policies, and Medical Record Implementation Handbook which establish the specific content of medical record file. Based on the interview with some respondents at Tulip Installation, there are not procedures or policies related to the specific content of the medical record, but the procedures, policies or decree, and BPPRM are found in the Medical Record Installation RSUP Dr. Sardjito.

Socialization of procedures, policies or decree, and Medical Record Implementation Handbook about managing medical record especially the specific contents of the medical record was not performed at Tulip Installation. Supply of medical record files in Tulip Installation was budgeted by Medical Record Installation RSUP Dr. Sardjito.

Based on the documentation study, the following are specific contents of the medical records of cancer patients:

Table.1. Specific content of medical record files of cancer patient

No.	Information	Name of sheet
1.	Patient identification	Appear in all medical record sheet: [1] Polyclinic sheet; [2] Laboratory test; [3] List of problem; [4] action information giving; [5] Approval of medical action [6] Chemotherapy program; [7] treatment care
2.	Diagnosis support	Laboratory test
3.	Service and medication justification	[1] List of problem or [2] action information giving;
4.	Course and medication outcome	[1] Chemotherapy program or [2] treatment care

Based on Minister of Health Regulation No. 269 of 2008 Chapter 1 Article 1 paragraph 1, the medical record is the file containing records and documents about patient identity, examination, medication, action and other services that have been given to patients. Based on Minister of Health Regulation No. 269 of 2008, the content of the medical record for inpatients and one-day care covers, at least, these following points:

- a) Identity of the patient;
- b) Date and time;
- c) Result of anamnesis includes, at least, complaints and history of the disease;
- d) Result of physical examination and medical support;

- e) Diagnosis;
- f) The implementation plan;
- g) Medication and / or actions;
- h) Action approval if necessary;
- i) Clinical observation record and medication outcome;
- j) Summary of return;
- k) The name and signature of the doctor, dentist, or certain health workers who provide health services;
- l) Other services performed by certain health workers; and
- m) Equipped with clinic Odontogram, for patients of the dental clinic.

According to the American Society of Clinical Oncology (-) gives an example of a medical form that the data gunman to write down information during treatment, including medical history form, sheet nursing, laboratory test results, and physician agreement sheet.

2. closed medical record review about information of patient identity based on MCI 19.1

Based on the documentation study on medical record file of the cancer patient, identification information contained in each sheet are: [1] Number of medical records; [2] The name of the patient; [3] Gender; and [4] age.

Identification is the process of data collection and recording any information about the evidence of a person so that we can establish and likening such information with the individual person, in other words that using identification we can determine a person's identity and know a person distinguish from the others (Budi, 2011).

Based on the interview, the patient's identity in every sheet of medical record form must be filled. If the file has been returned from the clinic after being used to record patient service and there are several items of identity has not been filled, then the administrator will complete the medical record In the event of a buildup of patients enrolled, the activity of completing incomplete identity is not done by medical record administrator. This is because the big amount of work and the limitation of a number of the administrator. There is one medical record administrator at Tulip Installation, helped by two outsourcing assistants to serve the taking of medical record file from the medical records shelf.

This following table is the result of closed medical record review about patient's identity information in medical record file of cancer patient:

Table 2. Result of closed medical record about information of patient identity in every medical record sheet

No.	Name of form	Percentage (%)		
		Filled		Unfilled
		Complete	Incomplete	
1.	Polyclinic sheet	39	32	29
2.	List of problem	29	23	48
3.	Laboratory tests	87	2	11
4.	action information giving	0	0	20
5.	Approval of medical action	19	7	74
6.	Chemotherapy program	43	6	51
7.	Treatment cares	20	9	71

Review about patient's identity information in patient's medical record file is considered as *complete* if all of the items in every sheet of medical record file such as name, medical record number, and age are filled. Below are the results of documentation study about patient's identity information:

Tabel 3. The result of closed medical record review about patient identity on medical record file

Assessment elements	Percentage (%)		
	Filled		Unfilled
	Complete	Incomplete	
Information patient identity	0	96	4

Based on the documentation study on 100 cancer patient's medical record files, it was found that there was 96% identity information on each piece of the cancer patient file is incomplete. The percentage of unfilled identity information in all sheets of the medical records of cancer patients is 4%.

Based on KARS (2011) on the criterion of scoring, score 10 or Fully reached was reached when the value of 80-100% was found in the data interviews, observation and documentation study. From the findings above, the value of criterion in patient identity information meets the standard as fully reached. But the value was not very good because there was 96% identity information on each piece of the cancer patient file is incomplete (from 100 cancer patient's medical record files). For example, in the case of a medical record file, it was found only 2 of 8 medical record sheets that are filled up with identity information, namely the polyclinic sheets and laboratory examination sheet.

From the analysis, it is known that the level of completeness of patient identification on each piece of the medical record is low. In the other hand, identification is very useful to distinguish one patient to another patient because of the patient identification contained personal data of patients as the specific characteristic of a patient. Based on the result of interviews with medical records administrator, medical record file was not accompanied by assembling activity including completing of patient identity on each piece of medical record sheet.

Based on assembling procedure in the Medical Record Installation in RSUP Dr. Sardjito, one of the assembling's task is to examine the completeness of medical records content. From interviews with

respondents, Tulip Installation has not had medical records administrator who was given the task to manage medical record file includes assembling. There is one medical record administrator at Tulip Installation, accompanied with two outsourcing employees who help medical record administrator in filling activity. Therefore, it is necessary to held procedure socialization to the Head of Tulip Installation and medical record administrator related to the management of medical record. In addition, it is necessary to improve the management of medical record file stored in a decentralized manner at Tulip Installation RSUP Dr. Sardjito, such as regular activation of assembling, coding, and filing activity. Job analysis is also needed because it was found that medical record administrator's workload at Tulip Installation was very heavy.

3. Closed Medical Record Review about Information of Diagnosis Support, Justification, and Course of Medication Based on MCI 19.1

Based on KARS closed medical record review format (2012) information on diagnosis support is information about the examination results. Information of diagnosis support considered as filled when one of the items in the test results on polyclinic sheet or laboratory results on laboratory test sheet is filled.

Based on KARS closed medical record review format (2012) justification is basic medication proof. Information of service and medical justification is information about the diagnosis. Information of services and medical justification considered as filled when one of the diagnosis items in the polyclinic sheet, chemotherapy program information sheet, action-giving information sheet, problem list sheet, or nursing care sheet are filled.

Based on KARS closed medical record review format (2012) Information of course and medication outcome is information concerning on the results of the performed medication. Information of course and medication outcome is considered as filled when one of the development evaluation item in nursing care sheet or one of prognosis item in action-giving information sheet are filled.

Below is the result of the documentation study on 100 medical record files based on MCI 19.1 standards with assessment elements 3,4, and 5:

Table 4. The result of closed medical record review on medical record files of cancer patients based on MCI 19.1 standard

No.	Assessment elements	Filled	Unfilled
1.	Information of diagnosis support	88	12
2.	service and medical justification	100	0
3.	Information of course and medication outcome	30	70

Based on the documentation study on medical records file of cancer patients, it was found that 88% information of diagnosis support and 100% information of service and medical justification were filled.

Based on KARS (2011) on the criterion of scoring, score 10 or Fully reached was reached when the value of 80-100% was found in the data interviews, observation and documentation study.

According to Hatta (2008), in the data of health care, primary diagnosis is a condition that is determined after a review and considered as the most responsible reason for patient's arrival to the hospital or to obtain care.

Based on the study of the documentation on medical record file of cancer patients, it was found that 30% of the information of course and medication outcome was considered as filled. Based on these data, it is necessary to improve the management of medical records in the Tulip Installation RSUP Dr.Sardjito, such as regular activation of assembling, coding, and filing activity. Hopefully, the unfilled information on the medical record file can be immediately found and continued by completeness asking. Therefore, it is needed the suitable resources such as leader policy and the availability of staff to carry out these activities. It is also necessary to do the analysis of medical record management in Tulip Installation that is conducted in a decentralized manner. The results of this analysis can be a basis for determining the number of medical record administrator in the Tulip Installation so that medical records management can be performed well.

Based on KARS (2011) on the criterion of scoring, score 5 or Partially reached was reached when the value of 20-30% was found in the data interviews, observation and documentation study.

Conslusions

1. The specific contents of medical record file have been set by RSUP Dr.Sardjito in the form of the procedure, but this procedure is not socialized in the Tulip Installation.
2. Based on the closed medical record review on information of patient identification, information of diagnosis support, and service justification, it reached a score of 10 or Fully Reached.
3. The results of closed medical record review on information of course and medication outcome showed the final score of 5 or partially reached.
4. It is necessary to: [1] perform socialization of existing procedures in the Medical Record Installation to Tulip Installation; [2] conduct analysis of medical records work in the Tulip Installation; and [3] establish leadership support to enable a good medical record management activities in Tulip installation RSUP Dr.Sardjito.

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Abstract only**Activity Based Funding In Ireland; Where Are We Going?**

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The Casemix funding programme for acute hospitals in Ireland began in 2003. More than a decade on, the programme has been instilled into the Irish health services and is now ready for roll out. But are the hospitals ready? This paper contemplates the journey from our hospital- The National Maternity Hospital and its preparations for the introduction of Activity Based Funding (ABF). We look at the highs and lows of implementation of a complete change in the funding process at a hospital local level and from a national position. The hospital took seriously the notion of casemix in 2003 by forming a work group which investigated the implications of the introduction of a casemix style funding programme which was away from the traditional block grant model of funding. In 2014 the hospital moved to employ a casemix/coding consultant to assist with the transition to the new funding regime and assess the hospitals readiness for the impact on the day-to-day operations of our hospital. The clinical coders of Ireland work a a system by the Health Pricing Office responsible for the introduction of ABF and the price setting for the DRG's. The Hospital In-patient Enquiry Scheme (HIPE) Portal is the reporting system used to transmit the monthly data on which the funding will be based. This paper will look at the coding and educational requirements of the hospital and the clinical coders and the processes in place to ensure maximum funding is achieved.

Title of Presentation: The Power of 10

International Classification of Disease: Mortality Reporting

Judith Jones, MBA, RHIT

Don Gull

ABSTRACT

Many countries utilize Diagnosis Related Groupings (DRG), to compliment the international Classification of Disease for their particular country. These countries utilize this reporting to include illnesses, diseases and causes of deaths. Moreover, the United States transitioned over to the I.C.D 10 CM version on October 1, 2015 and this has allowed the diagnosis code expansion from 14,000 to over 68,000. Today the reporting structure may still vary from country to country, due to a variety of DRG's used for other countries. This diagnosis data can be collected and analyzed for many different purposes that can help advance the health of the world population. Mortality reporting addresses the need for evaluation of a country's health system, determination of focus toward public health actions; helps improve overall population health and reduce the number of preventable deaths (CDC, 2016).

BACKGROUND of PROBLEM

The World Health Organization has revised the International Classifications of Disease (ICD), since 1949 and since that time, the United States expanded and hung onto the 9th edition from 1978 to October 1st, 2015. The U.S developed their diagnosis Related Group around a payment system that remained in place by our government's largest payer, Medicare for over three decades. The reluctance to expand to ICD 10-cm that would allow more specificity, better reporting, and quality measures were initially met with a preempted strike by the United States Congress who had asked for more time and research into the problem. After much thought and efforts and from the American Health Information Management Association, the full blessings from Congress were given on October 1, 2015. With the expansion, our country is able to report with the greater amount of specificity.

Tracking Mortality in the United States

The United States has been tracking mortality data for several years. For the first quarter of 2016 heart disease, cancer, falls (age 65 and older), chronic lower respiratory diseases, and stroke have been the top 5 causes of mortality (CDC, 2016). This information is collected by each state and reported electronically so that long-term mortality data can be analyzed. The National Center for Health Statistics provides guidance to each state on submission of vital statistics information. Standardized forms such as birth and death certificates are used to collect data which is then processed by the regulations. Under The US Department of Health and Human Services, the NCHS, CDC, and PHS created the Model State Vital Statistics Act and Regulations of 1992 (CDC, 2016). This act outlines the manual procedures required for each state to report vital statistic data. The process for collecting mortality data starts at the point which the deceased is placed in custody of the funeral home or coroner. Once the coroner has taken possession of the deceased they have 5 days to submit a final certificate of death. The coroner is then responsible for obtaining cause of death within 48 hours of receiving the deceased from the responsible physician. The ICD-10 code relaying primary and subsequent causes of death are then submitted through the death certificate to the state's Office of Vital Statistics who then electronically transmits the data to the National Vital Statistics System (NVSS) (CDC, 2016). Each state incurs costs in order to provide vital statistics data for nation use so the NCHS provides cost sharing to off-set the burden.

International classification of disease (ICD), copyrighted by World Health Organization (WHO), is the foundation by which all mortality data is reported (WHO, 2016). ICD has been revised and published in a series of editions to reflect advances in health and medical science over time. These updates help to ensure that healthcare data that is collected accurately reflects the current medical body of knowledge. ICD was originally developed in the early 20th century to collect data on causes of death (Giannangelo, 2004). Since that time several editions have been published with the newest version being ICD-10 which is used to report both mortality and morbidity data. ICD may be modified in order to serve a country's internal reporting purposes with application for modification submitted to WHO (Giannangelo, 2004). Some countries choose to use the standard published ICD while others choose to apply for modification to the codes in order to serve their own purposes. Australia (ICD-10-AM), Can-

ada (ICD-10-CA), Thailand (ICD-10-TM), United States (ICD-10-CM), and Germany (ICD-10-GM) are a few countries who have been authorized to make modifications (Giannangelo, 2004). These modifications can be used to add more specificity to codes for reporting purposes. For instance, if an ICD code does not provide the specificity needed for analysis a request for modification could be created to add additional digits to a code designed to capture anatomical site affected or manifestations of disease. The expansion of codes creates different descriptors and therefore the codes have different meanings (Giannangelo, 2004). When analyzing world mortality data it is important to remember that a comparison of codes in ICD-10 should be weighed against all its modifications.

The Czech Republic, Denmark, Romania, Slovakia, and Thailand implemented ICD-10 for mortality coding in 1994, and since that time 33 additional countries have joined them (Brouch, 2000). This data can be accessed worldwide and used for research purposes. ICD was originally created to track mortality data but has expanded with ICD's 6th revision to also track morbidity (Brouch, 2000). The process of tracking global health problems starts with the selection of ICD-10 codes. Public health policies and programs rely on mandated coding systems at the country level to collect information (WHO, 2016). Coding systems provide the necessary guidance for accurate collection of coded data to be transmitted for reporting. Reporting of ICD codes is necessary for improving public health surveillance and monitoring which also starts at the country level (WHO, 2016). Once codes are reported they can be compiled and analyzed for decision making and research purposes. Collaboration internationally between countries, local public health agencies, providers, and others focused on reporting public health information results is necessary for codes to be exchanged (WHO, 2016). Working together as a global community will improve the exchange of information for enhancing health policy decision making and medical research.

Conclusion

International Classification of Disease will continue to provide opportunity for analysis of mortality data. While caution should be exercised when analyzing data from countries approved for ICD modification the benefits of this information outweigh the drawbacks. As ICD and mortality reporting continue to progress there are a few areas in which advancements in reporting will help the global community further understand causes of death. High-income countries have mechanisms in place to capture and report mortality data thus providing more accurate statistics (WHO, 2016). In the United States the National Center for Health Statistics (NCHS) created special software to automate coding of medical information on the death certificate, according to WHO rules (Brouch, 2000). This ability to fund and implement technology has resulted in solid statistical information over a period of time. Many low- and middle-income countries do not have such systems, and the numbers of deaths from specific causes have to be estimated from incomplete data (WHO, 2016). Countries with higher rates of death due to preventable disease can significantly benefit from implementing processes and technology that assist in producing high quality cause-of-death data.

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Title of presentation: DPC(Diagnosis Procedure Combination) and the Role of HIM for
Developing the Coding Text

Improvement of Classification Accuracy in the Case-mix System DPC and the Role of HIM for Development of the Coding Text.

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ABSTRACT

The Japanese national health insurance financing system has long been based upon a fee-for-service (FFS) reimbursement using a national price schedule from 1961.

In Nov.1998*, The Japanese government introduced a case-mix system, the J-DRG/PPS trial for 10 national hospitals(6years trial)

After that, the next generation Japanese case-mix system, known as the Diagnosis Procedures Combination / Per Diem Payment System (DPC/PDPS) was introduced for acute care hospitals in 2003.

The number of hospitals participating in the DPC project was 82 hospitals (66,497 beds) in 2003, increasing to 1,667 hospitals (495,227 beds) in 2016, which now provides 54.1% of acute care beds

in Japan.

The DPC grouping logic is based on the ICD10 Japanese Version for 2003, the Japanese procedure code (K-code) and the selection of a complication, adjuvant, severity and other variables. And DPC has 18 Major Diagnostic Categories (MDC).

Firstly, DPC classification requires to choose a diagnosis with a related ICD code, therefore accuracy of ICD10 coding is an extremely important element. DPC Hospitals have to submit their clinical information and medical claim data to the Ministry of Health, Labour and Welfare (MHLW). Their data is analysed and evaluated by MHLW.

So, professionals of ICD10 coding and managing DPC data were needed as the demand of the accuracy improvement increased.

Since DPC was introduced, some problems have occurred.

One of the problem is that ICD10 has not adopted medical claims under the national health insurance system. Firstly, we did not have an effective solution for the abundance of unspecified codes (dot 9 codes) and there was a lack of accurate coding.

However, in 2010, DPC hospitals needed to establish a committee for coding accuracy and when their unspecified codes exceeded 40%, there was a penalty. In 2012, that was from 40% to 20%.

This forced DPC hospitals to improve their coding accuracy.

In 2012, The DPC committee of MHLW gave the DPC research team an order to develop manual for accuracy improvement. The research team started development with over 40 HIMs of various parts of Japan as soon as instructions were given. In 2014, the coding manual was shown as a coding text book by MHLW. In 2016, the coding text book was revised to Ver.2.

This study aimed to assess the accuracy of coding data and consider the role of HIM.

1. BACKGROUND : Breaf History of the DPC/PDPS*

*DPC=Japanese Case-mix System, PDPS=per diem payment system

1.1 Before the DPC/PDPS

The Japanese national health insurance financing system has long been based upon a fee-for-service (FFS) reimbursement using a national price schedule from 1961.

However, In late years increase of health care cost became the problem that could not overlook.

Figure1 shows the left axis expresses health care costs and right one is GDP.

This shows national health care cost is around 400 Billion \$, to 1980s GDP was increasing, however from 1990s is stagnant.

The growth of health care cost exceeds growth of the GDP.

So, we needed a measure, one of answer was DPC/PDPS.

In Nov.1998*, The Japanese government introduced a Japanese case-mix system, the J-DRG/PPS trial for 10 national hospitals.

*6years trial(from Nov.1998 to Mar.2004)

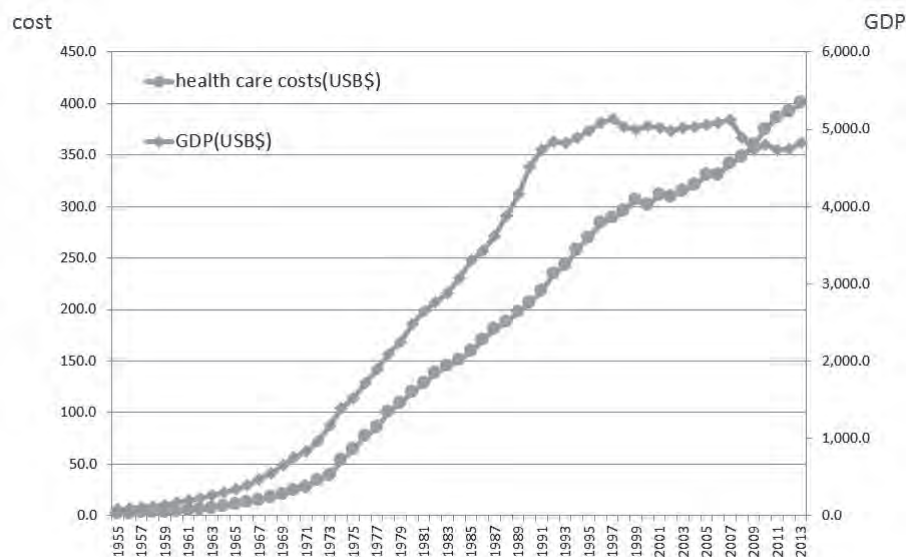


Figure 1. Health Care Cost and GDP in Japan

1.2 Conclusion of The J-DRG/PPS Trial

The results of the discussion from this trial (After first three years) is

- (1) American style DRG/PPS is not suitable for the Japanese medical practice.
- (2) We need more clinical classification system.
- (3) It must be diagnosis dominant classification, not procedure dominant classification like the DRG/PPS.

1.3 New Case-mix System Required

After first three year social experimentation, the Japanese government has decided to develop the Japanese original new case-mix grouping and payment system based on the pre-existing hospital information system.

In order to respond to this request, our research team was organized in 2001 (DPC research team).

1.4 New System was Developed and Introduced

In Apr.2003, new system introduced known as the DPC(Diagnosis Procedure Combination)/PD-PS(per diem payment system) into 80 university hospitals and 2 National center hospitals(Cancer center, Cerebral and cardiovascular center).

Next year, in Apr.2004, this system was introduced into other acute care hospitals.

1.5 The number of DPC Hospitals and Acute Care Beds

The number of hospitals participating in the DPC project was 82 hospitals (66,497 beds) in 2003, increasing to 1,667 hospitals (495,227 beds) in 2016, which now provides 54.1% of acute care beds in Japan. The number of the DPC hospitals increased 20 times in 13 years.

Figure 2 shows a trend of the increase in number of the DPC hospitals and beds.

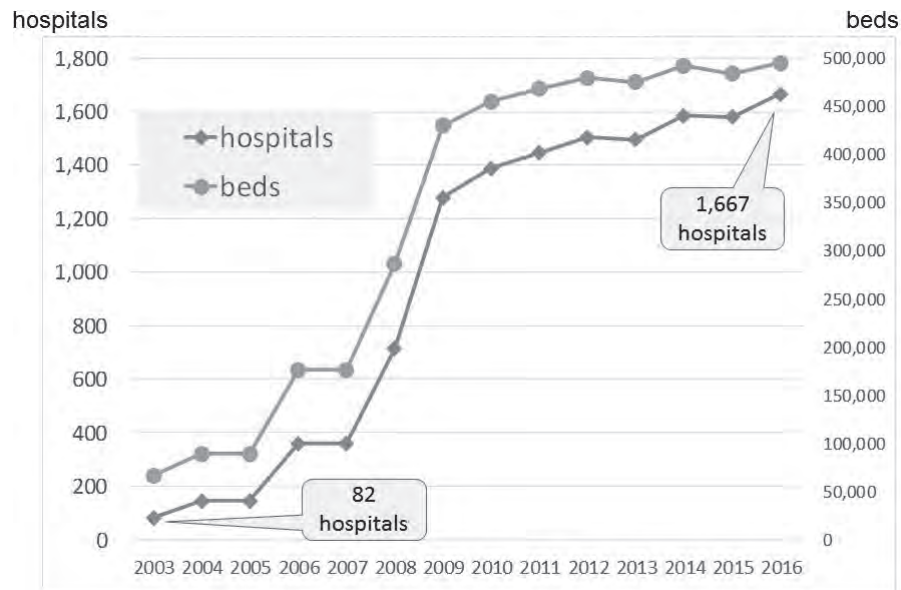


Figure 2. DPC Hospitals and Acute Care Beds

2. Data Accuracy

2.1 DPC Grouping Logic and Submitting Data

Firstly, DPC classification requires the doctor to select a diagnosis with a related ICD code, therefore the accuracy of ICD10 coding is an extremely important element.

DPC Hospitals have to submit their clinical information and medical claim data to the Ministry of Health, Labor and Welfare (MHLW).

Their data are analysed and evaluated by MHLW.

These data are used for a next revision and used for inspection of the validity.

Figure 3 shows the DPC classification method. We call this the three layer structure.

- (1) DPC grouping logic is based on the ICD10, the Japanese procedure code (K-code) and the select of a complication (CC), adjuvant, severity and other variables.
- (2) The DPC has 18 MDC s (Major Diagnostic Categories).

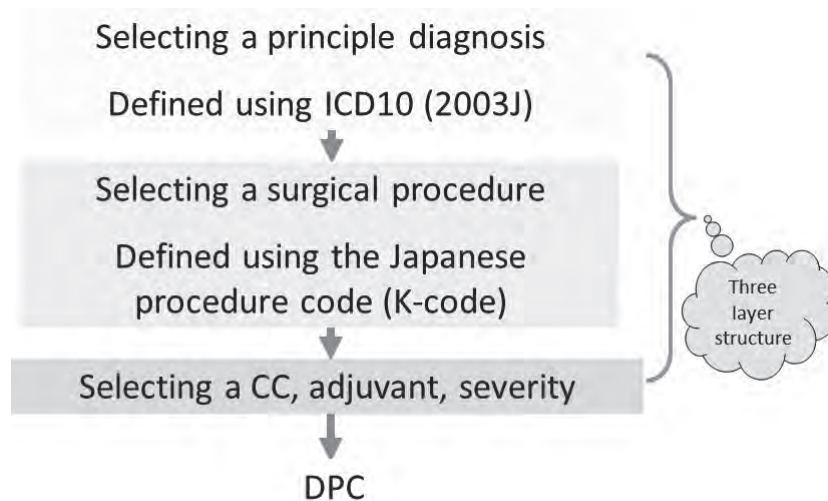


Figure3. Basic Type of the DPC Classification Method

2.2 Data Accuracy and Problems

Professionals of ICD10 coding and managing DPC data were needed as the demand for accuracy improvement increased. Since DPC was introduced, some problems have occurred.

One of the problems is that ICD10 has not adopted medical claims under the national health insurance system.

So, we did not have an effective solution for the abundance of unspecified codes (dot 9 codes) and there was a lack of accurate coding.

3 .The Role of HIM

In 2010, DPC hospitals needed to establish a committee for coding accuracy. From 2010, when their unspecified codes exceeded 40%, there was a penalty. And from 2012, that number was reduced from 40% to 20%. This forced DPC hospitals to improve their coding accuracy.

So, Health Information Managers (HIM) bear a key role in Japan. This study aimed to assess the accuracy of coding data and consider the role of HIM.

4.What is the Coding Textbook?

In 2012, The DPC committee of MHLW gave the DPC research team an order to develop manual for accuracy improvement. The research team started development with over 40 HIMs of various parts of Japan as soon as instructions were given. In 2014, The coding manual was shown as the coding text book by MHLW. The committees for coding accuracy of the DPC hospital use this item for the education of the staff. In 2016, The coding text book was revised to Ver.2. The work for revisions of the coding textbook by the DPC research team and HIMs is continued afterwards.

5. Conclusions

The establishment of the committee which an HIM belongs to and a setup of the coding standard

of dot 9 codes had an achieving effect. Meanwhile, ICD10 coding of some hospitals may be arbitrary. For these reasons the coding text book was necessary and developed by HIMs. As more knowledge about ICD10 coding is spread, the coding skill improves.

So in summery, The role of an HIM has become more important.

The Effectiveness of Clinical Pathway Implementations on Stroke Non-Hemorrhagic at Panti Rapih Hospital Yogyakarta Indonesia

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ABSTRACT

For the sake of effectiveness and efficiency in health services, the length of the day care should be minimized. This rule is legalized in the Indonesian Practical Health Law No 29 Year 2004. This leads Panti Rapih Hospital to implements clinical pathway for some diagnosis.

This research measures the effectiveness and efficiency of clinical pathway implementations at the Panti Rapih Hospital in Yogyakarta, Indonesia. The research is an analytical survey research by using a quantitative approach. There are seven variables to be measured, namely: age, gender, level of care, diagnosis, complications, the length of stay (LOS), the cost of care. The research uses 68 medical records of stroke non-hemorrhagic in patients period 1-st July to 31-st December 2014.

The research shows the fact that there are only two variables out of seven which give significant difference before and after the implementations of the clinical pathway at Panti Rapih Hospital Yogyakarta Indonesia. It is the LOS and the cost of care. The average stroke non-hemorrhagic patients LOS before clinical pathway implementations is 3.03 days to 11.61 days. The average stroke non-hemorrhagic patients LOS after clinical pathway implementations is 3.81 days to 6.83 days. The average stroke non-hemorrhagic patients LOS before clinical pathway implementations is Rp. 2,613,000 to Rp. 61,017,000. The average stroke non-hemorrhagic patients LOS after clinical pathway implementations is Rp 2,373,500 to Rp. 13,062,000.

Keywords: effectiveness, efficiency, clinical pathway

1. INTRODUCTION

Integrated clinical pathways are structured multidisciplinary care plans which detail essential steps in the care of patients with a specific clinical problem. They have been proposed as a way of encouraging the translation of national guidelines into local protocols and their subsequent application to clinical practice. They are also a means of improving systematic collection and abstraction of clinical data for audit and promoting change in practice [1].

Ischemic stroke results in bland (non-hemorrhagic) ischemia and infarction in a typically vascular distribution. the vascular distribution is often very helpful in differentiating stroke from tumor or demyelination [2].

Highly a number of stroke non-hemorrhagic patients at Panti Rapih Hospital approximately 60 – 70 patients with their highly cost of treatment was encouraged the medical committee to implement a clinical pathway for stroke non-hemorrhagic disease.

Based on the previous study in medical record installation at Panti Rapih Hospital taken by January 12th – 15th, 2015. Their CP's team evaluating clinical pathway that was implemented for some diagnosis. There were partus spontan, pre-eclampsia, dengue fever on children, non-STEMI, STEMI, stroke non-hemorrhagic, BPH, and fracture femur. This diagnosis was chosen because of highly increased of these disease sufferer and these cost of treatments was still high. From samples that were taken in an earlier study, there were 40 medical records of stroke non-hemorrhagic patients divided into 20 medical records was before clinical pathway and 20 medical records were after clinical pathway. Stroke non- hemorrhagic was chosen because it had the highest number of patients that hospitalized than others. The results on the length of stay patients before CP was 6,4 and their cost was \pm Rp. 5.600.000 while the length of stay after CP was 4,9 and their cost was \pm Rp. 4.700.000.

2. METHODOLOGY

The study was conducted by analytical survey with a retrospective design in stroke non-hemorrhagic patients hospitalized at Panti Rapih Hospital from July 2014 – December 2014 using medical records of patients during care, data collecting techniques using study documentation and interview. The total number of subjects were 68, consisted of 34 patients in the group before clinical pathway and 34 patients after clinical pathway.

Data were analyzed statistically to knowing the average of Length Of Stay (LOS) and Cost Of Treatment with earlier examining data distribution. Because of both these variable hasn't had normally distributed so data were analyzed by Mann-Whitney U Test. It is used because data was statistic non-parametric, each variable hasn't correlation to another. The conclusion can be taken by the results of Mann-Whitney U test with seeing the results of (sig) or p-value. If p-value < 0,05 means that there are significant different and p-value > 0,05 that means no significant different.

3. RESULTS

According to study documentation results, all medical records patient hospitalized during 2014 periods at Panti Rapih that consisted of stroke, stroke ischemic, and stroke hemorrhagic with its code were I64, I63.-, and I61.9 were 672. Afterward, the population of stroke non-hemorrhagic only was chosen in July – December periods. There were 68 medical records patients that divided into 34 medical records was before clinical pathway and 34 medical records were after clinical pathway.

Tabel 1. Characteristics of stroke non-hemorrhagic patients before and after implementation of clinical pathway

Characteristics	Before clinical pathway	After clinical pathway	<i>P value</i>
Averages of age	63,97±8,744 50 – 83	63,03±11,642 38 – 87	<i>P</i> = 0,672*
Gender :			
a. Male	22 (65 %)	22 (68%)	<i>P</i> = 0,881**
b. Female	12 (35 %)	11 (32 %)	<i>P</i> = 0,835**
Complication of disease :			
a. Yes	17 (50 %)	27 (79 %)	<i>P</i> = 0,423**
b. No	17 (50 %)	7 (21 %)	<i>P</i> = 0,353**
Rooms of care			
a. VIP & I	12 (35 %)	10 (29 %)	<i>P</i> = 0,670**
b. II	9 (27 %)	11 (32 %)	<i>P</i> = 0,655**
c. III	13 (38 %)	13 (39 %)	<i>P</i> = 0,100**

* : Mann-Whitney U Test

** : Chi-Square Test

3.1 Data distribution of age

The averages of stroke non-hemorrhagic patients before clinical pathway were 63,97 ± 8,744 with a range of age 50 – 83 while after clinical pathway were 63,03 ± 11,642 with a range of age 38 – 87. The result of Mann-Whitney U test explaining that *p*-value = 0,672 > 0,05 it could be concluded that there were no significant difference ages about both of groups. The same results were showed before, with data distribution about ages of stroke non-hemorrhagic patients, their range were 56-70 (52,5 %) and 30 – 55 (47,5%). This is because one of stroke non-hemorrhagic factor that can't control is age. It is about degeneration process attack old. The vein will lose flexibility because of atherosclerosis [3].

Adults (> 55) have twice possibility from suffering of stroke non-hemorrhagic [4].

3.2 Data distribution of gender

The results showed that 65 % of 34 patients before clinical pathway and 68 % from 34 patients after clinical pathway were male. The result of Chi-Square Test explaining that *p*-value > 0,05 it could be concluded that there was no significant difference about gender before and after clinical pathway. 64 % stroke non-hemorrhagic patients were male. It is because males were more often smoking than female [5].

3.3 Data distribution of Complication of disease

The results showed that 50 % or 17 patients had complication disease during care before clinical pathway and 21 % or 7 patients had complication disease during care after clinical pathway. The most complication disease of Stroke non-hemorrhagic that written on medical record patients was Urinary Tract Infection. The results of Chi-Square Test showed that *p*-value > 0,05 it could be concluded that there was no significant difference about both of two groups. The same results were showed that about 9 % patients with complication disease before clinical pathway and 5,92 % patients with com-

plication disease after clinical pathway. Statistics result showed that p value were $0,480 > 0,05$ it could be concluded that there was no significant difference about two of groups [6].

3.4 Data distribution of rooms of care

From 68 patients, there were 22 patients on VIP and room 1st, 20 patients on room 2nd, and 26 on room 3rd. The result of statistics showed that p-value $> 0,05$ it could be concluded that there was no significant difference between two groups.

Table 2. The difference of stroke non-hemorrhagic patients length of stay before and after clinical pathway.

	Before clinical pathway (day)	After clinical pathway (day)	P-Values
The average of Length Of Stay patients	$7,32 \pm 4,297$	$5,32 \pm 1,512$	0,014*
The average of Length Of Stay patients with complication disease	$8,76 \pm 5,506$	$5,43 \pm 0,976$	0,043*

* = Mann-Whitney U Test

1. According to statistics test, both of groups were showing that data distribution wasn't normal. So statistics test used Mann-Whitney U test. The averages stroke non-hemorrhagic patients Length Of Stay (LOS) before clinical pathway were $7,32 \pm 4,297$ day and after clinical pathway was $5,32 \pm 1,512$ day. The result of Mann-Whitney U Test explaining that p-value $< 0,05$ it could be concluded that there was a significant difference about two groups analyzed. The same results show that the average of Length Of Stay after clinical pathway implementation was 7.3 ± 0.5 days and before clinical pathway implementation were 10.9 ± 1.2 days. It could be concluded that there was a significant difference because of $p < 0,05$ [7]. Other researcher with some different result shows that clinical pathway implementation wasn't given an impact to decreasing the average of Length Of Stay (LOS) and cost of treatment [8]. The Same result shows that clinical pathway of Congestive Hearth Failure hasn't different on patients Length Of Stay and cost of treatment [9].
2. Patients Length Of Stay (LOS) with complication disease before and after clinical pathway were $8,76 \pm 5,506$ days and $5,43 \pm 0,976$ days with *p-value* based from *Mann-Whitney U Test* 0,043 $< 0,05$. It could be concluded that there was a significant difference about two groups analyzed. This result implied that clinical pathway was effective to decrease the number of complication disease because of stroke non-hemorrhagic. The same result also shows about clinical pathway on Acute Myocardial Infarction that Patients Length Of Stay has significant decreased [10]. But, others results also shown by some researcher who interested about clinical pathway management in the hospital. That clinical pathway has no significant different for stroke diagnosis. It was happened because of the clinical pathway has not implemented effectively [11]. The same results also show that after their research about clinical pathway on Pneumonia that

has no significant different about two of groups (before and after). The results also show that clinical pathway can't afford to decrease the number of patients mortality because of complication disease [12]. Another research about clinical pathway shows that clinical pathway on a renal transplant. The averages patients Length Of Stay with complication disease before clinical pathway explaining that standard deviation value was 38,9 day and after clinical pathway was 18,9 day. P value > 0,002 there were no significant different [13].

Table 3. The difference of stroke non-hemorrhagic patients cost of treatment before and after clinical pathway

	Before clinical pathway (Rp)	After clinical pathway (Rp)	P values
The averages of cost of treatment	8.198.691±10.026.026 2.613.000 – 61.017.000	6.362.543 ±3.249.981 2.373.500 – 13.062.000	0,447*
The averages of cost of treatment with compliation disease	11.222.382 ±13.552.217 3.160.500 – 61.017.000	8.157.738 ±4.054.705 3.830.500 – 13.025.666	0,824*

* = Mann-Whitney U Test

1. According to statistics test, both of groups were showing that data distribution was not explained normally. So statistics test used Mann-Whitney U test. The averages of patients cost of treatment without other factor correlation before clinical pathway were Rp. 8.198.691± Rp. 10.026.026 with minimum and maximum cost Rp. 2.613.000 – Rp.61.017.000. While after clinical pathway were Rp. 6.362.543 ± Rp. 3.249.981 with minimum and maximum cost were Rp.2.373.500 – Rp. 13.062.000. P value > 0,05, it could be concluded that clinical pathway has no significant difference. Although there were any decreased about the cost of treatment before and after clinical pathway implementation but it wasn't meant statistically. The same results show that background on increased of CVA's cost of treatment. His results explained that clinical pathway can afford to decrease the cost of treatment amount 14,6 %. But it has no significant difference [7]. The same result also shows that even though the result explain that there were decreased about cost of treatment but it has no statistically significant different [14].
2. The averages of patients cost of treatment before clinical pathway were Rp. 11.222.382 ± Rp. 13.552.217 with minimum and maximum cost were Rp. 3.160.500 – Rp. 61.017.000 while after clinical pathway were Rp.8.157.738 ± Rp.4.054.705 with minimum and maximum cost were Rp.3.830.500 – Rp.13.025.666. P value was showed that > 0,05 so it could be concluded that there was no significant difference between two groups. The same results were showed on the clinical pathway of TURP at Aga Khan University Hospital. Those results explaining that there were significantly increased about completing documentation, consultation and education for patients family. But from those results, there was no significant difference in cost of treatment before and after clinical pathway [15]. Another same result explaining that clinical pathway of the liver has significantly decreased. But clinical pathway with complication disease correlation to outcomes has no significant difference [16].

4. DISCUSSIONS

The development and implementation of a clinical pathway for patients with stroke during acute hospital phase can positively affect outcome in the form of reductions in length of stay, charges, and complications while improving and standardizing the quality of care [7].

The implementation of clinical pathway is most likely to succeed when the decision to develop is taken on an organizational basis. Senior management commitment and a strong medical and nursing were essential. Pathway documentation is more likely to be used if it is simple, clear and user-friendly. The process of pathway development considers why tasks and interventions are performed, and by whom since it promotes greater awareness of the role of each professional involved in the care cycle [17].

The success of clinical pathway implementation can be achieved by good organization of physician who serves medical care because the clinical pathway is structured multidisciplinary care plans which detail essential steps in the care of patients with a specific clinical problem. They have been proposed as a way of encouraging the translation of national guideline into local protocols and their subsequent application to clinical practice. They are also a means of improving systematic collection and abstraction of clinical data for audit and of promoting change in practice [1].

The main areas of concern for the patients of stroke are the treatment and outcomes and discover the ways for optimum management of a stroke patient. There is a certainty that if the patient's stroke receives organized care, they will surely have better outcomes and prognosis. In a hospital setting, the well-trained staff and multidisciplinary approach to treatment and care characterize the stroke unit. The core disciplines for such multidisciplinary teams are medical treatment, nursing, physiotherapy, occupational therapy, speech, language therapy and social work. The Clinical Pathways ensure a goal-defined, making certain a well-defined efficient diagnosis, organized and time-specified plan of treatment of the patients with stroke, which can as certain evidence based practice and an improvement in the quality of outcomes at a lower cost [18].

They are designed to explicitly define what kind of continuity of care the patients should receive, at what time they should receive this care and what are the roles of the various multidisciplinary teams in the patient care. It has been seen, without much of much evidence to support this, which integrated care pathways are increasingly being implemented into the care of the patients with acute stroke and rehabilitation of the stroke patients. They have been shown to improve the patient outcomes, the quality of the care, a decrease in the interventions ordered for the patients and decrease in the costs and also decrease the length of the stay. They should not be seen as a 'cookbook' for healthcare – with prescriptive, step-by-step instructions – but rather as a set of appropriate, evidence-based activities and interventions for a specific user group. Care pathways are instruments that can reduce improper access to hospital emergency services, inappropriate admissions, and unplanned discharges. So, to a great extent, they can help avoid unmotivated and undesirable interruptions of care, which can damage people in need and be a waste of resources. Wasted resources are particularly common in situations where different professionals intervene without consulting each other, creating unnecessary and costly overlaps and confusion [18].

5. CONCLUSION

The research shows the fact that there are only two variables out of seven which give significant difference before and after the implementations of the clinical pathway at Panti Rapih Hospital Yogyakarta Indonesia. It is the LOS and the cost of care. The average stroke non-hemorrhagic patients LOS before clinical pathway implementations is 3.03 days to 11.61 days. The average stroke non-hemorrhagic patients LOS after clinical pathway implementations is 3.81 days to 6.83 days. The average stroke non-hemorrhagic patients LOS before clinical pathway implementations is Rp. 2,613,000 to Rp. 61,017,000. The average stroke non-hemorrhagic patients LOS after clinical pathway implementations is Rp 2,373,500 to Rp. 13,062,000.

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Abstract only**Innovations By Being An Early Adopter of Technology****Gerald Yu***Fraser Health Authority*

Do you have to innovate from scratch or can you be an early adopter of technology to help you to innovate? The answer is yes to the latter. At Fraser Health Authority in British Columbia, Canada, Health Information Management has adopted early Electronic Health Record technologies to improve patient care by improving patient identity, patient information access and patient data. The presentation will discuss the early adopter journey for the past ten years. The implementation of registration kiosks at Jim Pattison Outpatient Care and Surgery Centre has provided patients the ease of checking in for their visits while providing operational efficiency for clinical staff. Not only do kiosks improve patient experience but it improves the quality of the patient identity data. Adopting scanning technology has enabled improved access of patient records by clinicians. The scanned health records have transformed how clinicians provide care and have augmented other electronic health record technologies like PACS, CPOE, and others. In conjunction with scanning, electronic forms were created so that forms are standardized which enables required forms to be automatically generated thus improving workflows and improved documentation. Data streaming and data mapping enable improved coded patient data by using the source system. The procedures in the Operating Room system were mapped to standardized nomenclatures, ICD10, which enables the OR system to interface procedure data to the coding system. This interface technology enables efficiency and data quality. HIM has always looked to new technologies for innovations. By being an early adopter, it enables HIM to innovate its operations and provide improved health information services to its stakeholders like patients and clinicians. Besides discussing the above three implementations, the presentation will also highlight current technologies being adopted: Front End Speech Recognition and Computer Assisted Coding.

Abstract only**SNOMED CT The Global Language of Health****Donald Sweete***International Health Terminology Standards Development Organisation (IHTSDO), Denmark*

SNOMED CT is a global clinical terminology that contributes to the improvement of patient care by supporting the development of high quality, computer processable clinical content in health records. The implementation of SNOMED CT enables a broad range of benefits to a wide variety of stakeholders, including healthcare providers, consumers and administrators, medical researchers and entire populations. In this presentation, we will discuss various areas in the health standards domain providing an overview of some of the issues facing health IT interoperability. The presentation will provide an overview of the work of the International Health Terminology Standards Development Organisation

(IHTSDO) and its main product SNOMED CT, as well as the collaboration work with the international standards organisations, such as HL7 and DICOM. This will serve to give the audience a better understanding of the power of the clinical terminology, how it is differentiated from other terminologies and standards, and the benefits that it offers to the various stakeholders involved in healthcare. We will also provide the audience with an overview of the IHTSDO and WHO collaborative work that facilitates linkage between SNOMED CT and WHO classifications, both from design and a content perspective.

Abstract only

Analysis of Re-apply Cases of Medical Records Disclosure Related to Electronic Medical Record

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Introduction and Objectives: In Oita Red Cross Hospital, request for disclosure of medical records from patients is steadily increasing along with the penetration of the Personal Information Protection Law (Act on the Protection of Personal Information. Established on May 23, 2003, was fully implemented on April 1). In addition, our hospital has been introduced an electronic medical record (EMR) system in February 2010, has changed significantly from the method of disclosure of paper medical records. Due to the specific problems of the EMR, I feel that the case of re-claim has been increasing. This study is aimed to analyze the problems and consider the solutions.

Method: From disclosure request of medical records of the past three years, select the one that there was a re-claim, and analyzed the reason. From the results, the cause has been divided into a by hospitals and those by the patient side. In addition, pick up that there is a problem on the electronic medical record system.

Result; There were a total of 126 claims, re-claim was 15 cases (11.9%). Among the re-claim cases, there were 12 cases due to the cause of the patient's side, due to the cause of the hospital side were 6 cases. In some cases, to seemed to be due to both.

Further, there were also cases difficult to identify. Those derived from systematic problems in three cases, other was 12 cases. The reason the entire number was increased, because the hepatitis B class action lawsuit was terribly increase.

Conclusions: The claimant is unable to image the system (the image of the chart printed from the EMR). In addition, not even our hospital side can sufficient explanation. On the other hand, for a method of medical records printed manual, leak had occurred in the confirmation shortage of personnel. From now on we want to prepare a manual for the disclosure request, and reduce the troubles on printing by utilizing it. For issues on the hospital electronic medical record system, so that it is not dependent on the skill of the person in charge, I want to aim to be subjected to a system improvements. At the end, always to show a positive attitude to work in information disclosure, I think that it is important.

Fiji Ministry of Health and Medical Services: A Journey from Manual to Automated Mortality Coding

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ABSTRACT

This presentation will cover how mortality statistics are collected and collated within the Fiji Ministry of Health and Medical Services from 1969 till to date. The Health Information Unit aims to improve consistency and maintain a high coding standard using ICD. Until recently all coding of mortality statistics was undertaken manually and entered into standalone databases. This was burdensome and costly in terms of time and accuracy. Various areas were looked into to improve the quality of mortality statistics in Fiji. To support policy and planning for decision making, automated coding (via IRIS software) was introduced in 2014 an integrated into the Fijian national health information system (PA-TIS-plus). IRIS coding has led to improvements in efficiency and accountability for results (time taken reduced from 2 weeks to 2 days to code 2000+ records) and vast improvements to quality and timely statistical reports.

The Fiji Medical Cause of Death Certificate consists of five copies in which the white copy is the Registrar General's copy, for death registration, pink copy is the Health Information Unit copy, green copy is the relative's copy, blue copy is the Police copy for burial order and the yellow copy remains in the book as an archive copy.

1. INTRODUCTION

Accurate mortality statistics are essential for population health assessment, and to design and monitor health intervention programs. (Carter, Karen L; Chalapati , Rao; Alan , Lopez D; Taylor, Richard;, 2012). The quality of the cause of death data depends mostly on what the Clinicians document on the certificate and how accurately the mortality coder translate these causes into alpha-numeric code.

The Ministry of Health and Medical Services main source of mortality statistics is the Medical Cause of Death Certificate (MCDC). Community deaths are also reported in the statistical summary report from the Public Health Information System (PHIS). These records are routinely reconciled with the MCDC death data to ensure that deaths are fully captured (inclusive of hospital and community deaths).

The MCDC are only filled by the clinicians and Nurse Practitioners (NP). Coding training in Fiji was conducted by the Health Information Management Association of Australia (HIMAA).

2. MORTALITY JOURNEY

2.2 Medical Cause of Death Certificate Form

The Fiji Medical Cause of Death Certificate consists of five copies in which the white copy is the Registrar General's copy, for death registration, pink copy is the Health Information Unit copy, green copy is the relative's copy, blue copy is the Police copy for burial order and the yellow copy remains in the book as an archive copy.

The previous MCDC used was a two page tear off. The original (white copy) of the certificate goes to the Registrar General and the yellow copy is sent to HIU. The second part of the tear off is the Notice to Undertaker for burial order and the butt remains in the book as archive copy.

The review of the certificate took place in 2006. The review was part of the collaboration of agencies in trying to capture more information on deaths in Fiji. These include Ministry of Health and Medical Services, Fiji Islands Bureau of Statistics, Fiji Police, Fiji National Provident Fund and Registrar General. This collaboration further progressed to the formation of the Civil Registration and Vital Statistics Committee (CRVS). A total of nineteen recommendations were set for the country's plan where two were based on the improvement on the quality of death certification and coding. (Naidu, Buttsworth, & Aumua, 2013).

 The image shows the 'Old MCDC' (Medical Cause of Death Certificate) form. It is a two-page document with a header section containing fields for 'Name of Deceased', 'Date of Death', and 'Place of Death'. The main body of the form is divided into several sections for medical history, including 'Antecedent causes', 'Disease or condition directly leading to death', and 'Other specified conditions'. There are checkboxes for 'Natural Death' and 'Unnatural Death'. The bottom section includes fields for the 'Physician's Signature', 'Date', and 'Place of Signature'.

Old MCDC

 The image shows the 'New MCDC' (Medical Cause of Death Certificate) form. It is a single-page document with a header section containing fields for 'Name of Deceased', 'Date of Death', and 'Place of Death'. The main body of the form is divided into several sections for medical history, including 'Antecedent causes', 'Disease or condition directly leading to death', and 'Other specified conditions'. There are checkboxes for 'Natural Death' and 'Unnatural Death'. The bottom section includes fields for the 'Physician's Signature', 'Date', and 'Place of Signature'.

New MCDC

2.2 ICD Mortality Coding

The Health Information Unit (HIU) keeps death records for as far as 1969. Coding for causes of death for these years until 1999 was done using ICD 9. ICD 10 AM coding training was conducted by HIMAA in 2000. Therefore coding for the causes of death from 2000 was done using ICD 10 AM. Selection of the UCOD was from the lowest used line on the certificate. (Vuadreu, R, HIU).

Another training on ICD 10 AM coding was conducted by HIMAA where 16 participants were

trained. Causes of death were then coded using morbidity coding rules using ICD 10 AM.

Two staff attended the training on mortality coding in November 2010 and this is when mortality coding rules and ACME decision tables were used to select the Underlying Cause of Death (UCOD). Manual coding of the causes of death and using the ACME table were burdensome and costly in terms of time and accuracy.

Automated coding of causes of death using Iris software was made available in Fiji in 2014 with the assistance from the Brisbane Accord Group (BAG) team. Death records of the deceased were updated in the Patis-plus system before causes of death data are extracted from Patis-plus and formatted and uploaded into Iris software for coding on a monthly basis. After all the causes of death are coded and an underlying cause of death has been assigned, the death record is uploaded back into Patis-plus.

2.3 Software for Capturing Death Data

The Health Information Unit uses Microsoft excel to capture and store mortality data from 1969 to 1991. All deaths in this year were entered and analysed in excel, (Vuadreu. R, HIU). A stand-alone database was used to capture and store death data from 1992 to 2006 and analysis was done in Microsoft excel. The MCDC was reviewed in 2006 and piloted in 2007. The death data from 2007 to 2010 were captured into the patient information system (Patis). This software link-up patient records in the country where each patient was given a National Health Number (NHN). Once a NHN is given, individual health records can be viewed from other hospital in the country that is link up to this system. Certain built in death reports can be viewed in Patis and also downloaded into word document or into excel.

The patient information system was upgraded to a web based system as Patis-plus in 2011. Death data for 2011 was then entered in excel as the work was still in progress. Data entry and analysis for 2011 to 2013 death data were done in excel. Two volunteers were hired in 2014 to enter the death data into the web based system. They managed to enter all the death from 2014 to 2016 into the system. The two officers are now entering death records from 2013 backwards up to 2008 into the web based system. The retrospective reviewing of this death records will allow us to code all the death records from as far as 2007 using Iris software.

2.4 Challenges

There were challenges in the Health Information Unit in regards to mortality data.

The main issue is human resources. At the moment there are only two mortality coders in the department that have gone through mortality coding training. All mortality coding is centralized.

Recent developments have established a team working under the mortality coder to conduct review of mortality entry, validations and linkage.

The Iris software is used by the Unit to code causes of death and assign an underlying cause of death (UCOD). This software is not in the network where two or more staff can access and do the coding.

Documenting causes of death by the Clinicians in the MCDC seems to be another issue. Training of Doctors on cause of death certification is on-going where 59% of the Doctors are trained. The ACME and coding process where diabetes shooting up as the leading causes of death in Fiji due to misplacement of DM in Part I.

Training and accreditation for other staff in ICD 10 mortality coding is another challenge.

Table 1: Chronology of mortality development event.

Year	CODING	SOFTWARE	Coding rules
1969 – 1999	ICD 9	1992 -1999 Stand-alone database (Microsoft Access)	Selecting the lowest used line on the certificate
2000 –2006	ICD 10 AM	Stand-alone database (Microsoft Access) 6.75 ptMCDC reviewed in 2006	2004 informal training on selecting the UCOD
2007 – 2010	ICD 10 AM	Patis	Following the morbidity coding rules Mortality Coding training at QUT, Australia in July 2010
2011 – to date	ICD 10	Excel sheet Patis-plus	2011-2013 manual coding using ACME Decision table to select the UCOD 6.75 pt2014 to date, data entry into Patis-plus and coding causes of death in Iris.

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Title of Presentation: The Albertina Sisulu Executive Leadership Programme in Health (ASELPH) Fellows and Rating of Their Learning Style Using Honey and Mumfords Learning Style Questionnaire

The ASELPH Fellows (Albertina Sisulu Executive Leadership Programme in Health) and rating of their learning style using Honey and Mumford's Learning Style Questionnaire.

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Keywords: Leadership, Learning Styles, Honey and Mumford, Information

Abstract

Launched in 2013, the Albertina Sisulu Executive Leadership Programme in Health (ASELPH), provides executive-level training and support to build the capacity of the managers who drive health system transformation in South Africa. South Africa Partners forged this programme in partnership with the University of Pretoria (UP), University of Fort Hare (UFH) and Harvard School of Public Health (HSPH), and in collaboration with the South African National Department of Health. ASELPH is envisioned as a local 'flagship programme' capable of setting the standard for executive level health leadership and management training in South Africa.

The Honey and Munford learning inventory was used to determine the student learning style of the first cohort of 49 ASELPH students studying at the University of Fort Hare towards their Masters in Public Health. This 80 item inventory was developed from David Kolb's model and divided the learners into four preferred learning styles: reflector, pragmatist, activist and theorist. (Fleming et al., 2011) Learning styles are said to have an influence on how students learn and perform academically (Mohamed and Helal, 2012).

INTRODUCTION & BACKGROUND - THE ALBERTINA SISULU EXECUTIVE LEADERSHIP PROGRAMME IN HEALTH FELLOWSHIP

The Albertina Sisulu Executive Leadership Programme in Health (ASELPH) is named after Albertina Sisulu and was launched by the Minister of Health, Dr Aaron Motsoaledi, on 16 May 2013 to provide executive-level training and support to build the capacity of the managers who drive health system transformation in South Africa. A partnership between the University of Pretoria (UP), University of Fort Hare (UFH) and Harvard T.H. Chan School of Public Health, works in collaboration with the South African National Department of Health.

The three key components of health transformation in South Africa are service delivery improvements, meeting key policy operationalization goals and excellence in executive-level training. Through

the Fellowship period, one of the competencies students need to develop is understanding the value of executive's leadership to exploit global information regarding supporting organisation strategic decision making (McKinney and Sen, 2012:111).

The programme, which focuses on the Harvard Case Study Method, develops Fellows' reflective thinking skills. Reflection provides Fellows with unique active and structured ways of thinking to facilitate strong executive leadership orientation for both executive and other health managers (McKinney and Sen, 2012:111). It emphasises executive leadership skills and competencies, health policy analysis and transformation, strategic health human resources and the financing of management modalities. Throughout the fellowship programme, there is significant focus on building competencies in information searching, the ability to synthesise from a variety of sources to be able to create valuable policies and organisational reports (Seekoe, 2015: 5). According to McKinney and Sen (2012:111) guidance and supervision are key to developing critical thinking and reflective skills. Executive Fellows are linked to a formal mentoring programme which provides an opportunity to develop reflective thinking skills (Seekoe, 2015: 5). They have an opportunity to engage with mentors and reflect actively through writing their research and management reports and analysing and utilising information effectively.

Method

The Honey and Mumford learning inventory was used to determine the student learning style of the first cohort of 49 ASELPH students studying at the University of Fort Hare towards their Masters in Public Health. This inventory was developed from David's Kolb's model and divides learners into four preferred learning styles, reflector, pragmatist, activist and theorist. (Fleming et al., 2011). The questionnaire of 80 items, is then scored and the answers identify the students preferred learning style. The Honey and Mumford's Learning Style Questionnaire was administered to ASELPH students to assist them to select learning experiences that suit their style of reflector, activist, theorist or pragmatist (Honey and Mumford, 2000).

Participants

The University of Fort Hare (UFH) offers a three-year Masters in Public Health (MPH) programme, with the first cohort of 49 students graduating in April 2017.

Table 1: Profile of ASELPH Fellows at the University of Fort Hare: Provincial Distribution & Management level

Province	Designation	Number
Eastern Cape	Deputy Director	5
	District Manager	2
	Sub-District Manager	3
	Medical Doctor	1
	Chief Executive Officer	2
	District Clinical Specialist	1

	Senior Manager	2
	Managers	11
Kwazulu Natal Province	Chief Executive Officer	4
	Manager	5
Northern Cape Province	Clinical Specialist	1
	Chief Executive Officer	1
Private Fellows	Director	2
	Chief Executive Officer	1
	Manager	4
	Senior Researcher	1
	Statistical Consultant	1
	Lecturer	1
Total		49

The ASELPH Academic Programme

The ASELPH Fellows follow a course work Masters Degree at the notional qualification level 9. Modules are offered throughout the year in semester one and two. Credits are allocated to modules according to notional hours. The lowest credits are 8 equivalent to 80 notional hours. Research carries the highest notional hours of 30 for the research methodology course and 60 for the dissertation.

Table 2: ASELPH Masters in Public Health Modules & Curriculum- Year 1

Year 1 ASELPH Modules	NQF /HEQF Level	Semester	Credits
Fundamental Module			
Introduction to Public Administration, Learning and issues in Public health in the African context	9	1	8
Core Modules			
Public Health Policy Transformation, Governance, Legislation and Political Analysis Strategy, National Health Insurance, District Health System Centralisation/Decentralisation and Re-engineering	9	1,2	16
Operations Management, Strategic Marketing and Communication	9	2	8
Executive Leadership in Health, Complex Problem Solving and Negotiating Coherence and Coordination	9	2	8
Research Methodology	9	2	30
Strategic Human Resources, Labour Relations & Management Performance	9	1	8
Strategic Economics and Finance Management in Health	9	2	8
Implementation of Quality Improvement Modalities (Strategies) in Health Systems, Health Informatics, Monitoring & Evaluation	9	1,2	16
TOTAL CREDITS			110
Year 2 ASELPH Modules	NQF / HEQF/ Level	Semester	Credits
Mini-Dissertation	9	1,2	60

Elective Modules (<i>Students to Choose 1 of the 3 tracks</i>)			
Hospital Management Track			
Hospital operations management	9	1.2	16
Critical units in hospital	9	2	8
Hospital specific competencies	9	1	8
OR			
Health Research Track			
Epidemiology	9	2	8
Advanced epidemiology	9	1.2	16
Biostatistics	9	2	8
OR			
Occupational/Environmental Health Track			
Health Education and Health Promotion	9	1	8
Advanced Epidemiology	9	2	8
Environmental health	9	1.2	16
OR			
Occupational Health			
			92
TOTAL CREDITS (110+92)			202

NOTES: 1 NQF refers to the academic standards laid down by the National Qualifications Authority (NQF); and the Higher Educational Quality Framework (HEQF).

The overall pedagogic and programmatic approach is to locate Health Information Systems and thinking – both at the conceptual and technical levels- as central pivotal aspects of strategic and operational planning of Health systems; rather than separate specialised areas isolated from the key decision and policy makers and implementers. The ASELPH programme adopts the whole systems thinking framework, examining the entire system of health promotion, prevention, treatment and care and rehabilitation. The graduate outcomes of this programme ensure that in a resource constrained environment, the professionals can function effectively with the full range of health problems and challenges.

Learning Styles

The Honey and Mumford Learning style inventory was originally developed from David's Kolb's model of experiential learning which he explained in his originally published 1984 book 'Experiential Learning: Experience As The Source Of Learning And Development' (Kolb, 2014). It is widely recognised as a seminal work, however, Kolb did acknowledge the early work by others in the 1900's, including Lewin, Dewey, Rogers, Bruner, Jung, Piaget and James. (Kolb, 2014).

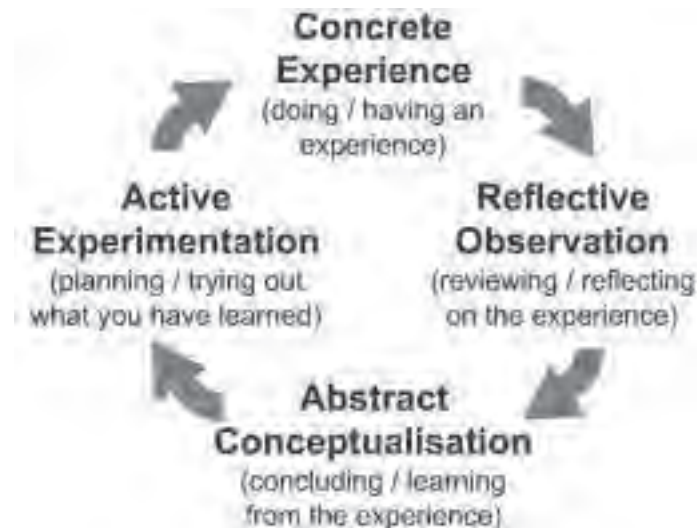
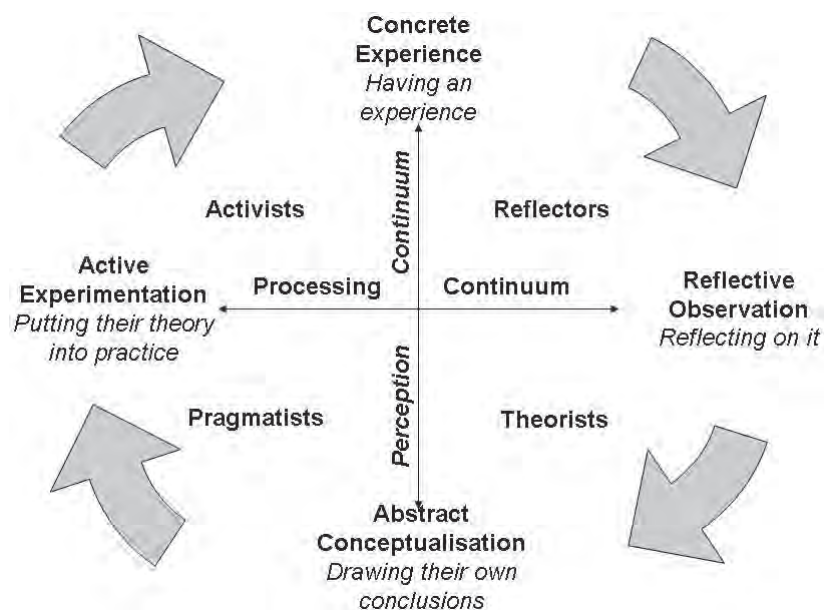


Diagram from Kolb 1984

Honey and Mumford divided the learners into four preferred learning styles, reflector, pragmatist, activist and theorist (Fleming et al., 2011)



Honey and Mumford (2000) thought people preferred different methods of learning, depending on the situation and their experience level. Whereas Kolb thought that learning was dominantly locked into one mode. Honey and Mumford state people move between the four modes of learning depending on their experience and situation.

- **Reflector** - Prefers to learn from activities that allow them to watch, think, and review what has happened. Likes to use journals and brainstorming. Lectures are helpful if they provide expert explanations and analysis.
- **Theorist** - Prefer to think problems through in a step-by-step manner. Likes lectures, analogies, systems, case studies, models, and readings. Talking with experts is normally not helpful.

- Pragmatist - Prefers to apply new learning to actual practice to see if it works. Likes laboratories, field work, and observations. Likes feedback, coaching, and obvious links between the task-on-hand and a problem.
- Activist - Prefers the challenges of new experiences, involvement with others, assimilation and role-playing. Likes anything new, problem-solving, and small group discussions.

Results

The results are presented according to the four learning styles viz., activists, reflector, theorist and pragmatist based on questions that were less and most favoured as indicated in Table 3.

Table 3: Showing showing overall group results of ASELPH Fellows

LEARNING STYLE	Activist	Reflector	Theorist	Pragmatist	Group
TOTAL	226	403	384	369	Total
AV. SCORE	8,37	14,93	14,22	13,67	Average

The questions, which were less favoured are shown below:-

- I often act without considering the possible consequences
- I enjoy being the one that talks a lot
- I find the formality of having specific objectives and plans stifling
- People often find me insensitive to their feelings

The most favoured answers included:-

- I take pride in doing a thorough job
- I accept and stick to laid down procedures and policies so long as I regard them as an efficient way of getting the job done
- In meetings, I put forward practical, realistic ideas
- I believe that rational, logical thinking should win the day
- I like meetings to be run on methodical lines, sticking to laid down agenda, etc.
- I take care over the interpretation of data available to me and avoid jumping to conclusions
- It's best to think carefully before taking action

The latter reflecting some good leadership attitudes.

The next stage in this work is to retest the students and interview them to explore their perceptions of their preferred learning style.

Discussion

The results show that reflector and theorist learning styles are the most preferred by the students over pragmatist and activist. There are several unique features of these study results that are pertinent for developing and developed countries.

Firstly, we have located the central focus of health information systems within the broader health management paradigm - hence overcoming the fragmented approach common to other management

development programmes.

Secondly, the learning style inventory has been correctly applied to senior managers who are required to develop their personal “learning styles” from both the MPH programme, and most importantly from their workplace based learning – blending experiential learning with pedagogic didactic teaching.

Thirdly, the learning style inventory allows each manager to identify their strengths and weaknesses as they move from the classroom context to their hospital management context – as they go through the four typologies of activist, theorist, pragmatist and reflector.

The results reveal that the reflector and theorist are the dominant modalities followed by the pragmatist and lastly the activist. Thus the results suggest that the students are demonstrating “managerial” behaviours and attitudes and confirm the validity and reliability of the instrument.

The critical aspect of this MPH Programme is to train Managers who are to build and create learning organisations as outlined in the work of Peter Senge, who describes five disciplines that must be mastered when introducing learning into an organisation:

1. Systems thinking
2. Personal mastery
3. Mental Models
4. Building Shared
5. Team Learning (Senge 1990,10).

It is argued that the dominant learning styles reflected in the data would contribute to the capacity of the students to establish such learning organisations.

The National Department of Health (NDOH) in their Human Resources for Health 2030 vision Indicates “a workforce fit for purpose to meet the needs of the re-engineered health system and measurably improve access to quality health care for all by 2030. Its mission is to ensure adequate numbers of appropriately competent staff in all locations (primary, secondary and tertiary) as a result of increased employment, production, recruitment and reduced attrition and ensuring that health care workers have an optimal working environment and rewarding careers and to increase retention.”

According to the National Health Insurance (NHI) in South Africa Policy Paper (NDOH. 12 August 2011, Pretoria) Section 6, states that: “To successfully implement a healthcare financing mechanism that covers the whole population such as NHI, four key interventions need to happen simultaneously: i) a complete transformation of healthcare service provision and delivery; ii) the total overhaul of the entire healthcare system iii) the radical change of administration and management iv) the provision of a comprehensive package of care underpinned by a re-engineered Primary Health Care”.

It is argued that the results from the learning style inventory illustrate that the tested students could contribute to these interventions.

Limitations to the study

As this was a baseline study, the learning style inventory would need to be administered to subsequent cohorts of students to develop a larger database. A longitudinal study of this group of students

in their workplace settings is required to evaluate the full impact of this MPH programme, specifically exploring the blend of didactic teaching and the work-placed based experiential learning among the students.

Conclusions

The ASELPH MPH programme is a global flagship programme, and these early results from the learning style inventory data suggest that the students have a preference for reflective thinking, which underpins postgraduate learning behaviour.

Recommendations

Both the MPH programme curriculum as well the students learning styles, as identified in this study, need to be further examined and reviewed to increase alignment. Follow-up studies located at the working environment of the students are required to explore further the applications of these learning styles.

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Abstract only

Australian Burden of Disease Study 2011: A Case-study in the Use of Coded Data in Population Health

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Burden of disease analysis combines multiple data sources to count and compare the total fatal and non-fatal health loss from disease and injury in a population, and its attribution to specific risk factors. Burden of disease is measured using disability-adjusted life years (DALY), which combines estimates of years of life lost due to premature death (YLL) and years lived with disability (YLD) to count the total years of healthy life lost from disease and injury. The Australian Institute of Health and Welfare (AIHW) has recently completed the third Australian Burden of Disease Study (ABDS). This study provides updated estimates for 200 diseases and injuries for the Australian population as a whole, as well as for the Aboriginal and Torres Strait Islander population for the reference year 2011. This presentation will highlight the strategic use of health classifications such as ICD-10 in the calculation of mortality estimates, and ICD-10-AM coded hospital separation data, which underpins a large number of the non-fatal estimates in the ABDS 2011. It will also cover the emerging role of health information management in summary measures of population health. The results from ABDS 2011 are an important resource for health policy formulation, service planning and to monitor population health, including the gap between Indigenous and non-Indigenous Australians. They will provide a foundation for further research, such as the assessment of health interventions for prevention or treatment of specific conditions, and as an input to cost-effectiveness analysis.

**Hatta Method for Analysing Completeness and Usage of Orthotics
Prosthetics Health Record**

Presentation Type: Oral presentation

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ABSTRACT

The absence of orthotics prosthetics (OP) data in Indonesia's two ministries impressed the implication of no availability OP (disability) data in international level such as at World Bank, WHO and social welfare organizations. Mix disabilities of world population are 15% or 1 billion (WHO, 2011; UNESCAP 2012). Thus, data should be carefully analysed by governments. Therefore, access of data and information are of prime concern (WSIS Declaration 2003, HIFA 2015). Despite a report of around 5% or

11.5 millions mix disabilities in Indonesia, include 3 millions with general physical problems but no further data on OP data, part of disability. Therefore, it is advisable by using Hatta Method, OP health record (HR) could be checked on its completeness and usefulness with SPSS multivariate - factor analysis approach. Result: newOPHRdesign.

Hatta method is an original thought for expanding a better health record review system and new technology for HIM. This new system is offering a solution to detect itemized variable data with SOAP and ICF criteria for disability through a systematized OPHR reviews. This research has 4 steps. (a) analyzing OPHR with SOAP, ICF criteria for completeness. (b) analyzing the usage of recorded OP data. (c) using SPSS's multivariate factor analyses for reducing itemized OP data. (d) the chosen itemized variable data for designing new OPHR for a better documentation.

This descriptive analyzes is an retrospective analysis, consist of two research studies with several steps.

Part I (a) Developing lower limb orthotics prosthetic health record (OPHR) questionnaire on quantitative and qualitative (administrative and medical) analysis by Hatta Method using SOAP and ICF criteria. (b) Analysing completeness of OPHR. (c) Analysing the core of Hatta Method: quantitative and qualitative (administrative and medical) analysis and the usage of recorded OP data.

Part II multivariate analysis-factor analysis approach for designing new OPHR.

Analyzing OPHR in two orthotics prosthetics clinics in two cities Jakarta (2009-2014) and Surakarta (Solo). Sample: 30 OPHR of Jakarta and 10 of Solo, due to homogeneity. Purpose of research: To analyse OPHR with quantitative and new qualitative review technic and simplification of OPHR itemized variables and designing new lower limb OPHR with selected usage variables. Useful to government and new technology for HIM profession.

Result: Hatta Method with new analysis health record technic has proven medical audit can be performed by HIM analisators and finding new itemized usage variables for new OPHR.

Key words: OPHR, ICF, SOAP, Hatta Methods.

1. INTRODUCTION

1.1 Background

Despite of a cummulative report of around 5% or 11.5 millions mix disabilities in Indonesia, include 3 millions with general physical problems there is no orthotics prosthetics (OP) data as part of disability case at Ministry of Health and Ministry of Social Welfare in Indonesia. The question is why it should happen ? While WHO slogan is "HIFA 2015" i.e *health care information for all in 2015* and Indonesia signed WSIS (2003) agreement which stated "*by 2015 all health care facilities in the world will be linked by information technology*". More over, WHO (2010) and UNESCAP (2012) have detected globally there were around 1 billion of disabilities.

Indonesia has numbers of OP graduates from two of 3 years course programs in two cities i.e Surakarta or called Solo (since 2005) and Jakarta (since 2008). The Jakarta School of OP (JSOP) is a modern one with expatriates lecturers from Exceed (NGO) and accredited with WHO/ISPO stan-

standard. ISPO is the International Society for Prosthetics Orthotics. JSPO has its own Laboratory clinic with daily patients attendance. Both two schools are owned by the Ministry of Health of Indonesia.

Orthotics is a specialty within medical field concerned with the design, manufacture and application of orthoses. An orthosis (plural: orthoses) is an externally applied device used to modify the structural and functional characteristics of the neuromuscular and skeletal system. (<https://en.wikipedia.org/wiki/Orthotics>).

An *orthosis* is the correct term for an externally applied device that is designed and fitted to the body to achieve one or more of the following 7 goals:

- Control biomechanical alignment,
- Correct or accommodate deformity
- Protect and support an injury,
- Assist rehabilitation,
- Reduce pain
- Increase mobility,
- Increase independence

<https://www.aopa.org.au/careers/what-are-orthoses-and-prostheses>.

While *prosthesis* is an artificial device that replaces a missing body part, which may be lost through trauma, disease, or congenital conditions.

The “no OP data” issue at the level of Indonesia’s ministries has raised some questions. Is there no OP health record (HR) form and how is the construction of the OPHR forms? Based on this issue, Hatta Method is a breaking through concept as a continuation of Edna Huffman’s famous textbook “Medical Record Management” (published 1941 – 1994) of last decades on quantitative and qualitative HR analysis.

In Hatta Method, reviewing HR means analysing and reading written record more thoroughly until its conclusion and final diagnosis/condition. Set up a HR questionnaire on quantitative and qualitative analysis. In the new analysis technic, qualitative analysis is now being divided into completeness documentation and data usage with patient care audit criteria approach. Including SOAP technic and ICF level¹.

While the Indonesian Ministry of Health no. 377 (2011), said “medical audit is the duty of doctor only”, Hatta Method is bridging a new thought that analyzing the completeness of HR data should be together with finding the usefulness or the usage of the itemized OP HR variables. If so, the medical or health recordings should have more informative data on next treatment or therapy. Therefore, the present technic on analysing HR data usage is a combination of medical auditing in health recording.

¹ SOAP = subjective, objective, assessment, plan

ICF = The International Classification of Functioning, Disability and Health

Hatta Method uses different ways in analyzing HR. The construction of questionnaire on quantitative and qualitative HR analysis is different than an ordinary questionnaire style. It uses 2 columns to specify the completeness and usage of data.

In medical qualitative analysis, the result of *data usage* to SPSS factor analysis approach is reducing numbers of previous OPHR variables into smaller but more functional variables. These reduced variables are becoming the new itemized variables of the new OPHR design.

Analyzing HR in a profound manner called *Hatta Method* and its continuation is the formation of a new HR form. Therefore, learning this new HR analysis method and constructing data base to medical audit until the formation of a new HR format will be an additional value to present knowledge - competency to health information management (HIM) profession level.

Hatta Method will be the remedy for obtaining a good quality of OP data versus the previous saying of “no OP data”. Hopefully this method could be implemented globally as well.

2. Methods

This descriptive analyses was an retrospective analysis, consist of research study with several stages by using OPHR (orthotics prosthetics health record).

Samples : 30 OPHRs from Jakarta city and 10 OPHRs from Surakarta (Solo) city, Indonesia

For OPHR purposes, the initial review should be started from documentation process at JSPO's clinic where patients visit regularly. Then, link the issue of compliance attitude on good documentation through education. In the long run, with proper training, OP graduates will show good attitude towards the availability of complete OP data to information governance level.

Stage 1. Develop Hatta Method to OPHR lower limb questionnaires : (a) Quantitative and (b) Qualitative analyses. Introduces new Qualitative approach i.e administrative analysis and medical analysis. Two criterias are used in qualitative medical analysis i.e SOAP (subjective, objective, assessment and plan) documentation and WHO's International Classification on Functioning, Health and Disability(ICF).

Stage 2. Collecting data based from OPHR questionnaires:

2.1 Reviewing and analysing OPHR, based of quantitative analysis

2.2 Reviewing and analysing OPHR. based of administrative qualitative analysis

2.3 Reviewing and analysing OPHR, based of medical qualitative analysis to find completeness and usefullnes of 30 OPHRs based on SOAP and ICF criterias.

Stage 3. Analysing OPHR data from two OP schools in 2 cities Jakarta (2009-2014) and Surakarta (Solo).

Stage 4. Designing new OPHR forms (using SPSS multivariate factor analysis)

Sample: 30 OPHRs (lower limb) in Jakarta and 10 OPHR in Solo, due to homogeneity.

Main research purpose: Knowing the completeness and the usage of OPHR variables according to the systemized Hatta Method

The second step of this research : design new OPHR :

Table 1. Explanatory Scoring on Hatta Method

Left column = completeness of data	Right column = medical qualitative analysis	Score
1 = no	0 = not the case	3
	1 = no follow up Information	2
2 = yes	2 = with follow up information	4
	9 = no information	1

The SOAP criteria derives from OPHR forms.

The ICF criteria derives from WHO ICF book on (a) Activities and Participation (chapter 4) on Mobility (4 sub criteria of 21 points or d 410 – d 499) and (b) chapter 5 on Self Care (9 points of d 510 – d 599). Total a and b = 30 points.

By using Hatta Method, OPHR is checked against its completeness criteria. In medical qualitative analysis the usage of SOAP data and WHO's ICF concept are analysed in stages manners. Finally simplification of OPHR by using the most usage variables for the new informative OPHR (lower limb) will be useful to government's data and new technic for HIM profession.

Table 2. Questionnaire on Hatta Method for Medical Qualitatif Analysis (MQA)

Left side of MQA form	Right side of MQA form
<p>Title : <i>Completeness of OPHR information (each SOAP and ICF Criterion has a column such as below)</i></p>	<p>Title: <i>Usage of OPHR data based on each SOAP and ICF criterion</i></p>
<p>Consist of: Itemized of each variable criterion of SOAP and ICF within OPHR</p>	<p>Consist of : Rank numbers</p>
<p>Example on ICF: Code d 410 – d 429 criterion on ICF has 4 d's) Title: 1. <u>Changing and maintaining body position</u> <u>(has 4 d's : a , b c d)</u></p> <p>Q : Does OPHR have any information about changing and maintaing body position ? a. (copy d1 and summarize) b. (copy d2 and summarize) c. (copy d3 and summarize) d. (copy d4 and summarize).... explain in brief the content of each a b c d ".". Then, circle the aswer on any 4 relevant d's Next, circle the right answer this number of 4 d's : 1 = no information on all 4 d's 2 = yes there is (are) an/some information</p>	<p>Usage of each criteria Title: 1. <u>Usage of (title..) "Changing and maintaing body position"</u></p> <p>Q : if disable is a patient with condition on (explain the above title ..) with the choosen criterion (left), does OPHR have an extra information ?</p> <p>0 = not the case 1 = there is the itemized variable but no extra information 2 = yes there is the itemized variable in OPHR and there is an extra information 9 = there is no itemized variable and therefore there is no nformation</p>

Repeat the same procedure to S O A P's OPHR form.

The total of SOAP and ICF data are transformed into multivariate analysis and Factor analysis approach is the best method for finding the reduction number of the itemized variables.

Syntax of SPSS : (simplified) : Scoring method

if left is 1 and right is 9 then the Usage of that title above is 1 if left is 2 and right is 1 then the Usage of that title above is 2

if the left is 2 and right is 0 then the Usage of that title above is 3 if the left is 2 and right is 2 then the Usage of that title above is 4

3. Result andDiscussion

Reviewing and analyzing OPHR based on quantitative analysis

From quantitative analysis OPHR documentation which consists of 16 subvariables on patient's

identification, the existence of documentation, validity of recording, documentation, revealed only 44.26 % (12.78/30) OPHR complete.

2.2 *Reviewing and analyzing OPHR based on administrative qualitative analysis* Administrative qualitative analysis consists of 12 subvariables : reason for visiting health care facility and the condition/diagnoses should be in line, consistency in documentation, treatment is justified, informed consent, review on recording (data is up to date, legibility, standard abbreviation, politeness in writing, no gaps in writing, using standardized ink and clarity on writing) and information on reimbursement.. The result revealed 62.5 % of 30 OPHR data was complete.

2.3 *Reviewing and analyzing OPHR based on medical Qualitative Analysis* – Completeness of SOAP data based (non scoring) at JSPO revealed 62.88 % of 30 OPHR data complete.

Medical qualitative analysis from the completeness of itemized variable until usefulness of ICF's criteria showed : Activities and Participation (chapter 4, 5) only used 15.4 % ICF. This means, OPHR does not have enough ICF variables. Therefore SOAP-ICF variables have to be included in the next remodelled form.

- Usage of ICF was revealed only 13.34² % ICF data being used.
- From usefulness of SOAP of 30 OPHR, it was revealed 37.08³ % SOAP data being used.

The above results show that recording technic has to be upgraded and update of ICF and SOAP record has to be re constructed.

To create a OPHR new form, SPSS program of version 17 was used and Varimax rotation method above 0.3 was selected in order to gather more data.

The process of reducing OPHR variables through Factor Analysis SPSS varimax rotation of Jakarta and Solo data have been done in three series. It stops once the most accepted rotation of varimax has been considered as the best model. Consultation to OP practitioners is important to achieve the best design.

² Taken from score 4 = the highest mark, only 13.34%. Meaning there is an answer of yes (left questionnaire) and usage of data (right questionnaire) has an extra information on treatment for the patient

³ Taken from score 4 = the highest only 37.08 % (same explanation as above)

The result: from the initial 7 factors and 58 variables on SOAP and ICF on OPHR, it is now being reduced to 4 analysis factors and 29 OPHR variables.

The composition of new forms of OPHR: G 5.4 Patient Registration

G 5.3 Authorization

G 5.6 Subjective

G 5.7 Lower Limb

G 5.8 Activities and Participation

G 5.9 Planning

G 5.10 Progress Notes



RESULTS :
4 FACTOR ANALYSIS
(S, LL, AP, P) with
29 new OPHR variables

Previously 7 FA and 58 variables

Previous OPHR had 7 factor analysis and 58 variables including identification, 4 SOAP forms and progress form reflected lower quality documentation. While, ICF criteria was not known. After exercising varimax rotation of Factor analysis in SPSS, less number of forms were created. Presently objective (O) and assessment (A) forms have been merged to Lower Limb form with simplification of certain O and A activities inside.

4. Conclusion

Hatta Model is not just for orthotics prosthetics field which is part of medical technician area. It can be used also for analysing diagnostic/surgery even on physical rehabilitation record. In the future work it is advisable if it is done by electronic health record(EHR).

The low result in documentation should be minimized by recording training

Introducing the new steps in analysing health record to medical audit usage data and with SPSS factor analysis approach will produce new variables as the itemized design for the new health record (OPHR) forms. This new form will be simpler as the chosen variables are the most needed ones. It is hoped Hatta model as a combination of administrative and medical audit analysis will be a new technical knowledge to all HIM practitioner and used to many discipline professional globally as well.

Table 3. Process Creation of OPHR Forms

Kode angket	FACTOR I LOWER LIMB	Varimax rotation 0.3
CPD 58 S	Lower Limb MMT/ROM	0.652
CPD 60 O	SOAP 7 Variabel	0.688
CPD 62 O	SOAP gait deviation	0.824
CPD 70 A	General Assessment dalam SOAP LLO	0.740
CPD 72 A	SOAP LLO diagnosis	0.549
CPD 74 A	SOAP LLO functional loss	0.881
CPD 88 A (7)	SOAP LLO picture with picture and note (moved from F1 ex moved from F2)	0.497
	7 variables	

The process creation of OPHR forms
Example: Lower Limb form

Using Multivariate Factor Analysis approach to OPHR usage data.

Running SPSS with Varimax rotation of > 0.3 until finding the most suitable variables

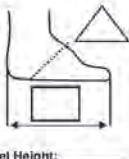
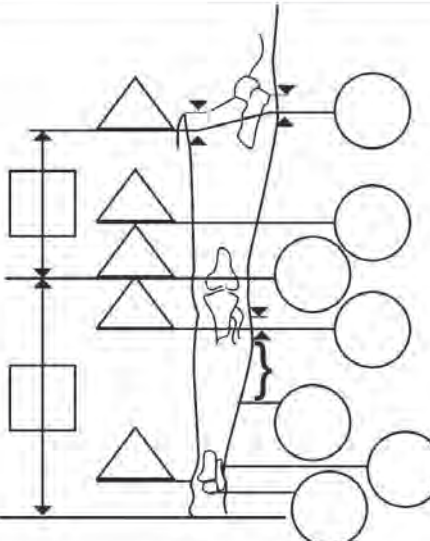
CPD 58
Subjective

CPD 60 O = objective, is SOAP with 7 variables:
Sensation,
Proprioception,
muscle tone,
muscle length, lengl
length, shortening,
joint deformities,
spinal deformity

CPD 62 O

CPD 70
CPD 72
CPD 74

CPD 88 A

J S P O	Jakarta School of Prosthetics and Orthotics			
	Lower Limb			
DATE: _____		H.R. NO: <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/>		
NAME: _____				
FIRST NAME		ALIAS	FAMILY NAME	
SIDE: L <input type="checkbox"/> R <input type="checkbox"/>	PRIMARY PATIENT: YES <input type="checkbox"/> NO <input type="checkbox"/>		SEX: M <input type="checkbox"/> F <input type="checkbox"/>	
FOLLOW UP: YES <input type="checkbox"/> NO <input type="checkbox"/>				
OBJECTIVE				
HIP JOINT	ROM		MUSCLE STRENGTH	
	L	R	L	R
Flexion (120)				
Extension (30)				
Abduction (45)				
Adduction (30)				
Internal Rot. (35)				
External Rot. (45)				
KNEE JOINT		L	R	L
Flexion (130)				
Extension (0-10)				
ANKLE JOINT		L	R	L
Dorsiflexion (30)				
Plantarflexion (45)				
Inversion (30)				
Eversion (15)				
KNEE STABILITY		L	R	
M-L ligaments				
A-P ligaments				
Sensation:		Proprioception:		
Muscle Tone:		Muscle Length:		
Leg Length Shortening:		Joint Deformities:		
Spinal Deformity:				
ASSESSMENT				
GENERAL ASSESMENT:				
DIAGNOSIS:				
FUNCTIONAL LOSS:				
SPECIAL REMARKS: <div style="border: 1px solid black; height: 100px; width: 100%;"></div>		 Heel Height: _____		
Description: △ : Diameter ○ : Circumference □ : Length				
PO: _____		Fitting Date: _____		Delivery Date: _____

J S P O		Jakarta School of Prosthetics and Orthotics			
Activities - Participation / ICF					
H.R. NO: <input type="text"/> - <input type="text"/>					JOB:
NAME: <input type="text"/>					
FIRST NAME		ALIAS		FAMILY NAME	
MOBILITY	INDEPENDENT	ASSISTED	IMPOSSIBLE	Notes (Good/ Poor)	
Changing and maintaining body position (d410-d429)					
d410	Changing basic body position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d415	Maintaining a body position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d420	Transferring oneself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d429	Changing and maintaining body position, other specified and unspecified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Carrying, moving and handling objects (d430-d449)					
d430	Lifting and carrying objects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d435	Moving objects with lower extremities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d440	Fine hand use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d445	Hand and arm use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d446	Fine foot use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d447	Carrying, moving and handling objects, other specified and unspecified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Walking and moving (d450-d469)					
d450	Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d455	Moving around	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d460	Moving around in different locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d465	Moving around using equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d469	Walking and moving, other specified and unspecified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Moving around using transportation (d470-d489)					
d470	Using transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d475	Driving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d480	Riding animals for transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d489	Moving around using transportation, other specified and unspecified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d498	Mobility, other specified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d499	Mobility, unspecified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SELF CARE					
d510	Washing oneself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d520	Caring for body parts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d530	Toileting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d540	Dressing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d550	Eating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d560	Drinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d570	Looking after one's health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d571	Looking after one's safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d598	Self-care, other specified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d599	Self-care, unspecified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PO: <input type="text"/>					Date: <input type="text"/>

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Sample Size 30 <https://www.youtube.com/watch?v=IJ0M37sHaXY><https://www.isixsigma.com/topic/sample-size-why-30/>

Abstract only

Medical Certification of Cause of Death and Mortality Statistics: Indian Perspective

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India has a mandatory death registration system under the Registration of Death and Birth (RBD) Act, 1969 through Civil Registration System (CRS) and Sample Registration System (SRS). Office of the Registrar General & Census Commissioner, India, Ministry of Home Affairs is responsible for the collection, compilation, analysis and publication of annual mortality statistics. Notwithstanding the established registration system, timely tabulation of mortality statistics and lack of implementation of Medical Certification of Cause of Death (MCCD) scheme across states and Union territories (UTs) are major challenges. Understanding these constraints, from August 2014, the central government has made the MCCD scheme mandatory for all medical institutions and hospitals, both public and private sector to report the cause of death in the prescribed format to the Chief Registrars of Birth and Death in the respective states. This enforced many of the states to implement the MCCD scheme, and this made some states to initiate online and kiosk system to report the cause of death to government authorities. However, all the states have not completely adopted the prescribed MCCD forms for reporting the cause of death, and collection and dissemination of data would needs more streamlining. The time-lag in the tabulation of cause death at national level is a concern. The statistics on cause of death for the year 2013 was the last published official national level mortality statistics. The report shows the percentage of medically certified deaths to totally registered deaths varies from 0.4 to 100 among the states. This clearly indicates the inadequacies in reporting the cause of death and implications of mortality statistics. The national level mortality statistics are generally compiled based on MCCD inputs received from the states. The statistics are mainly presented under leading cause groups of deaths,

distribution of the major causes of deaths among each disease category and specific cause of mortality in different age groups based on the tenth revision of the ICD. MCCD have been tabulated for a total of 69 categories of causes under major groups I to XX of national list, including the external causes of morbidity and mortality based on the tenth revision of the ICD. In 2013, the MCCD data were supplied by 31 states/UTs compared to 24 in 2004, shows an improvement. However, the disparity in the reported death cases and actual deaths need to be viewed critically.

Title of Presentation: The Importance of Information management in the Establishment of Sustainable Health Care System

The Importance of Health Information Management in the Establishment of Sustainable Healthcare System

- from the Perspectives of Bed Management -

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ABSTRACT

A fundamental health care reform is required in Japan in order to sustain its system in super-aging society. Reconstruction of health management in each hospital is an essential driving force to accomplish their goal. This article introduces a local hospital which transferred an acute ward to a post-acute ward and organised bed control team in order to shorten the average length of stay. Sharing correct and prompt health information in the hospital made it possible to smooth bed control. As a result of the differentiation of bed usage depends on the level of care, the hospital managed to achieve an efficient hospital management.

1. Health care system in Japan

1.1 Characteristics of health care system in Japan

Establishing a sustainable health care system is a serious concern in Japan. Healthcare costs continues to rise due to the rapid aging population [1.]. Combined with a stagnant economy, rising health-care spending threatened the sustainability of the social insurance system.

The Japanese Government is proceeding with restructuring of health care delivery. Although the average length of stay in Japan is still the longest in OECD countries [2.], it has been steadily decreased every year especially after the prospective payment system was introduced in 2003. An abundant acute facilities accounts for the longest stay with 17.2 days. The number of hospital beds per capita has not decreased over the past decade in Japan and it is also the highest with 13.3 beds per 1,000 population in 2013 [3.]. Patients are able to stay in acute hospital even after the curative care. The Ministry of Health, Labour and Welfare seeks to promote both the differentiation of hospital beds by function and the community-level integration of medical treatment, long-term care, and preventive care.

Under these medical reforms, each hospital is struggling for adopting their health care administrations to meet the government policy. In this article, the author shows an example of a hospital trying to serve an efficient bed management in order to shorten the average length of stay. It also reveals how health information manager (HIM) can contribute to hospital management by means of offering correct diagnosis information.

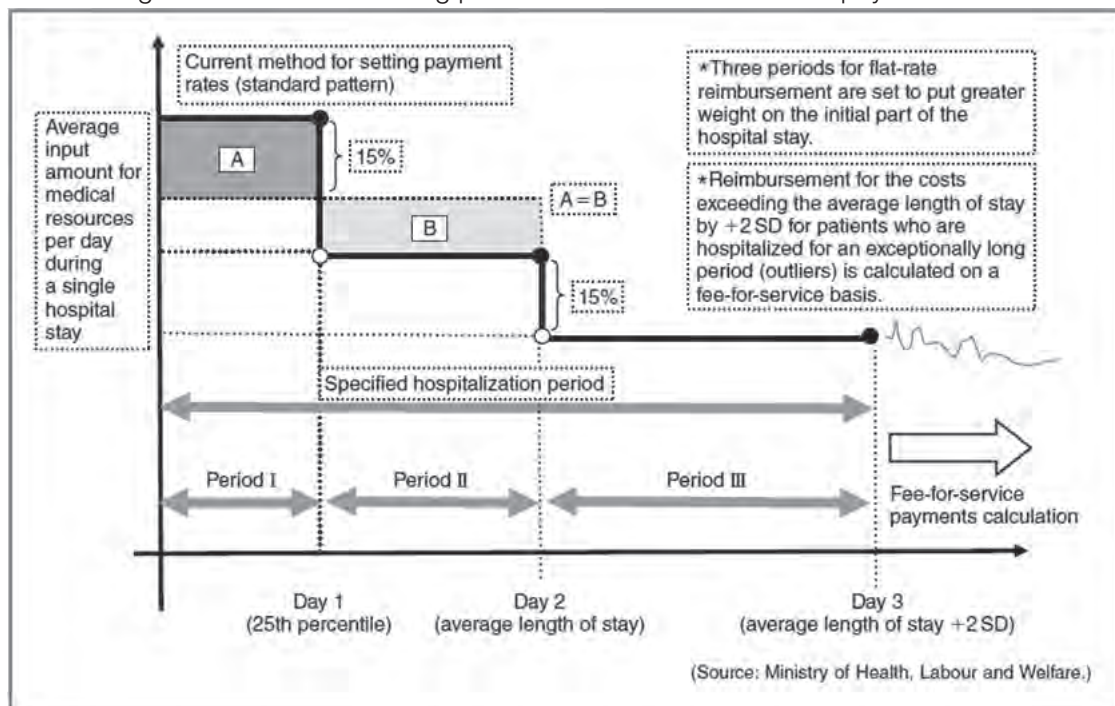
1.2 DPC/PDPS

A prospective payment system, Diagnosis Procedure Combination /Per-Diem Payment System (DPC/PDPS) is introduced in 2003 to suppress hospital cost and reduce average length of stay. Provider reimbursement is calculated based on DPC/PDPS which is determined by diagnosis and treatments. Basic hospital stays, tests, medication and injections and treatments are reimbursed with inclusive payments set for each DPC, while surgery, radiation therapy and rehabilitation are reimbursed on the basis of the fee-for-service system [4].

Hospitalisation period is broken into three stages with flat-rate payments rates set for each one. The end of day2 is the average length of stay. Therefore it is important for the hospital to discharge patients within this period.

The payment is calculated fee-for-service after the end of Period3, which is the average length of stay plus 2 standard deviation. If the acute hospital allows a certain proportion of patients to stay after Period3, it means that the hospital do not offer an efficient medical care.

Figure 1. Method for setting per-diem treatment rates in DPC payment Table



1.3 Integrated Community Care System

In order to improve a long-term care for the elderly, the government tries to establish an Integrated

Community Care System. It aims at 'creating a community where people are able to continue living in familiar settings with ease even after they come to require advanced-level care.' [5.]

As part of the establishment of Integrated Community Care System, the integrated care unit was introduced in 2014. This unit can maintain both as sub acute phase and post acute phase unit. The payment system is different from DPC/PDPS. All the treatment including surgery, radiation therapy, rehabilitation are included in basic hospital stay payment. The basic payment is 28,000 yen and it could be reimbursed until 60 days. This unit plays an important role of establishing Integrated Community Care System and there are some requirements to get reimbursed. For instance, the hospital is supposed to support patients so that they could return to their home. The proportion of patients who go back to their home after hospital care should keep more than 70%. Rehabilitation should be served more than 40 minutes on average for each patient per day.

2. Management of hospitalisation length by bed control team

2.1 Backgrounds

2.1.1 Kitakyushu City

Steel Memorial Yawata Hospital is located in Kitakyushu City in Fukuoka prefecture. Kitakyushu City, with a population of about 1 million, is already faced with a super-aging society with a rate of elderly population is over 30%. Having 17 acute hospitals which have more than 200 beds, the competition for curative care between hospitals is very high. The number of beds per 1,000 population is about 20 and it is three times as many as national average. Steel Memorial Yawata Hospital had tried to deliver an efficient bed control management in this super-aging local city with congested acute care resources.

2.1.2 About Hospital

Steel Memorial Yawata Hospital offer both inpatient and outpatient services. It has 300 acute beds, 8 intensive care units, 100 integrated community care unit and 16 palliative care units. There are 28 clinical departments including surgery, hepatology, gastroenterology, cardiovascular disease, diabetes, nephrology, pulmonary medicine, neurosurgery. It is a general acute hospital in the region.

2.2 Bed Control Team

2.2.1 Community comprehensive health care unit

The Steel Memorial Yawata hospital shift one acute ward to integrated community care unit in October 2014. The patients are getting older every year and it reached over 70 years old on average in 2015. The numbers of patients who cannot leave the hospital within the average length of stay were increasing. It was important for hospital administration to sustain its function as an acute care services. Therefore the integrated community care unit was opened as a saucer for elderly patients.

Although the integrated community care unit was opened, the bed occupancy rate of the unit was remained 60%. On the other hand, the numbers of prolonged stay, who stays after DPC Period3 in acute wards did not decrease. One of the reason was that the doctors and nurses did not pay atten-

tion to DPC period as they were busy for serving medical treatment in acute wards. The another reason was that the role of the integrated community care unit was not recognised and transferring patients to this unit was not taking into consideration.

2.2.2 Starting bed control project

Bed control team (BCT) was organised on February 2015 so that doctors, nurses, social workers and HIM could cooperate together for an efficient bed management. Its aim was to 1. Effectively manage the utilization of acute and post acute beds and support the appropriate services to the patients, 2. Support prompt discharge for the patients who stay after they finish curative care and make a best use of acute beds, 3. Shorten the average length of stay.

2.2.3 Bed control workflow

The patient who stays after DPC Period³ was listed by HIM. The treatment phase of each case was examined by nurses. An accounting clerk calculate the payment. Social workers confirmed patient's plan after they discharged. Then all the information was shared in the meeting and the members discussed the case which was able to transfer to the integrated community care unit. The final decision of shifting unit is made by a doctor in charge.

When BCT started their management, influenza was spread in the region and the numbers of inpatients increased drastically. The curative care wards were full and the hospital was not able to accept emergent patients. Making arrangement curative beds for emergent patients became an urgent need.

It was essential for BCT to cooperate with doctors. There are nearly 100 doctors in the hospital and most of them did not know the role of integrated community care beds. Therefore BCT visited the doctor's conference and explained how bed control was tight. Then BCT asked doctors to cooperate together by making a treatment plan promptly, and early discharge and transfer units after acute phase.

2.2.4 The expansion of the community comprehensive care unit

As BCT kept listing up the patient and examined the possibilities of shifting unit in each cases every week, other hospital staff also started to pay attention to the shifting unit. The bed occupancy rate of the unit was risen. Therefore another unit was shift from the acute to the community comprehensive care unit. Two community comprehensive care unit started to run after one year the first unit was open.

2.3 Result

The outcome is analysed in terms of an efficiency and an emergent care measure. The indicators are compared between the 2014 and the 2015 fiscal year.

The average length of stay in the acute care unit was shortened 11.7 days to 11.4 days. The percentage of the cases DPC period 3 over has decreased from 7.4% to 4.0%.

Bed occupancy rate for the community comprehensive care unit was drastically improved from 60% to 80% on average after the bed control team started their management.

Acute bed usage rates was well controlled. In 2014 the numbers of inpatients were drastically increased in winter and acute units were completely occupied. The hospital was not able to accept an emergent patient. As a result, the acceptance rates of an ambulance was dropped in January and February. In 2015 the bed usage rate did not rise as high as the previous year because of bed management. There was a capacity to accept accute patient during the winter season.

Table 1. Average length of stay in acute beds

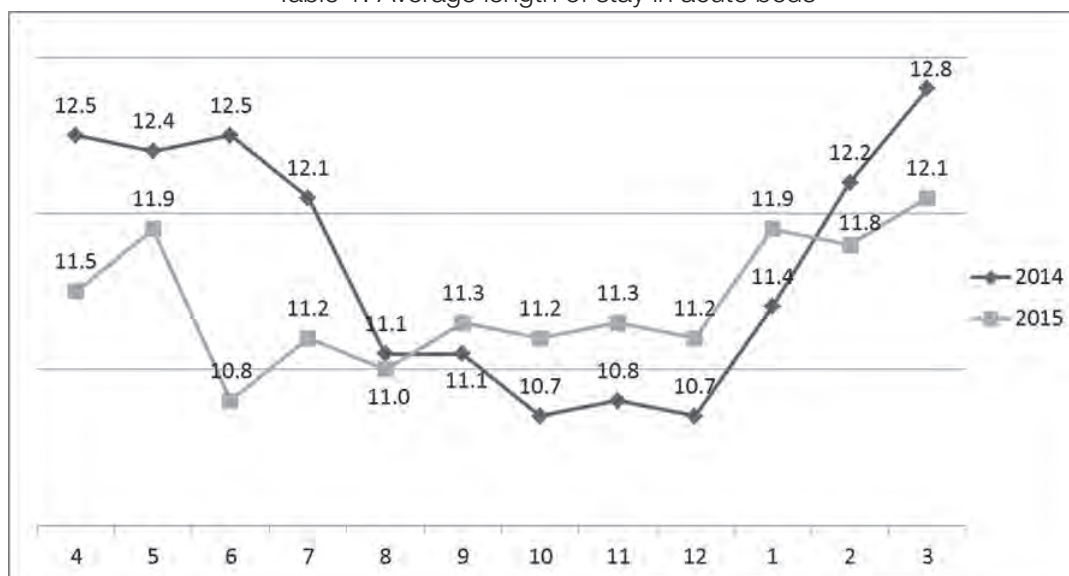
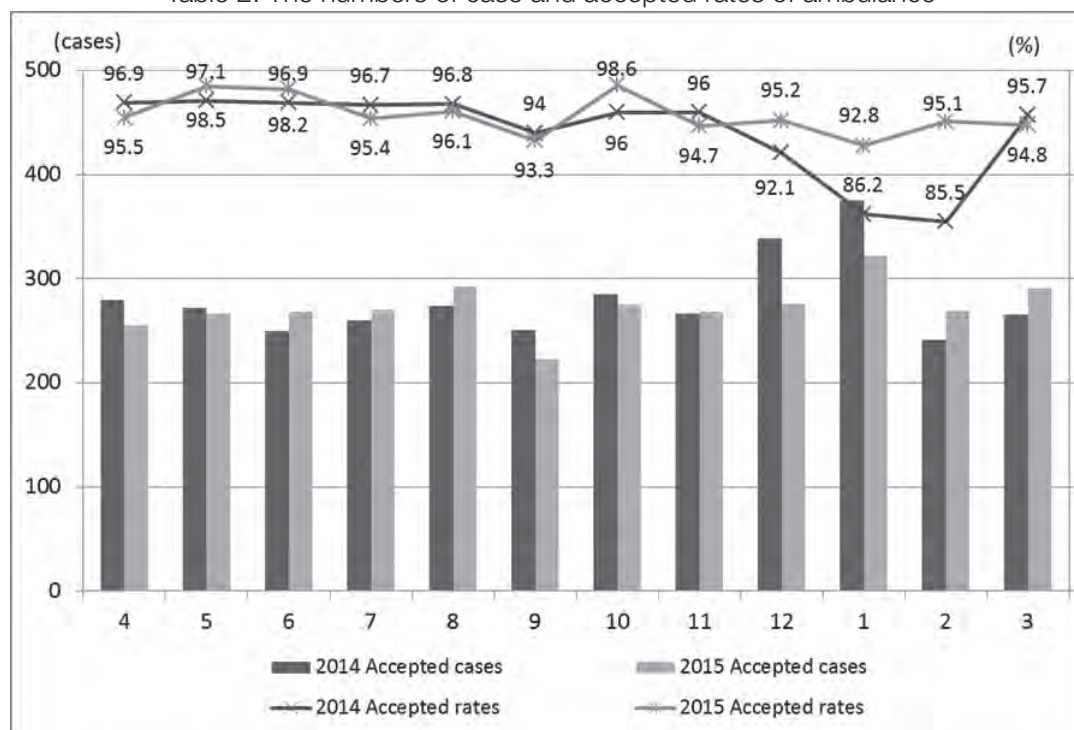


Table 2. The numbers of case and accepted rates of ambulance



Sharing up dated DPC period, which is based on the average length of stay in acute hospital with doctors, nurses, social workers and HIM resulted in the reduction of prolonged stay. It also contribut-

ed to the efficient bed control management and hospital administration.

3. Conclusion

The Japanese Government initiate health care reform to establish a sustainable health care system. The acute hospital is required to shorten the average length of stay and make use of their beds in appropriate units. It is essential for the hospital to share prompt and correct health records in order to make these reforms. HIM can take a vital role to achieve their goals.

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Physician Treat Patient and HIM Treat Hospital for Controlling Healthcare Cost

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ABSTRACT

Theme: Change or Perish HIM leader with digital information has to bring change in healthcare cost and improve efficiency to accomplish HIM application and popularization of HIM in the global health-care environment. HIM application and popularization drive needs to adopt the following.

Modification of HIM traditional education to corporate competing syllabus to generate innovative leaders

HIM move from conventional safe zone to threatening challenging role in controlling healthcare cost of the hospital

IFHIMA to develop basic HIM standards of practice to be followed by all the countries

FIFA makes the standards of football game followed throughout globe

Establish HIM national association in each country

Establish a central HIM department in the MOH to oversee the HIM programs in the county

Establish HIM Council of country at par with the Medical and Nursing Councils of nations to guide on education, standardization of HIM system and uphold professional standards and esteem

Revenue producing department employees of IT and Petroleum are paid more with esteem, make HIM to raise revenue through their excellence digital information leadership.

IFHIMA Newsletter to all the nations how HIM play vital role in efficient management of hospital

HIM Professionals Role HIM professionals may not deal with patient directly, but help patients indirectly by maintaining their records or taking care of medical data and ensure reliability, timeliness, accuracy and completeness and by collection, analysis, storage, use and transmission of information to meet legal, professional, ethical and administrative records keeping requirements of healthcare delivery. Their services are used in clinical, medical education, research, epidemiological, demographic, financial services also for insurance, public health or national health and international health agencies. As HIM is highly trained person, acquainted with the latest technology applications, policies and procedures his responsibilities are becoming increasingly significant as the healthcare industry continues to transition to Electronic Health Records. HIM can play a pioneer role by coordinating with the entire hospital functions which can be classified into two main groups primarily patient care including swift,

safe, quality and cost contained care, and medical education, research, insurance, reimbursement and security and confidentiality of patient. Secondly management of hospital functions which are considered as secondary services, without first, the second is nullified HRM including medical, nursing and allied health and support services, finance, are part of hospital organization their financial expenditure need to be closely monitor for economical measures.

Introduction:

In order to achieve the theme “Change or Perish” HIM leader with digital information has to bring change in healthcare cost and improve efficiency to accomplish HIM application and popularization of HIM in the global healthcare environment. With this objective, the paper entitled: “Physician treat patient and HIM treat hospital for controlling healthcare cost” has been prepared for presentation.

The HIM professionals, besides hospital environment, they also work for accounting firms, insurance companies, information systems vendors, government agencies, pharmaceutical research companies and others. They often bridge roles such as connecting clinical, operational and administrative functions that affect the quality of patient care at every touch point in the healthcare delivery cycle. HIM professionals manage people and operational units like release of information, file room, transcription, coding and billing etc., participates administrative committees and prepares budgets. And interact with all levels of an organization such as clinical, financial, administrative, and information systems. HIM professional is an expert who possesses comprehensive knowledge of medical, administrative, and legal requirements related to healthcare delivery.

While this has been the role of HIM professionals of technologically advanced nations, the HIM professionals of Developing Countries (DC) are working with least recognition, pay and esteem and thereby the progress is badly hampered. The current status of HIM professionals overall, in majority of hospitals including government, private and even some corporate hospitals is deplorable except few privileged group who might be in a better position, otherwise majority of them are in poor shape. Hence, the application of this paper is to popularization of HIM in the Developing Countries.

Current Problems:

Healthcare industry is plagued by rising cost and public pressure to contain expenditures. Patients and even the healthcare providers are not satisfied with escalating cost. The increased costs could be attributed to manifold reasons including inefficiency, inflation and duplication. This has necessitated for policy makers to focus on health coverage of entire population with limited finance by applying various methods to economizing the cost, and this is a global phenomenon. Due to this trend most of the Medical, Nursing, Paramedical and Hospital Administrative colleges have incorporated a healthcare economics and cost subjects in their educational syllabus and course content. This is the arena for HIM professionals by embracing additional challenges coupled with emerging technology that can work and prove that his profession can be cog of the vital wheel of the hospital management that lead to the HIM recognition.

Materials and Methods:

HIM application and popularization drive needs to be adopted with the measures which are not limited to the following:

- Modification of HIM traditional education to corporate competing syllabus to generate innovative leaders
- HIM move from conventional safe zone to threatening challenging role in controlling healthcare cost of the hospital
- IFHIMA to develop basic HIM standards of practice to be followed by all the countries
- e.g., FIFA makes the standards of football game followed throughout globe
- Establish HIM national association in each country and developing partnership with Govt.
- Establish a central HIM department in the MOH to oversee the HIM programs in the county
- Establish HIM Council of country at par with the Medical and Nursing Councils of nations
- Revenue producing department employees of IT and Petroleum are paid more with esteem, make HIM to raise revenue through their excellence digital information leadership.
- IFHIMA Newsletter signifying vital role played by HIM in efficient management of hospitals
- Popularization of HIM profession in global healthcare environment.

Modification of HIM traditional education:

In view of emerging technology and implementation of electronic health records, the conventional responsibilities of HIM department will diminish and need revision of HIM traditional education to corporate competing syllabus to generate innovative HIM leaders on modern lines to meet the new challenges of maintaining paperless records with huge generated data, need to bring the healthcare cost which is burning issue for all the healthcare institution across the globe.

HIM professional move from conventional safe zone to threatening challenging role:

The hospital activities have to be critically examined to ensure that the services, efforts and funds are not wasted, abused, not duplicated, unnecessarily experimented, no communication gap, expansion of departments internally or externally without justification and also to ensure judicious utilization of beds, proper distribution of manpower and resources.

Thus, the immediate aim is to move towards more economical balance of services and to eliminate ineffective, excessive and unnecessary medical procedures. The expenditure spent for above services has to be converted into cost units such as expenditure per bed, inpatient day, each hospitalization episode, outpatient per attendance and episode, delivery, intensive care bed, surgical procedure, each laboratory analysis, radiological film, per pint of blood, per diet, patient records, consultation, and expenditure on personnel and so on are required to develop a cost analysis criteria to carry out performance review in terms of cost and quality.

The HIM Professional has to play a vital role in controlling the cost or minimizing the expenses by varied methods. This could be done, not directly but with the collaboration and cooperation of all the departments by using the electronic health information as entire hospital services revolve around the

patient care. It is advisable the IT department while developing software for paperless management system should link into information part that each department expenses have an interconnection with the number of patients treated as an outpatient, emergency or as an inpatient. By co-relating the expenditure of the service departments with the number of patients treated in different areas such as OP, ER, and IP can calculate the unit cost for analysis purpose. With the patient care is classified as per the international classification of diseases and procedures will give significant information on the expenditure and by comparison of different services will lead to right status of expenses for each episode of care.

It is the HIM's endeavor to show healthcare providers how they can save time, efforts, reduce operating cost, and sustain improved quality of care. Where there is a lack of good record system or inefficient management, there is a problem of declining reimbursement and increased operation cost. HIM professional plays an important role in bringing complete and relevant information coupled with efficiency of practice for prudent decision making are ways to successful implementation.

IFHIMA to develop basic HIM standards of practice to be followed by all the countries:

The IFHIMA to develop basic HIM standards of practice to be followed by all the countries in line with FIFA makes the standards for football game followed throughout the globe. The IFHIMA standards will lead the application of HIM field in the health institutions of the country.

Establish HIM national association in each country:

Especially in DCs there is a dire need of health information management association at national level. The priority would be is to ensure that all the employees working for HIM department should be made a member of the association and ensures that all the employees are involved in the educational and professional growth activities with the support of workshops, seminars and conferences at institute, local, regional, and national levels.

Government participation:

The next step would be involving the Government including Federal and State in the activities of HIM national association, by communicating the progress made and seeking the support for further improvements. This could be achieved by having the modern HIM educational and training centres in the country. The three Tier educational programs can be developed for operational level (Asst. Technician), Supervisory level (Technician) and manager level (HIM Manager). Gradually, the higher professional programs such as master's and doctoral can be planned in collaboration with universities, and started later as the association progresses.

Establish a Central HIM Department in the Ministry of Health (MOH): Establish a Central HIM Département in the MOH to be headed by a senior HIM Professional to oversee the HIM the développement of HIM programs in the country. The responsibilities of Sr. HIM professional are not limited to the following:

Setting of national standards for medical records / health information management

- Improve the quality of HIM professionals and HIM numbers
- Initiating HIM educational and training programs to generate needed manpower
- Conduct workshops, seminars and conferences for the benefit of HIM and institutions.
- Develop HIM policies and procedures including, the budget, staff pattern etc.
- Participate and assist the government in improvement of healthcare delivery system
- Develop partnership with IFHIMA and similar associations to enhance the HIM status
- Strive to advance the eHealth technology to meet dynamic progress of medicine

Establish HIM Council of Country:

The HIM association should try to establish HIM Council at par with the Medical and Nursing Councils of nations to guide on education, standardization of HIM system and uphold professional standards and esteem. The council will oversee the entire HIM education and training programs and bring uniformity and ensure the profession is on right path on line with the needs of healthcare delivery system.

Revenue producing department:

The HIM department should grow as revenue producing department by taking highly challenging responsibilities of the management that will give the HIM the leverage. As you are aware the IT employees and employees of Petroleum Corporations are paid more salaries and with immense esteem. Hence, to be recognized as an important professional, we need to make HIM to raise revenue by accepting through their excellence digital information leadership responsibilities.

IFHIMA Newsletter to all the nations:

The IFHIMA has to send Newsletter regularly to all the nations especially the Developing Countries indicating how HIM play a vital role in efficient management of hospital and how it could be a good assistance in economizing the healthcare cost through digitalized information - collecting, classifying, analyzing and interpreting with the clinical work load information. And by enlightening new innovative methods practiced in different parts of the world could be brought to all the IFHIMA member countries.

Popularization of HIM Profession:

There are various avenues in the healthcare institutions e.g., as the Human Resource unit consumes more than 60 percent of total institute expenditure. It is imperative for the finance department to maintain unit cost of each service and to monitor high spending units to find out reasons for enhanced expenditure and how to economize without sacrificing the quality. HIM professional should have a logical knowledge and skills to identify the realistic and just mechanism that can bring down the expenses extremely.

Recommendations:

It is high time to enhance the IFHIMA member countries, especially the developing countries on war

footing to ensure that the efforts and endeavours of the association reaches to as many as nations possible in order to bring greater unification and standardization for easy global link and ultimately to accomplish the association's objectives. The challenges of IFHIMA need to achieve its overall objectives to the global organization! Hence the following suggestions are made for consideration by IFHIMA for achieving its overall set objectives.

- The IFHIMA President should visit the selected Developing Countries (DC)
- Opening of a HIM cell in the Ministry of Health with a senior competent HIM professional to oversee the country's HIM system
- Award Honorary Membership to all those with 30+ years of active participation and significant contribution to the IFHIMA
- The IFHIMA in collaboration with the WHO, assist the needy nations by selecting IFHIMA Honorary Member professional/s to be made responsible to visit to all the potential nations
- IFHIMA to have a list of retired professionals who can voluntarily contribute in this endeavour to assist the nation concerned on behalf of IFHIMA.
- IFHIMA should create a special budget by raising funds to meet the expenses required for the travel, boarding and lodging for honorary experts whenever the job is assigned.
- Strengthening the activities of IFHIMA by setting up information centre and data bank to gather the problems in managing HIM system and address the issues in DC.
- Conduct periodic educational program such as workshops, seminars for professionals of DC to enhance their knowledge and skills in eHealth and electronic health records.

Conclusion:

HIM Professionals have to work with passion, dedication, and have to widen their focus and broaden their horizons. The more challenges we undertake, better we are equipped to do the best. This is an opportunity for HIM to assume leadership roles and be part of the senior management team to support them in providing facts for business opportunities, clinical care improvement, efficient Revenue Cycle Management etc. This can be achieved by having continuous audits and quality assurance programs involving all the healthcare providers. Although technology is taking over traditional methods, HI Managers have to be vigilant and ensure that medical record documentation principles such as quality, timeliness, etc. are managed properly.

Abstract only

Trends and Predictors of Waiting Times for Colorectal Cancer Surgery

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Background: The context regarding waiting times for cancer treatment is seldom known in Japan, though many cancer patients are deeply affected by waiting times for treatment. There is little way for patients to know what situations affect waiting times. To this end, we try to identify the current situation

and to determine the predictors.

Methods: This study is retrospective, a hospital-based study of patients diagnosed with colorectal carcinoma in Izuka Hospital in 2014. The data is sourced from medical charts and hospital-based cancer registry. We reviewed the data and assumed the degree of influence which affects the waiting times. We set waiting times to objective variables and set geographic, treatment, patient and hospital factors to explanatory variables. When the waiting time is 1 or fewer days, we regard it emergency case and exclude the date from the analysis. We performed the analysis by stepwise selection. Multiple linear regression analysis was developed to assess the predictors.

Results: There were 130 cases in this analysis. The mean waiting time: 31.4, Median: 26 Maximum: 158, Minimum: 6, Interquartile range: [16, 38.25]. Wait times were associated with especially primary surgeon, treatment history of hyper tension, patient's address, ASA physical status classification (ASAPS), housing situation and UICC clinical stage. Adjusted R squared is 0.35 ($P < 0.001$). P value on each selected objected variables is relatively low. So, this model chose the variables which have some demonstrative power.

Conclusions: It was found that surgeon, hypertension, address, ASAPS and housing situation were predictors affecting waiting times. Additional data is required to declare the predictors because the data is restricted to only our hospital.

Comparative Assessments of the Outcome in Untreated Versus Treated Stage IV Cancer Patients Based on an Analysis of In-hospital Cancer Registry Data at a Designated Regional Cancer Center/Hospital

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ABSTRACT

Introduction: We have conducted an analysis of in-hospital cancer registry data to explore factors affecting the overall survival duration with a view to securing reference data for stage IV cancer patients per se and their family members when considering treatment policy.

Subjects and methods: From among patients who had been diagnosed as having stage IV malignancy prior to initial treatment who were sampled from in-hospital data registered as cancer cases with a diagnosis of gastric cancer, colorectal cancer, lung cancer, breast cancer, or cancer of the liver between 2007 and 2013 inclusive at Hakodate Municipal Hospital, Hokkaido, those with the outcome being identified as death were included in this survey. The data were analyzed with respect to overall survival duration, information on initial treatment, histopathologic diagnosis, information on outcome,

and others.

Results: The median age of the subjects, 377 males and 184 females, at the start of the initial treatment was 72 years (range: 29-95 years). There were 135 patients with gastric cancer (M/F: 93/42), 131 with colorectal cancer (80/51), 252 with lung cancer (188/64), 24 with breast cancer (0/24), and 19 with primary liver cancer (16/3). Of these patients, 100 patients were not treated and 461 patients received treatment. The median overall survival was 40.5 days (range: 5-956 days) for the untreated group, and 335 days (14-2491 days) for the treated group. The median age was 79.5 years (53-94 years) for the untreated group and 70 years (29-95 years) for the treated group. The pertinent data were evaluated with a multiple regression analysis using the overall survival duration transformed into a logarithmic value as a response variable and the age, gender and whether treated or not as explanatory variables, to determine whether the overall survival duration might be longer for the treated group than for the untreated group even after controlling for age and gender. Whether the patient was treated or not was $B = 0.718$, $t = 13.610$, and $p < 0.0005$; so that, the overall survival duration was longer for the treated group as compared to the untreated group.

Conclusions: The present results have indicated that aggressive multidisciplinary treatment including surgical treatment are effective in the cases of five major malignancies diagnosed as stage IV prior to initial treatment. The present study suggests that these results may serve as useful reference data for the patients and their family members in making treatment choices.

1. Introduction

In Japan, cancer has been the leading cause of death since 1981, and the number of patients with cancer has been increasing sharply. According to recent data from 2013, deaths from cancer account for about 30% of all deaths. Previously, cancer treatment, palliative care for cancer patients, and terminal-stage care for cancer patients have been provided to hospitalized patients. Recently, however, it has been recommended that these services should be provided at home or at daily life care facilities, rather than at hospitals.

2. Objective

Under this setting, home visit nurses and nurses involved in palliative care now have more opportunities to receive consultations from terminal stage cancer patients or their family members regarding treatment strategies. For these nurses, however, little data is available for their use during such consultations. To collect data that will serve as reference information for terminal-stage cancer patients and their family members to select treatments, we analyzed the nature of treatment provided to patients with stage IV cancer at the time of their diagnosis, as well as the survival period and other features of these patients, using the in-hospital cancer registry data at the Hakodate Municipal Hospital in the southern part of Hokkaido, one of the Designated Regional Cancer Center, serves advanced medicine and is a central hospital in this region.

3. SUBJECTS and METHODS

3.1 Registration

Core hospitals for linked cancer care are hospitals providing expertise and multidisciplinary treatment for cancer specified by the state pursuant to the Basic Law for Anti-Cancer Measure. Through this system, cancer patients can now receive a high level of treatment within their daily living areas. As of 2012, there were 8,565 hospitals in Japan, and 397 of them were specified as core hospitals for linked cancer care. Cancer registration was started in 2006 and includes 49 standard registration items. Under the in-hospital cancer registration system, detailed information about the development, diagnosis, treatment, and outcome of cancer is collected for patients managed at a given hospital to assess the status of cancer care precisely at each hospital providing cancer care. The data collected under this system has begun to be gathered and processed for analysis by the National Cancer Center, starting with patients diagnosed in 2007. To enable comparisons among nationwide hospitals, in-hospital cancer registration is performed under a nationwide set of common rules, using a standard registration format.

Cancer registration covers patients who have been newly diagnosed as having cancer at a registering hospital or patients who have made their first visit to a registering hospital after having been diagnosed with cancer at another medical facility (including both patients receiving treatment for the first time and patients with recurrent cancer). Patients with cancer who are being followed without active treatment are also covered by this registration system, under a principle of one registration for one tumor. The present study did not include data from patients with recurrent cancer. The 7th version of the UICC TNM disease staging system has been applied to cases of cancer diagnosed in and after 2012.

3.2 Analyses of the cancer cases of registry data

From among patients who had been diagnosed as having stage IV malignancy prior to initial treatment who were sampled from in-hospital data registered as cancer cases with a diagnosis of gastric cancer, colorectal cancer, lung cancer, breast cancer, and primary liver cancer between 2007 and 2013 inclusive at Hakodate Municipal Hospital, Hokkaido, those with the outcome being identified as death were included in this survey. The data were analyzed with respect to overall survival duration, information on initial treatment, histopathologic diagnosis, information on outcome, and others.

In this study, overall survival duration was defined as the period from the date of cancer diagnosis until the date of death.

3.3 Aggregation and Treatment of Segments for the Treatment

At the time of registration, whether or not a given patient had received any of 12 categories of treatment, such as surgical treatment, endoscopic treatment, chemotherapy, endocrine therapy, and radiotherapy, is noted. The present analysis included the 12 aforementioned treatment categories, which were selected on the basis of their being the most commonly used elements of multidisciplinary treatment. In addition to these 12 categories, the analysis included another category of “non-treatment” for

cases in which none of the 12 treatment categories were applicable. Therefore, the analysis was conducted using a total of 13 categories of treatment.

Surgery encompassed cases receiving surgical treatment, endoscopic treatment, or both. Drug therapy encompassed cases receiving at least one round of chemotherapy, immunotherapy, BRM (Biological Response Modifier) therapy (a type of immunotherapy), or endocrine therapy. Other therapy encompassed Transcatheter hepatic Arterial Embolization (TAE), Percutaneous Ethanol Injection therapy (PEIT), thermal therapy, and cauterization therapy such as laser therapy (including radiofrequency ablation). The “non-treatment” category encompassed cases receiving treatment with analgesics or antiemetics that did not affect the tumor, although surgery or radiation provided to alleviate symptoms was regarded as falling under the definition of treatment because it partially targets the tumor itself.

4. RESULTS

4.1 Patients with stage IV cancer

The number of mortality cases were broken down into 5 cancer sites of stage . There were 135 patients with gastric cancer (M/F: 93/42), 131 with colorectal cancer (80/51), 252 with lung cancer (188/64), 24 with breast cancer (0/24), and 19 with primary liver cancer (16/3). Total cases were 561.

The median age was 79.5 years (53-94 years) for the untreated group and 70 years (29-95 years) for the treated group. In terms of number of incidence, 70-79 years is leading (191, M/F: 143/48), followed by 60-69 years (166, M/F: 122/44).

4.2 Comparison of treatment and non-treatment by age group

4.2.1 Overall survival duration

Figure 1 graphically represents the median survival duration according to age group for patients with each of the 5 types of cancer receiving treatment or non-treatment. The survival duration after treatment decreased with patient age, but it was longer after treatment than non-treatment for patients in each age group. For patients aged 90 years and over, the difference in the survival period between the group receiving treatment and the group receiving non-treatment was relatively small.

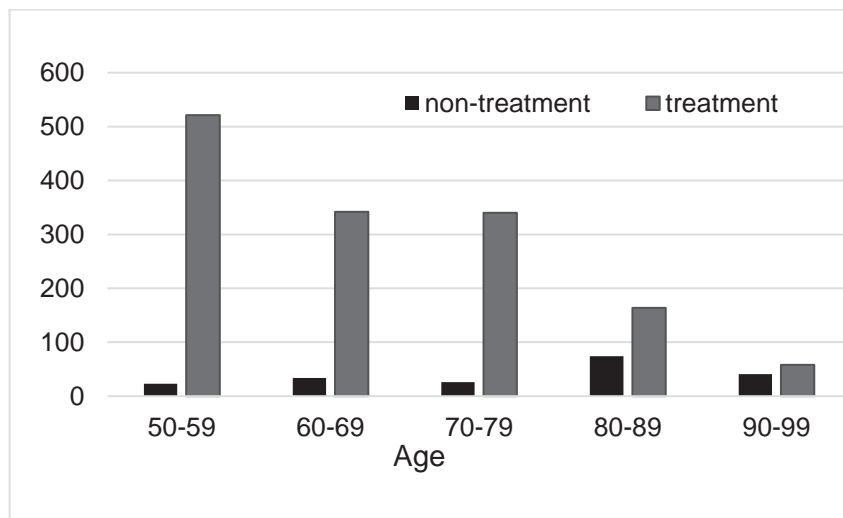


Figure. 1 The median survival duration according to age group for patients with each of the 5 types of cancer receiving treatment or non-treatment. (N=561)

4.2.2 The treatment status

In the treatment status for each age group, at an age of less than 50 years, all the patients with stage IV cancer received some multidisciplinary treatment. At an age of between 50 years and less than 80 years, about 90% of all the patients received treatment. At an age of 80 years and over, about half of the patients received treatment. Thus, an analysis according to age indicated that the treatment status differed among age groups of less than 50 years, between 50 years and less than 80 years, and 80 years and over.

4.3 A statistical analysis

Among of 561 patients who had been diagnosed as having stage IV malignancy prior to initial treatment, the 100 patients were non-treatment and 461 patients were treatment. The median overall survival duration was 40.5 days (range: 5-956 days) for the untreated group, and 335 days (14-2491 days) for the treated group. The median age was 79.5 years (53-94 years) for the untreated group and 70 years (29-95 years) for the treated group.

To determine whether the overall survival duration might be longer for the treated group than for the untreated group even after controlling for age and gender, the pertinent data were evaluated with a multiple regression analysis using the overall survival duration transformed into a logarithmic value as a response variable and the age, gender and whether treated or not as explanatory variables. So as to make the data more normally distributed, the overall survival duration values were log-transformed. After controlling for age and gender, whether the patient was treated or not was $B = 0.718$, $t = 13.610$, and $p < 0.0005$; so that, the overall survival duration was longer for the treated group as compared to the untreated group.

4.4 Comparison of survival duration by multidisciplinary treatment

This Figure 2 represents the survival of patients after each category of multidisciplinary treatment for 4 types of cancer, excluding primary liver cancer because of the small number of patients. For breast cancer, the treatment efficacy of chemotherapy seemed to be more favorable than that of other treatments. In cases of colorectal cancer, some methods of treatment were shown to lack efficacy. As mentioned before, the results of a multivariate analysis indicated that the presence or absence of treatment affected the survival period. Bearing in mind the possibility that the 100 patients who received non-treatment might have included some patients who might have responded if treatment had been applied, we then conducted a detailed analysis of the untreated patients.

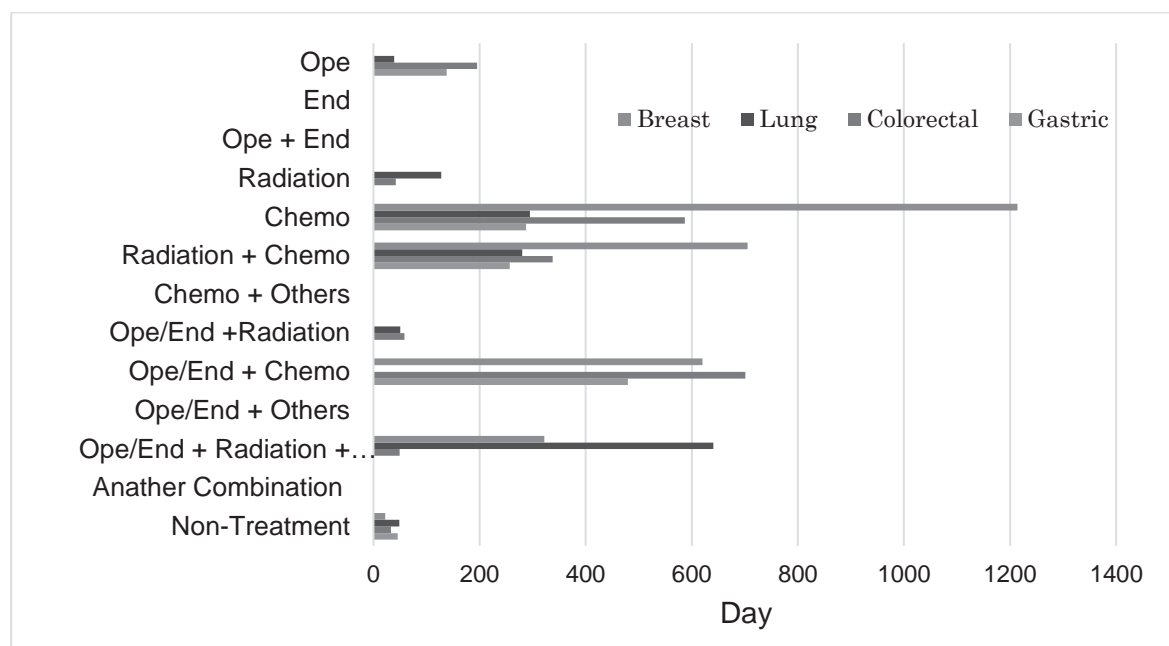


Figure. 2 Multidisciplinary Treatment for Cancer and Median Survival Duration. (N=542)
 Ope: Operation (may include Laparoscopic therapy) End: Endoscopic therapy
 Chemo: Chemotherapy Imm: Immunotherapy Thermo: Thermotherapy

4.5 Analyses of the untreated patients

4.5.1 Divided into three groups of the 100 untreated patients

In this analysis, the 100 untreated patients were divided into three groups: first, a group of 71 patients in whom cancer treatment was not indicated; second, a group of 17 patients who died before treatment because of a sudden change in their general condition during exploration for a suitable treatment method or immediately before the start of treatment and third, a group of 12 patients who could have received treatment according to their medical records (such as a physician's recommendation for chemotherapy, radiotherapy, surgical treatment, and so on). Then, we compared the median survival duration between the 461 patients who received multidisciplinary treatment and the 12 patients who refused to receive treatment despite a physician's recommendation. The presence or absence of a significant difference in this parameter between the two groups was tested using the Mann-Whitney test. The *P* value was 0.121. Thus, there was no significant difference.

The latter 12 patients included some cases with relatively long-term survival periods after the diagnosis of Stage IV. Among these patients, those who survived for about one year or more were then analyzed.

4.5.2 The long-term survived patients with having Stage IV malignancy.

There were 4 patients who survived for 11 months or more after diagnosis. These 3 patients were relatively young, and the extent of primary tumor spreading was small in these cases. The sites of metastasis in these cases were the paraaortic lymph node or the liver, with the tumor size of the metastatic liver cancer being less than 5 cm in all the cases.

Table 1. Among 12 patients, those who survived for about one year or more were analyzed.

Case No	Sex	Age	Survival Duration	ICD10 Code	Sites	Stage IV Prior to Initial Treatment			Metastatic Sites	Underlying Cause of Death	Decision	
											Patients	Family
1	M	85	329 days (11M)	C187	Sigmoid Colon	cT2	cN1	cM1	Paraaortic lymph nodes	Cancer	●	
2	M	66	473 days (16M)	C163	Pyloric Zone	cT3	cN2	cM1	Paraaortic lymph nodes Liver (S2,S4,S5,S6, S7, 18mm~27mm)	Unknown	●	
3	F	58	645 days (21.5M)	C163	Pyloric Zone	cT2	cN3	cM1	Paraaortic lymph nodes	Cancer		●
4	F	63	956 days (32M)	C343	Lung Inferior Lobe	cT2	cN2	cM1	Mediastinal Lymph nodes Liver (Multifocal, 15mm~45mm)	Unknown		●

5. DISCUSSION

As the patient age increased, the difference in the survival periods between the treated group and the untreated group became smaller. This suggests that the selection of treatments for elderly patients should respect the wishes of individual patients.

If only the results of the Mann-Whitney test are taken into account, we can conclude that the shorter survival duration was not necessarily attributable to the refusal of treatment by the patients or their family members, and that the decision to forgo treatment by such patients or their family members might have been reasonable. The treated group included some patients with a short survival period. The reason for this might have been that the selected treatment method did not match the conditions of individual cases, resulting in a lack of response and a shorter than anticipated survival period. In any event, the number of cases allocated to the treatment refusal group was not sufficiently large for analysis. Further study involving a larger number of cases is needed.

Four patients survived for relatively long periods despite receiving no treatment. Three of them were young. The extent of the primary tumor spread was relatively small, enabling passage disorders to be

avoided and allowing the patient to remain well-nourished. The site of metastasis was the paraaortic lymph nodes, which had a minimal adverse influence on the whole body. In cases with multiple liver metastases, survival can be affected by the site, number, and size of metastasis. In the 2 patients who survived for long periods, the metastasis was not of the worst type and seemed to be a type that was unlikely to disturb the QOL. These are probably the reasons why these 4 patients were able to survive for relatively long periods despite not receiving any treatment.

Among the patients who did not receive treatment, there appeared to be some cases in which an extension of the survival period could have been achieved with the application of multidisciplinary treatment. When the background characteristics of the untreated patients were investigated using their medical records, we discovered instances where the physician's notes reported that the patient had refused treatment and ceased to visit the hospital or that the diagnosis had only been disclosed to the patient's family member. This suggests a need for highly skilled and knowledgeable psychological support during the disclosure of a diagnosis of cancer to the patient or the patient's family members.

6. CONCLUSION

Aggressive multidisciplinary treatment including surgical treatment is effective in the cases of five major malignancies: gastric, colorectal, lung, breast, and primary liver cancer. These results can serve as useful reference information for terminal-stage cancer patients and their family members to select treatments.

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Abstract only

Fifty Shades of HIM: Quantifying and Qualifying the Workforce in Australia

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In October 2013 Health Workforce Australia (HWA) released the Health Information Workforce Report [1]. The report identified that the health information workforce (HIW) consisted of a number of different occupations with little consensus on both its boundaries and clear definitions for some of

these occupations. This workforce includes Health Information Managers, Clinical Coders, Data Analysts, Costing Experts, and health information technology specialists. The recommendations of the report included the need to improve the data collection processes for this workforce. The future HIW configuration needs to be clearly described and identified, and this will only be achieved when sufficient, robust qualitative and quantitative research has been conducted on the existing workforce. The Australian Bureau of Statistics (ABS) currently only monitors the Health Information Management and Clinical Coder occupations through the Australian and New Zealand Standard Classification of Occupations (ANZSCO) codes. Yet both the accuracy and sufficiency of this data is questioned when compared to the data collected through workforce specific studies. Data reported in the Australian Institute of Health & Welfare (AIHW) Coding workforce shortfall [2] study suggest that the ABS figure may not be a true reflection of this workforce, but is lacking in explanation accounting for the magnitude of discrepancy. For example, ABS data reports the number of Health Information Managers in Australia was 1255 in 2006 and 1473 in 2011, yet the AIHW reports the number as 630 in 2009, with the number of university graduates dropping each year. Furthermore, there is very limited research about the methodology undertaken to monitor this workforce. The recent Health Information Workforce Summit gathered a broad cross-section of the HIW and conducted focus group initiatives exploring our current workforce configuration and its future. This presentation will convey the results of a focus group examining the monitoring of this workforce. The recommendations on both quantifying and qualifying the health information workforce in Australia now and into the future will be discussed. Findings from this focus group will have both international applications and implications. Reference: [1] Health Workforce Australia (2013). Health Information Workforce Report October 2013. [2] Australian Institute of Health and Welfare 2010. The coding workforce shortfall. Cat. no. HWL 46. Canberra: AIHW.

A Trial of Development and Measurement of Quality Indicators for Childhood Cancer Treatment

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ABSTRACT

This is to report that the Quality Indicator about childhood cancer treatment has been calculated and set currently as a trial study for the first time in Japan. To assure the neutrality and accuracy of this set of QI, the data collection and calculation was done by a health information manager and not by a clinician. Throughout this experience of data collection and calculation, I realized how important it is that accurate and appropriate medical records are made. The HIM's contribution to medical record writings and data management is inevitable for the improvement of medical care quality.

1. BACKGROUND AND OBJECTIVES

Every year, about 2000—2500 children are diagnosed with childhood cancer in Japan. Until the 1970's childhood cancer was an incurable disease, and in the middle of the 1980's about half of the cancer cases became treatable and at present the survival rate has changed from 70% to almost 80%. The same time it is a fact that every year nearly 500 children have died from childhood cancer in Japan. The Osaka City General Hospital, I work for, is one of the 15 core hospitals in childhood cancer. We are on a mission to develop and improve the medical care quality of childhood cancer patients, along with 14 other core hospitals.

To improve medical care quality, quality indicator is a powerful tool. Quality indicators are defined as measurable elements to assess the quality of care provided. Quality Indicator consists of 3 features, "Structure", "Process" and "Outcome", according to the study of Dr. Avedis Donabedian. The facts are more and more QIs are being developed and measured among hospitals these days. On the contrary, not one set of QIs has been reportedly developed nor measured for childhood cancer in Japan.

2. METHODS

In reference to childhood cancer QIs of the Pediatric Oncology Group of Ontario (POGO), Dr. Fujisaki and others of pediatric hematology and oncology, Osaka City General Hospital, have defined and set 34 sets of QIs and measures as a trial study. The measuring data was picked out and collected from the following.

- the medical record
- the inpatient summary
- the operation record
- the data extracted from hospital databases
- the registered cancer record

- the department of pediatric archive

To assure the neutrality and accuracy of QI, the data collection and calculations were done by a health information manager and not by a clinician.

3. RESULTS

	Quality Indicator and Definitions	as a trial result Osaka City General Hospital Childhood Cancer patients diagnosed or in admission in 2014
1-10	Sufficient multidisciplinary staff	-
11	Chemotherapy regimen review: Number of regimen examined by the review committee	80.2%
12	First therapeutic intervention wait time	Median 5days
13	Time taken for the production of pathology report	Median 3days
14	Quantity of blood transfusion to the patients with acute lymphoblastic leukemia (ALL) at the stage of first induction therapy	Red blood cell: median 37ml/kg Platelet :431ml/kg
15	Central venous line infection rate The number of confirmed central venous line derived primary blood stream infection cases amongst pediatric oncology patients, per 1000 central venous line days.	5.8/1000ays
16	Intensive care unit (ICU) admissions due to Febrile Neutropenia	1.1%
17	Treatment-related mortality: the proportion of patients with acute lymphoblastic leukemia (ALL) who die in the first remission while in treatment, excluding deaths during transplantation or due to non-cancer related causes (such as accidents or suicide).	0%
18	Bleeding amount during an abdominal tumor surgery per 1kg weight	median 14.2ml/kg
19	Surgical Site Infection	-
20	Therapeutic intervention wait time since surgery date	abdominal tumor: median 7days cerebral tumor: median 13days
21	Surgery-related mortality within 30 days The proportion of patients who die within 30 days after surgery, excluding deaths during transplantation or due to non-cancer related causes (such as accidents or suicide).	0%
22	Use of Conformal or Intensity Modulated Radiation Therapy: The proportion of all localized primary RT that is delivered by conformal or Intensity Modulated RT.	100%
23	Five-year overall survival	77.9%

24	Five-year event-free survival	74.9%
25	Number of chemotherapy treatments at outpatient offices	732
26	Number of days staying at hospital within one year since diagnosed date of each patient	average ALL: 158days Neuroblastoma: 157days
27	Number of long term follow up outpatients	100%
28	Number of palliative care team's intervention for inpatients amongst all childhood cancer inpatients	38.4%
29	Sedation at the time of the bone marrow puncture or aspiration	100%
30	Attendance at the in-hospital classroom	69.4%
31	Holding a conference about returning to domicile schools before discharge	100%
32	The total number of days using lodging facilities for patient's family	987days
33	Total admission days of adolescent cancer patients amongst all childhood cancer patients	15.4%
34	The days staying at home within 30 days before death	Average 9.2days

These are the results that Dr. Fujisaki and others have defined, set, and measured 34 items of QI in the first trial study in Japan. Hereafter, please let me call this set of QIs for childhood cancer, developed by Dr. Fujisaki and others as QIF.

4. OBSERVATION

The result of indicators as #17: the treatment-related mortality or #21: the surgery-related mortality were both 0%. And #22 Use of Conformal or Intensity Modulated Radiation Therapy were 100%. These results were as expected and satisfactory ones. On the other hand, #11 and #15 had room for improvement as follows.

#11 Proportion of the number of chemotherapy regimen examined by the in-hospital review committee was about 80%.

#15 Rate of central venous line infection: The result was 5.8/1,000 device days as far as during the 2014.

The measuring work of QIF has helped us become aware of the following points.

There were some difficulties we encountered in collecting data. For example #16 Intensive care unit admissions due to febrile neutropenia. The result itself was not bad as 1.1%, the number of numerator was 1, and the number of denominator was 92. There was a need to collect information about febrile neutropenia from medical records, but sometimes, we had to judge whether or not the patient showed symptoms of febrile neutropenia by referring to their fever data and the blood tests, because some doctors had not recorded exactly on their patients' medical records.

Throughout the experiences we had faced, we realized again, how important it is that accurate and appropriate medical records are made.

5. CONCLUSIONS

QIF is the first set of QIs developed and measured for Childhood Cancer for the first time in Japan.

- QIF is expected to be able to be applied to other hospitals too.
- QIF is expected to contribute to the better quality of Childhood Cancer Medical care.
- QIF was assisted by an HIM, like me in this case, in its measuring work to assure the neutrality and accuracy of the data collection and calculation.
- Finally, I am pleased to say, an HIM's contribution is inevitable for the improvement of medical care quality

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Abstract only

Privacy Perspective Across the 49th Parallel: Complexity not Simplicity, Unfortunately

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Managing the privacy of patient information is of highest priority in most countries, but it's challenging due to laws, regulations, standards, and cultural beliefs. Health Information Management (HIM) professionals play a key role in interpreting and executing privacy and release of information requirements in many countries around the globe, with a culture of being the patient advocate frequently embraced. Each Canadian province has specific privacy legislation, but all are common in scope, as based on the Canadian federal PIPEDA legislation (Personal Information and Protection of Electronic Documents Act) and 10 guiding principles of the Canadian Standards Association's Model Code for the Protection of Personal Information. Canadian HIM professionals can also base their privacy stewardship and patient advocacy role on the Circle of Care approach to information sharing that was developed by Dr. Anne Kevoukian, Information and Privacy Commissioner, Province of Ontario. The term Circle of Care it is a term commonly used to describe the ability of certain health information custodians to assume an individual's implied consent to collect, use or disclose personal health information for the purpose of providing health care in circumstances defined in PHIPA. The United States (US) has the privacy regulations that are part of the Health Insurance Portability and Accountability Act (HIPAA) of 1996. These regulations instantiate Personally Identifiable Health Information (PHI) and the need to have explicit authorization to share PHI. However, HIPAA includes provisions that allow automatic release of information for treatment, payment, and operations (TPO). Added to the US federal regulations is a patchwork of state laws and regulations that can be significantly stricter, and state regulations and laws trump federal regulations, just as in Canadian provinces. The FIPPs as originally

articulated by the US Department of HEW, and later used by the European Union, Office of Economic Country Development and many countries around the world, are a framework that can underpin privacy laws around the globe. They embrace principles for balancing the need for privacy with others interests. Health information professionals in both countries, as well as the rest of the globe, could execute their role as guardians of health information much easier if all countries embraced the Fair Information Practice Principles (FIPPs).

Intensification of Mortality Registration System and Cause of Death in Twelve Districts/Cities in Indonesia, Year 2012

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ABSTRACT

Since 2010 The Ministry of Health of the Republic of Indonesia has intensified its efforts in mortality registry system and cause of death to be recorded in the health information system (HIS) in hospital or health center. This is done based on a joint regulation of the Minister of Home Affairs and the Minister of Health Number 162/Menkes/PB/I/2010 concerning sharing mortality data from the Population Administration to health personnel in health centers and hospitals. Then, the cause of death data was diagnosed according to ICD-10 and recorded on Medical Certification of Cause of Death (MCCD) by health personnel. The results of the evaluation in 12 districts/cities in Indonesia showed that the health information system is still weak in some aspects such as data quality, infrastructure, and skills to decide the cause of death, with a value of 36.8 on a scale of 100. Reporting cause of death in 12 districts/cities on 2012 showed that in the age group 35 years and above most was Ischemic heart diseases, Stroke, Diabetes, and Lung TB, while at the age of 15-34 years is a Transport accident. Intensification of this system should be a priority in the Directorate General of Health Services and the Directorate General of Public Health to reach the goal that all hospitals and health centers have qualified cause of death information system that runs well.

1. INTRODUCTION

Vital statistics is the core of the health information system of a country, in which policy makers rely on statistical data that is sound and timely. Thus, the development of civil registration systems and vital statistics (CRVS) are very important ¹⁾. In Indonesia, the Ministry of Home Affairs (MOHA) is the leading sector of development CRVS (Act No.23 of 2006) and the Ministry of Health to be a part in the strengthening of the recording of deaths and causes of death ²⁾. Act No. 24 of 2013 emphasize that every death must be reported by the head of the neighborhood to the head agency administration of population and civil registration ³⁾. The need for the cause of death data as a health indicator, in accordance with the regulatory foundation together MOHA and the Ministry of Health, health workers in

health centers and hospitals through Registrar institution may obtain details of mortality events in the community ⁴⁾.

Indonesian Mortality Registration System Strengthening Project (IMRSSP) is an operational research started on 2006 in 3 districts/cities to report and record mortality and cause of death ⁵⁾. To follow up every death incidence which are obtained from the Population Registrar, the Mortality Registration System and Causes of Death enhancement has been implemented since 2010-2012 ^{6),7)}. Now, we are able to find out the cause of death of every death incidence occurred whether in hospital or residence. Before those activities carried out, we should know clearly and comprehensively the strengths and weaknesses of their Civil Registration and Vital Statistics (CRVS) system and generate the evidence base to take corrective action.

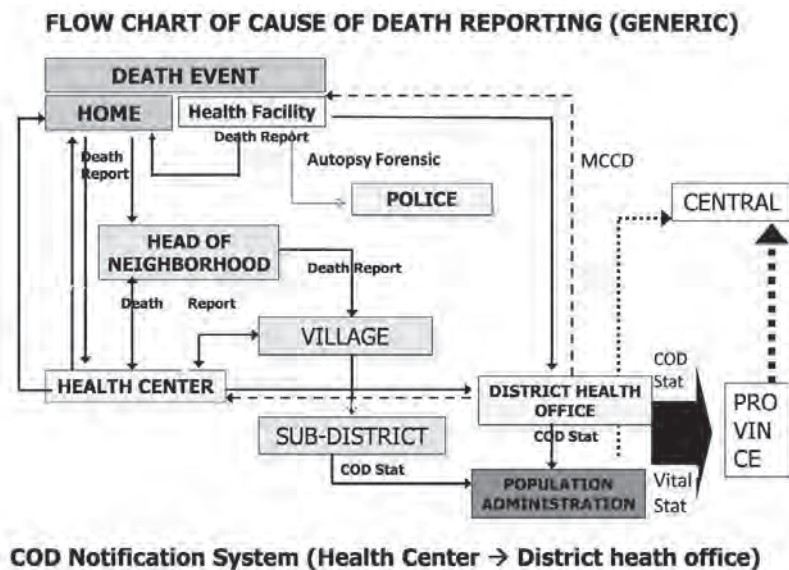
Cause of death registration system may be optimized and the mortality rate and cause-specific mortality rate data can be calculated through strengthening the death registration system and implementing good coordination between the Ministry of Internal Affairs and the Ministry of Health. Those information can be used for monitoring and evaluating improvement to achieve the target of the National Long-Term Development Plan (RPJPN), Medium Term Development Plan (RPJM), as well as the Millennium Development Goals (MDG's) ⁸⁾.

2. METHODOLOGY

The research designed to reinforce registration system of deaths and causes of death (COD) on 2012 was operational research, carried out in 12 districts/cities. The research are based on the existing system of the civil registration of births and deaths.

Round table discussion method (RTD) is a rapid assessment of the civil registration activities and vital statistic system, it is measure many aspects related to health information systems namely legal framework, registration infrastructure and resources, vital statistic utilization and organization, ICD application in hospital, COD data quality, data access and coder proficiency to determine cause of death ⁹⁾. The participant of RTD were a team of Central Bureau of Statistics, researchers of Mortality Registration and Cause of Death, executive team of directorate general of health services Ministry of Health and team of Ministry of Home Affairs.

The Cause of death reporting system design refers to the Generic models (Picture 1). For residents who died at home, a health center officer will interview the family of the deceased about the history of illness before death. The interview will be using verbal autopsy questionnaire¹⁰⁾ as a tool for health center doctors to look for signs and symptoms of illness and then concluded the cause of death¹¹⁾. As for residents who died in the hospital, the doctor who's take care of the patient must determine the cause of death based on all physical examination and supplementary result of the patient's medical record. The cause of death is determined based on the provisions of ICD-10 (WHO) with multiple cause of death concept, in which the underlying cause of death (UCOD) is the most important reports on mortality statistics ¹²⁾.



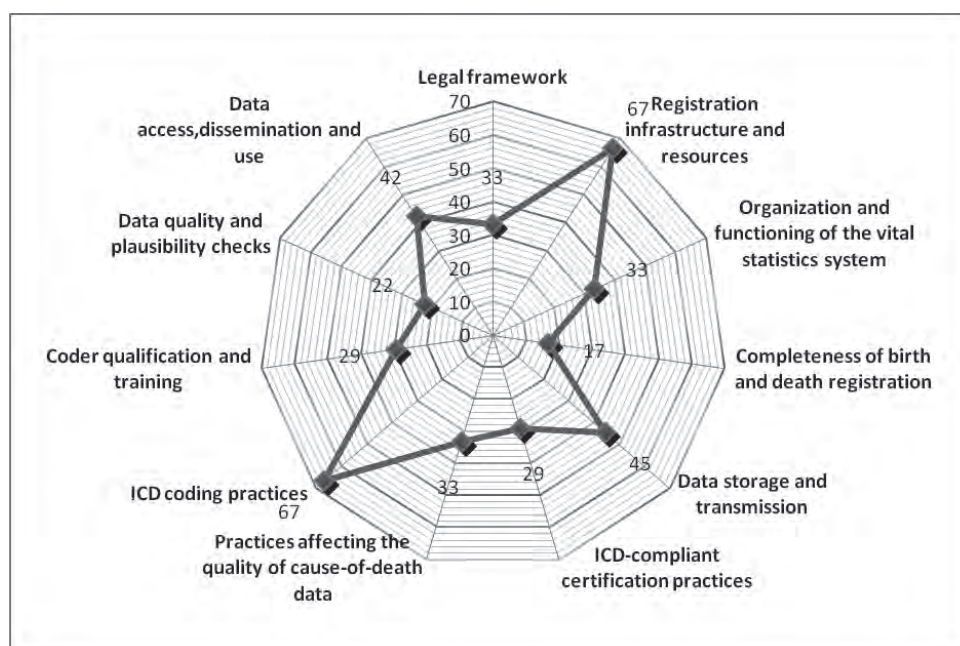
Picture 1. Death Cases and Cause of Death Report Diagram that Occurred in Health Facilities and Residence (Generic) ⁵⁾

Doctors in hospitals and health centers are required to complete Certificate of Death on the first page and Medical Certification of Cause of Death (MCCD)¹³⁾ at the bottom on the second page regarding the cause of death based on the diagnosis of the cause of death derived from VA questionnaire and doctor's note in the medical record. The medical records officer will determine the Final of UCOD along with the code of diseases according to ICD-10. The cause of death is categorized according to volume 1 Tabular List of ICD-10¹⁴⁾. The first page of the Death Certificate is given to the family of the deceased for funeral/cremation purposes, while the second page and so on which are confidential will be kept as a copy in the hospital/clinic to create cause of death statistical reports.

3. RESULT

3.1 Rapid Assessment of CRVS in Indonesia

Twenty-five questions are used to measure eleven areas related to the development of civil registration systems and vital statistics, including the registration of death, ICD training and certification training responsibilities of cause of death in Indonesia⁹⁾. The assessment outcome showed that the CRVS system is still weak on lots of aspects such as the legal framework for CRVS, vital statistics organization and function, a comprehensive births and deaths registration, adherence to ICD certification practices, practices affecting COD data quality, coders, training qualifications and the quality of the data itself. The average marks of assessment result is 36.8 out of 100.



Picture 2. Rapid Assessment Result of CRVS in Indonesia

3.2 Mortality and Causes of Death Reports in 12 districts/cities^{6,7)}

The cause of death and mortality reporting system development in 12 districts/cities concentrate on implementation and continuous report to obtain significant data for the district / city needs. The total data collected is 26,353 cases of death. Fifty nine percent death incidents occurred at home and 41% in hospitals. The population of the survey area is 7,225,719. A crude mortality rate in 12 districts/cities is 3.7 per 1000 population. This number is under-reporting compared to 7 per 1000 population came from the national death rate (Central Bureau of Statistics). There are 3 districts/cities which did not participate in this registration system because there is no commitment from the local government.

Death distribution in the age group below 12 months showed that the highest mortality proportion came from the age group of 0-6-day compare to the age group of 7-28 days (late-neonatal death) and the age group of 1-11 months. The death proportion in the age group of child (1-14 years) is 1.6%, while the death proportion in the age group 15-34 years is 7% and increase in older age groups. The death proportion in the age group 65 years and over was the highest with a rate of 43.7%.

According to the cause of death, the highest perinatal mortality caused by stillbirth/Intra Uterine Fetal Death (IUFD) 27% followed by low birth weight (LBW) and premature birth and asphyxia (21% and 17%). The highest mortality in infants aged over 7 days to 11 months and children under five are because pneumonia.

The death proportion of males aged 15-34 years was dominated by traffic accidents (23%). Tuberculosis is the leading cause of death in female and on the second place in male right before traffic accident (12% and 8%). In the age group 35-44 years, the cause of death is because of degenerative diseases, such as Ischaemic heart diseases (IHD), cardiovascular, stroke and diabetes mellitus (DM) are at the top five. The second place of cause of death proportion in male are pulmonary TB (8.2%). The leading cause of death in female is mainly because of cardiovascular diseases is 17.8% and fol-

lowed by pulmonary TB (6%).

The highest cause of death proportion age group 45-54 years are caused by degenerative diseases known as cerebrovascular diseases (18.2% for male, 23.9% for female). On the second and third place, the leading cause of death in men are Diabetes mellitus (13.6%) and Ischemic heart disease (8.2%). The second and third place of the leading causes of death in female is Ca cervix and Ischemic heart disease, 10.4% respectively. The causes of death proportion age group 55-64 years are caused by degenerative diseases known as cerebrovascular diseases (20.6%), IHD (10.4%) and Diabetes mellitus (9.1%). While in the age group 65 years and above, leading causes of death is due to Cerebrovascular 22.4%, IHD 8.9% and other cardiovascular diseases 7.7%.

4. DISCUSSION

The assessment outcome showed that the CRVS system is still weak on some aspects such as the legal framework, vital statistics utilization and organization. Based on Act No. 24 of 2013 registration of births and deaths are expected to be more complete, comprehensive and have better quality in recording and reporting of birth and death cases.

The proportion of deaths by age have the form of inverted letter J. Perinatal death 0-6 days including stillbirth is very high (4.6 percent) compared with Post-neonatal death 7-28 days (0.8 percent). Most of the perinatal death are stillbirth. This was due to expectant mothers health condition which affects her fetus. This problematic factor is difficult to handle because it is related to economic condition of each family. The highest perinatal cause of death proportion is stillbirth. However, compared to the conditions 20 years ago it has been decreased ¹⁵⁾. Likewise with the infant group, the cause of death still has the same pattern as 20 years ago, namely pneumonia, diarrhea and encephalitis ¹⁶⁾.

Deaths in young people aged 15-34 years old and 35-44 years old are increasing compared to child death (5-14 years old). This fact is associated to many deaths in young people aged 15-34 years old caused by traffic accidents. Respiratory tuberculosis is on the second place of age group 15-34 years old. The highest cause of death on age group 35-44 years old were cardiovascular and ischemic heart disease, the arrival of those two degenerative disease on relatively young age is quite unexpected and need to be anticipated appropriately and quickly. In male, the cause of death due to TB is on the second place after transport accident, while in women it is on the first place.

The cause of death in middle age (45-54 years) has clearly caused by Non-Communicable Diseases (NCD) namely cardiovascular disease and suffered by both men and women. For the age group 55-64, the highest cause of death was cerebrovascular diseases (21 percent), IHD (10%) and DM (9%). As well as with the age group 65 years and over, the cause of death due to cardiovascular diseases was on the first place. Since 1992 to 2007 both rural and urban areas, cause of death due to circulatory system and endocrine diseases in the Elderly group is increasing ¹⁷⁾. The results of mortality registration and cause of death in 15 districts/cities from 2010-2012 still showed delayed epidemiological transition and are predicted to be that way in the future. The proportion of deaths due to communicable disease (CD) is still descending while the proportion of deaths from NCD increasing.

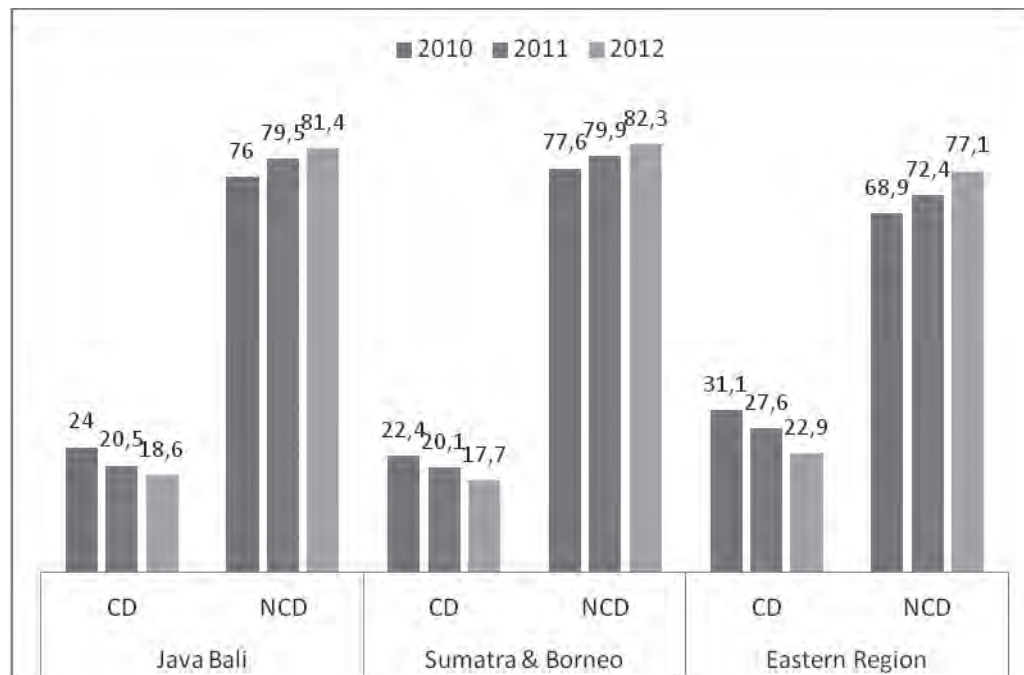


Figure2. Trend of Communicable Diseases and Non-Communicable Diseases in Java Bali, Sumatra & Borneo, Eastern Part Region of Indonesia in year 2010, 2011, 2012

The proportion of deaths due to CD is higher in eastern Indonesia compare to Sumatra, Java, Bali and Borneo. While the proportion of deaths due to NCD in eastern Indonesia is lower than in Sumatra, Java and Bali. The proportion of CDs and NCDs in Java and Bali are almost the same as in Sumatra (Figure 2). The burden of CD and NCDs has threatened the public health conditions seriously especially for productive young age group (35-44 years). This situation will add an additional load to the country since the ones that died were young productive age. Their family will no longer have income. The level of family welfare will decrease and many families will be poor and will suffer from the disease.

Developed countries have overcome the burden of infectious disease but in developing countries, they are still finding a solution for it. However, the emergence of NCD diseases after 1945 has been resolved. Cause of death analysis data on 1985-2007 in Indonesia showed that the delayed epidemiological transition has occurred with triple health burden¹⁸⁾. Transition in Indonesia has taken place on 2010-2012 and will be continue in the coming years. The accuracy and completeness death and cause of death registration will form the basis of calculating the costs of national health care. Act No. 24 of 2013 is expected to be the basis for improving coordination between the registrar and the health care team to record the cause of death of every death incident that occurred at home or in the hospital.

5. CONCLUSION AND SUGGESTION

The underlying cause of death in the perinatal period is LBW and asphyxia while deaths in infants 7 days-11 months are due to pneumonia and diarrhea. The cause of death in age group 15-34 are traffic accidents and pulmonary tuberculosis. In the age group 35-44, many deaths are caused by cardiovascular, IHD, traffic accident and pulmonary tuberculosis. The highest causes of death in the age

group 45-54 years, 55-64 years and 65 years are due to non-communicable diseases.

Indonesia is still facing communicable disease and non communicable disease with delayed epidemiological transition model. The government has to support health financing to manage CDs and NCDs in the community. Therefore, an accurate morbidity and cause of death data is necessary to calculate the government health costs correctly. The coordination between civil registration officers and the health care team should also be more close and cohesive; thereby we could obtain evidence based data of total deaths and causes of death and calculate national health account accurately.

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Title of Presentation: Is it Possible to Improve the Accuracy of Mortality Statistics with Audit of Death Certificates by a Physician Qualified as a Health Information Manager?
For Improvement Of The Mortality Statistics With Audit Of Death Certificates By Physician Qualified As HIM: Why Is “Pneumonia” A Major Cause Of Death In Japan?

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ABSTRACT

[Objective] It is a problem that pneumonia is the third cause of death in Japan, which is on a level with lower-middle-income countries. In order to clarify the cause of death and elucidate the problem of the death certificates in our institute, we audit all death certificates by not only health information managers (HIM) but a physician qualified as HIM.

[Materials and Methods] One-hundred sixty cases of death certificates have been audited by HIMs and a physician qualified as HIM from March 2015 through February 2016. The result was presented at physicians' meeting every month and fed back to the doctors who produced the death certificate.

[Results] Inappropriate rate of certificates was 55.1 % at the first half of the year. The rate of inadequacy had gradually decreased. The rate improved to 48.8 % at the second half of the year (n.s.).

[Discussion] Our hospital is almost specialized in brain disease. “Heart failure” and “pneumonia” were written as a direct cause of death without underlying cause of death in many documents. After feedback to the physicians with detailed explanation from another physician qualified as HIM, almost all doctors have changed the manner of certificates.

[Conclusion] It is very useful to audit death certificates by HIMs with a physician qualified as HIM in order to improve the accuracy of cause of death. It is important to enlighten physicians through various

medical societies.

Key words; underlying cause of death, death certificate, audit

1. Introduction

“Pneumonia” has increased as a cause of death since around 1980 in Japan (Fig.1)¹⁾. Finally, “pneumonia” has become the 3rd rank ahead of cerebrovascular disease since 2011, which is on a level with lower-middle- income countries²⁾. While on the other hand, age-standardized death rate in Japan is lower than other high-income countries. This indicates Japanese medical level is no less than that of other high-income countries. This irreconcilable difference has to be clarified.

2. Objective

We assumed that the reason why “pneumonia” became major cause of death in Japan was not poor public health or medical level but death certificates. In order to elucidate the problem of the death certificates, we audited all death certificates in our institute by not only health information managers (HIM) but a physician qualified as HIM.

3. Materials and Methods

All of the death certificates were audited by HIMs and a physician qualified as HIM from March 2015 through February 2016. The result was presented at physicians’ meeting every month and fed back to the doctors who produced the death certificate. We compared inappropriate rate between former half-year and latter.

4. Results

There were 160 cases of death certificates from March 2015 through February 2016. Seventy-eight cases were in the former half-year and 82 in the latter. Of 160 cases, 83 (51.9%) were inappropriate. In the former half-year, inappropriate death certificates were 43/78 (55.1 %). The rate of inappropriate documents decreased to 40/82 (48.8%) in the latter half of the year (n.s.).

Of 160 all cases, there were 47case (60.4%) related with pneumonia in the course of hospitalization. Twenty-one cases were in the former half-year and 26 in the latter. In the former half-year, inappropriate death certificates were 14/21 (66.7 %). The rate of inappropriate documents decreased to 15/826 (57.7%) in the latter half of the year (n.s.). Inappropriate rate of death certificates has gradually decreased.

“Heart failure” and “pneumonia” were written as a direct cause of death without underlying cause of death in many documents. Most of the reason defined as “inappropriate” was absence of the underlying cause such as stroke, ALS, dementia, trauma including femoral bone fracture, etc.

5. Discussion

After feedback to the physicians with detailed explanation by another physician qualified as HIM,

almost all doctors have changed the manner of certificates. Audit is very useful to improve the accuracy of death certificates.

Inappropriate death certificates should subsist not only in Japan but in other high-income countries. Why is “pneumonia” major cause of death in Japan? This reason should not come from only inappropriate death certificates. What is the difference?

In Japan, “pneumonia” has increased as the cause of death since around 1980 (Fig.1)¹⁾. Around the same time, hospital death has become superior to home death at 1977 in Japan (Fig.2)³⁾. At 2014, the rate of hospital death was dominantly 81.0% and home death was only 13.9%. Both “hospital death” and “pneumonia” as a cause of death have become major in Japan since around 1980.

In selected European nations such as Netherlands, Sweden, and France, home and care house are major place of death^{4,5)}. In these nations, there are laws for end-of life care. People pay high regard to individual's will. Deathwatch physicians are able to know patients' will and status for a long period before his/her death. Whereas “dementia” can be a cause of death, which is rare cause of death in Japan.

While on the other hand in Japan, there is no law for end-of-life care. People have very late recognition of terminal phase of patients. Ambulances are usually called and patients are hospitalized at the terminal stage, even for patients desiring home death. At hospitals, aggressive medical treatment tends to be given to dying people. And then, hospital death increases. If there are laws for end-of-life care, people do not need fear to be guilty just because patients died without aggressive medical treatment. Consequently, the number of hospitalization will decrease, which may also reduce health care cost in Japan.

Almost all death certificates are made up by physicians at acute hospital in Japan without knowing sufficient patients' history, i.e., cause of death tends to acute diseases without appropriate underlying cause of death. Physicians should investigate and write down underlying cause of death in death certificates. If most physicians produce underlying cause of death appropriately, “pneumonia” may be demoted at cause of death in Japan. Enlightenment of physicians through various medical societies may improve the accuracy of death statistics.

6. Conclusions

“Pneumonia” can degrade as a cause of death by describing appropriate underlying cause of death in Japan. Audit of death certificates and feedback to physicians are very useful. HIMs with physicians qualified as HIM are able to perform more precise audit. Enlightenment activities to physicians through various medical societies are very important for accurate mortality statistics.

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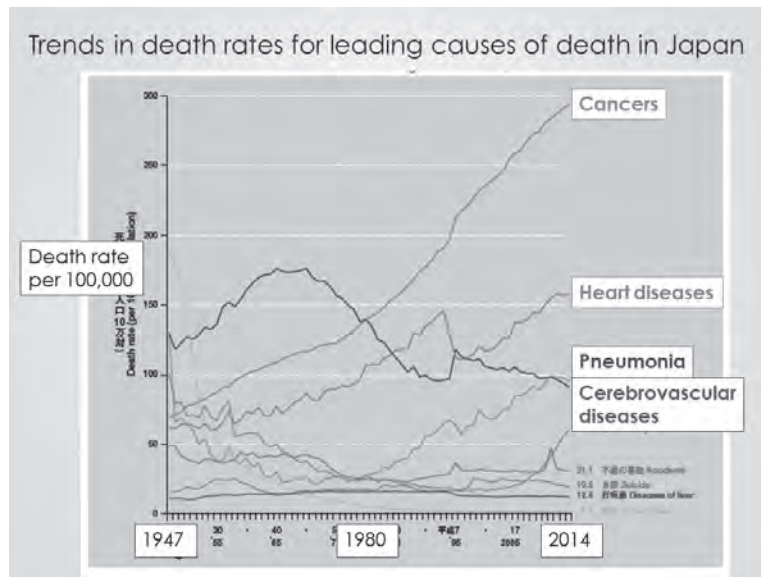


Fig.1. Trends in death rates for leading causes of death in Japan (modified Vital statistics, Ministry of Health, Labour and Welfare, Japan, 2015)

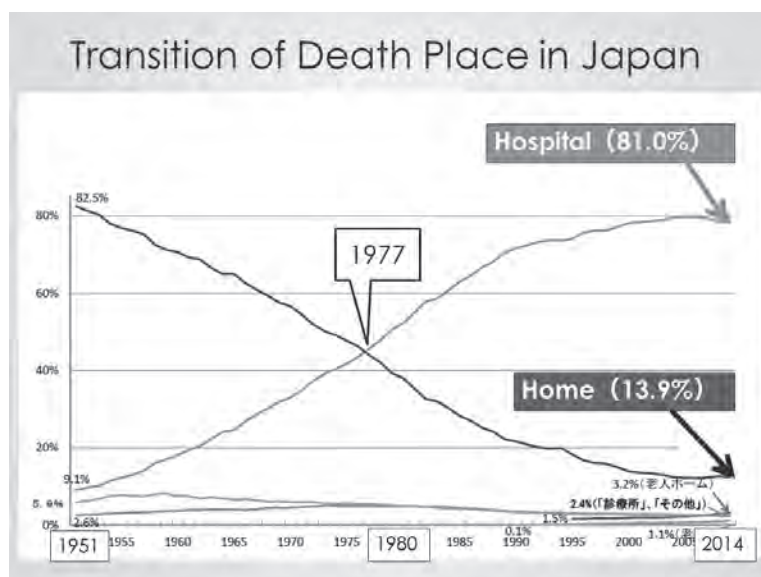


Fig. 2. Transition of death place in Japan (modified Vital statistics, Ministry of Health, Labour and Welfare, Japan, 2015)

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

The Role of IT Governance to Guide the National Electronic Health Records Program

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Electronic health records are national scale health information systems that involve many stakeholders and require many components. This makes EHRs complex, difficult to implement, and make them prone to failure. IT Governance is an emerging discipline that promote the use of industry-tested frameworks to organize the many different components of a complex IT system such as an EHR. The presenters will discuss the experience of the Government of the Philippines of COBIT5, a business framework for the governance and management of enterprise information technology, and how such a decision has helped in moving the national EHR program forward.

Coding Forum for Quality Improvement

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Introduction

Clalit Health Services (CHS) sees great importance in uniformity and accuracy of patient diagnoses and operations coding in order to obtain precise information regarding comparison of medical treatment between the CHS and Ministry of Health (MOH) hospitals, and, indeed on an international level, and to this end the CHS has created a national coding discussion forum to reach uniform coding decisions.

Clalit Health Services is a government-regulated national health service provider comprising fourteen hospitals (nine general hospitals, two psychiatric hospitals, two geriatric hospitals and one rehabilitation hospital), 1,400 community clinics, 420 pharmacies, 39 pediatric care centers and 38 women's clinics. It is the health provider for four million citizens – approximately 52% of Israel's population. Each hospital has its own coding team, providing codes for each in-patient diagnosis and operation.

Medical information coding serves as a uniform global language for medical recording, and is carried out in accordance with the International Classifications of Diseases, Procedures and Operations (the ICD). Israel still uses the code language ICD-9; however, the Ministry of Health (MOH) has decided

to adopt the ICD-10, and national health service providers are at the start of implementation. Coding is the “gate-keeper” in every hospital, and is essential ensure the quality of medical records. It is also a resource for correct billing, research and statistics, teaching and legal requirements. Coding accuracy and uniformity are essential in order to provide this information. In addition to these local requirements, uniform coding allows for comparisons to be made between hospitals with regards to medical studies and allocation of resources.



Methods

Aims: To increase coders' knowledge; to facilitate uniformity, accuracy and precise coding guidelines for quality improvement; and to reduce inaccurate coding.[1,2]

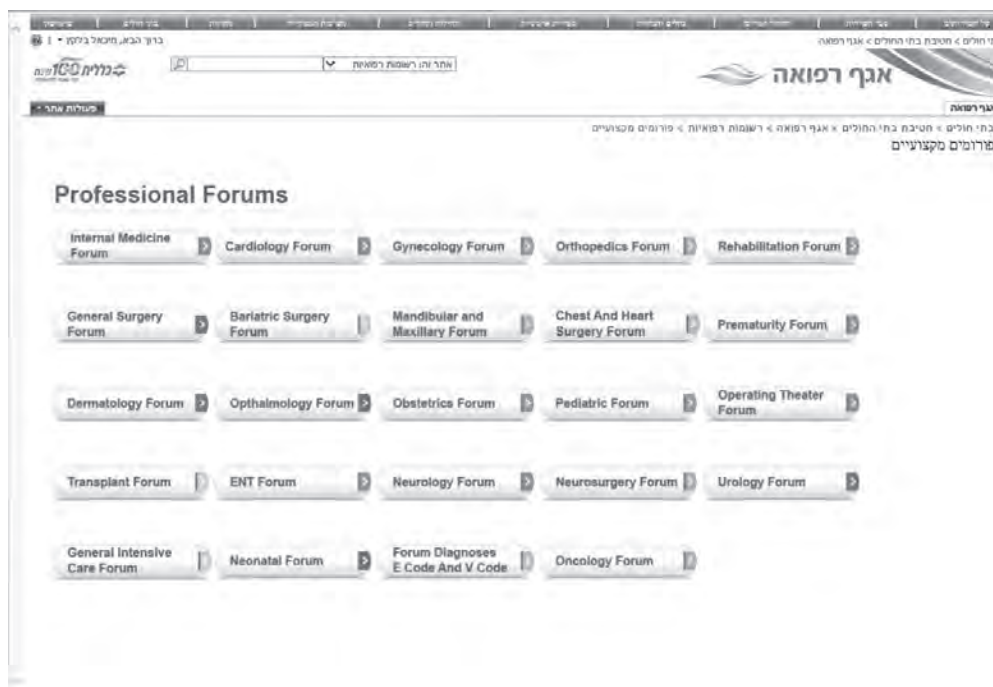
Each hospital within the CHS system has a coding department, with the coders undergoing specialist training. The CHS coding is monitored by the MOH who report coding differences in all of the hospitals throughout the country.

Uniformity and precision in coding, on a national level in all of the CHS hospitals, allows for optimal communication between medical teams, collaboration and use of data for studies and patient treatment and cooperation between hospitals, the MOH, international health organizations and other authorities.

A forum, accessible to all coders, that updates on-line, acts as the central resource for professional questions and answers in order to reach optimal uniformity and coding precision.

In 2015, the Registrar of the CHS initiated a coders' forum on the CHS portal, made up of representatives of each of the fourteen hospitals. The coding forum acts as a platform for professional

discussion, providing the coders with the opportunity to present professional questions, and to interact with each other. The forum is divided into 21 medical areas. These sub-forums have a forum head, experienced in specific medical field, who is responsible for making the final coding decision. The forum heads are coders from the coder teams within the fourteen CHS hospitals.



Only the forum representatives (heads) can present a question and participate in the discussion. The final decision is reached, at the end of the discussion by the specific sub-forum head, and highlighted in orange in order to indicate that it is a final decision. All of the CHS employees (number) can view the questions and answers.




When there is a discussion that shows incorrect or different codes, the National Registrar publishes national guidelines, which are published in the forum and are distributed between all of the coders.

Indicators: the number of incorrect codes identified between different hospitals

Results

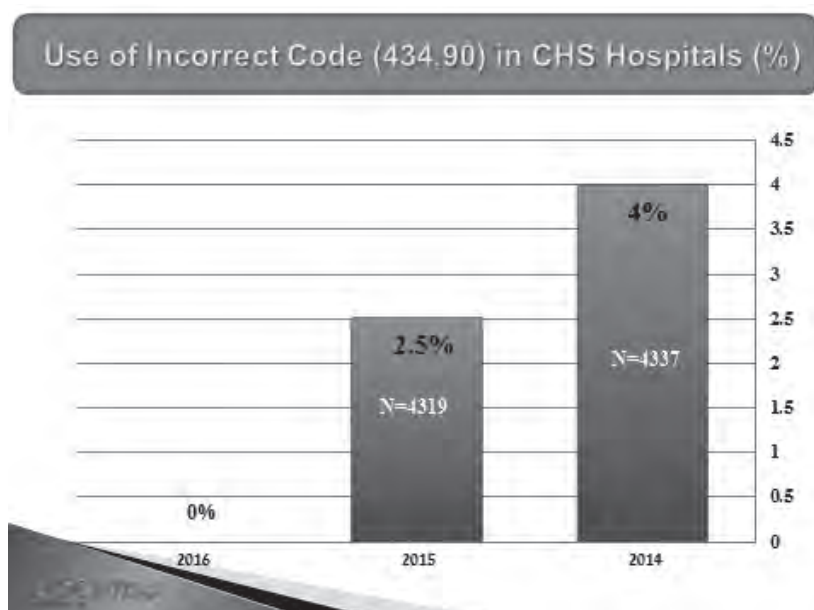
During the first four months of 2016, there were 57 discussions regarding questions asked from various coding departments, receiving final answers. In a further, four incidences, final decisions were not reached, and the questions were referred to the National Coding Committee of MOH, who provided answers, and these were then published in the forum.

Table 1: Example of a Coding Forum discussion

<p>From: 06/12/2015 10:46:23 Posted: Abortions Subject: How should I code residua following abortion?</p> <hr/> <p>From: 06/12/2015 10:44:58 Posted:</p>	
<p>Abortions Subject:</p> <hr/> <p>Mark as helpful Report abuse Reply Posted:11:21 2015 ,31.12</p> <p>Your question relates generally to the code 63791, this should be discussed. I don't use the code 639 in cases of retained products of conception</p> <hr/> <p>More From: 24/12/2015 12:18:48 Posted: Abortions Subject:</p> <p>In my opinion this is incorrect. When there is residua following abortion, during the same admission, just add the 5th digit – 1, to the code "abortion". When it is during a repeat admission for residua, choose 6398. According to the ICD-9 only the category 639 is suitable for complications after abortion, with a second admission, when residua is found during the first admission, and the type of abortion is not known, the code is 63791</p> <p>Complications following abortion and ectopic and molar pregnancies Note: This category is provided for use when it is required to classify separately the complications classifiable to the fourth digit level in categories 634-638; for example: a) when the complication itself was responsible for an episode of medical care, the abortion, ectopic or molar pregnancy itself having been dealt with at a previous episode b) when these conditions are immediate complications of ectopic or molar pregnancies classifiable to 630-633 where they cannot be identified at fourth digit level</p>	
<p>Mark as helpful Report abuse Reply Posted:10:27 2016 ,03 פבר</p> <p>I consulted with the MOH, and attach the Guidelines, Section 5, Chap. 11</p> <p>ICD-9-CM Official Guidelines for Coding and Reporting Effective October 1, 2011 Page 50 of 107</p> <p>Retained Products of Conception following an abortion Subsequent admissions for retained products of conception following a spontaneous or legally induced abortion are assigned the appropriate code from category 634, Spontaneous abortion, or 635 Legally induced abortion, with a fifth digit of "1" (incomplete). This advice is appropriate even when the patient was discharged previously with a discharge diagnosis of complete abortion</p> <p>It looks as though we were mistaken, and we should refer these guidelines to all the coders</p> <hr/> <p>More From: 31/12/2015 11:21:38 Posted: Abortions Subject:</p> <p>Decision: 639 Use the code for complications following abortion, and when coding a second admission for residua/complication of abortion</p>	

The MOH has established a national program of medical quality indicators for hospitals.[1] One of these indicators relies on the correct coding of Cerebrovascular Attack (CVA). In 2014 MOH validation showed cases of inaccurate use, predominantly, of code 434.90. As a result of the coders' discussion in the Coder Forum, new guidelines have been issued.[2,3]

In 2014 there were 173 incidences of incorrect usage of the code 434.90 to describe CVA (Cerebral artery occlusion, unspecified **without mention of cerebral infarction**). In 2015 there were 106 incidences, and in the first six months of 2016, no incidences were noted.



Following publication of the guidelines, the Coding Forum heads collaborated with the Medical Quality Department of CHS, formulating suitable written descriptions for CVA diagnoses, that were acceptable to the medical staff to be used the Emergency Department Computerized Medical File – “Chameleon”. [4]

The “Chameleon” is the computerized medical file of the CHS used in all of the fourteen CHS hospitals.

Table 2: ICD Codes for CVA in the Emergency Department

ICD-9 code	Emergency Department Description (Chameleon)
434.91	Stroke Ischemic (CVA) (Cerebral art occlusion with cerebral infarct)*
431	Intracerebr hem (Intracerebral hemorrhage)*
435.9	Transient ischemic attack (TIA) (Unspecified transient cerebral ischemia)*
V12.59	S/P TIA/Stroke, no resid. (Personal history of transient ischemia attack (TIA), and cerebral infarction without residual deficits)*

*ICD-9 text

Conclusions

A forum for submitting coding questions contributes to the accuracy and uniformity of coding, and helps in achieving targets of national quality indicators. [1] In addition, the forum provides an opportunity for personal empowerment amongst the participating coders, allowing them to share their professional experience creating a stockpile of collective information for experienced and novice coders. It serves as a center of excellence for hospitals and a tool to measure the process of quality improvement, placing the professionalism of the coders at the forefront. The uniformity of coding has improved, as a result of the forum and the discussions undertaken there.

Coding accuracy forms the foundation for comparison between medical treatments, their outcomes and follow-up care between CHS and MOH hospitals. In addition, as the CHS has many community clinics, uniform coding allows for comparisons with the community, and for continuity of treatment following discharge from hospital in the short and long-term.

The creation of the Coding Forum is an expression of the CHS's forward-looking perspective and continuous effort to improve and raise its standards, thereby providing a more comprehensive and professional service to its patients and employees.

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Abstract only

Creating a Canadian Terminology Standards Certification

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CHIMA¹, Canada Health Infoway²

Context: Human resource sector studies, survey data, and a Canadian advisory group validated that a business need exists in the Canadian health care sector to address the current gap of trained and experienced human resources in the use of clinical terminologies, including SNOMED CT and LOINC, to support the implementation and maintenance of e-health solutions. Key stakeholders identified the development of a clinical terminology professional certification in Canada as a priority to help address this resource gap. The use of clinical terminology across the country has been growing as

part of the increased investments in health information technologies. In the context of this increased use of e-health solutions using clinical terminology, new and evolving human resource role requirements to support eHealth are emerging. Objectives: In 2014, a business case to create a Terminology Standards Certification was approved by senior representatives from Canada Health Infoway and the CHIMA Board of Directors. Regenstrief Institute and the International Health Terminology Standards Development Organization confirmed support in working towards launching a clinical terminology professional certification in Canada. Support and commitment from the Canadian academic community was also received. Over a 10 month period (May 2015 to March 2016), a multi-stakeholder committee led by CHIMA and Infoway representatives completed the following work: Development of three (3) Terminology standards (TS) role descriptions (e.g., the development of key TS roles that are required in the current eHealth workplace) Development of a Canadian TS competency framework Creation of learning content items to support curriculum development Discussion: The three TS role descriptions will be reviewed, the Canadian competency framework outlined, and a discussion on the TS learning content items and relevance to an international audience will take place.

Abstract only

Electronic Integrated Antenatal Care (ei-ANC): Implementing Electronic Medical Record in Primary Healthcare Center

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Documentation requirements for the Indonesian Integrated Antenatal Care (ANC) program suggest the need for electronic systems to address gaps in existing paper documentation practices. Our goals were to quantify the current state of documentation completeness, understand documentation challenges and develop a tool. We analyzed existing ANC records in a primary healthcare center (PHC) in Bangkalan East Java Indonesia and conducted interviews with stakeholder to understand needs for an electronic system in support of ANC. Development of the ei-ANC system used the Systems Development Life Cycle (SDLC) method. Analysis of records for 42 visits to a primary healthcare center revealed substantial gaps in documentation. Interviews with seven stakeholders identified concerns regarding prioritization of documentation, difficulties in preparing reports, and enthusiasm for the prospect of an electronic record. The prototype ei-ANC was built as a web-based application using PHP 5 and JavaScript, a Firebird database, and an Apache web server. It assist midwives in recording integrated ANC data, including Patient Registration; Anamnesis; Physical Examination; Laboratory Test, Screening of Risk Pregnancy; Communication, Information and Education; Treatment and follow-up; Patient Disposition; Diagnosis; Graphics of the Maternal Weight and Body Mass Index (BMI); Outcome and Surveillance Public Health Reports. Individual and aggregate ANC data can be employed for clinical service and organization decision making; research; performance improvement; and education.

Abstract only

The Implementation of Health Information Systems In Primary Health Centers: Benefits and Challenges

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The Implementation of Health Information Systems In Primary Health Centers: Benefits and Challenges

Background: The rapid development of Information Technology (IT) has pushed each district's health office to develop health information systems with their own capabilities and requirements. As a result, various health information systems have been produced and implemented. This is not supported by the standardization of health information management processes and information technology used. These conditions have resulted in the varying uses of information systems and information technologies. Finally, it is difficult to integrate health data and information.

Objective: This study aims to explore the benefits and challenges involved in the implementation of health information systems in primary health centers.

Methods: We conducted a case study approach in order to explore the benefits and challenges concerning the implementation of health information systems in Yogyakarta. Our primary data collection methods comprised participant observations, semi-structured interviews, and document analysis.

Results: Based on a comprehensive evaluation of the implementation, we identified three major benefits, namely, (1) improved work performance, (2) ease of data storage and data retrieval and (3) automation of health reporting. Also, we identified three major challenges which complicated the implementation of health information systems, namely, (1) double entry, (2) completeness and accuracy of the data, (3) readiness of human resources and supporting infrastructure.

Conclusion: Implementation of health information systems in primary health centers is a very useful approach for accelerating job performance in order to increase patient satisfaction. However, they have their own complications to deal with. Implementation should be supported by training to update user knowledge, evaluating system development and usage along with coordination among relevant stakeholders in order to enable the bridging of health information systems.

Keywords: health information systems, system implementation, benefits, challenges

Knowledge, Attitude and Practice of Primary Health Care Providers Regarding E-health: A Validation Study

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ABSTRACT

Background:E-health refers to internet-based health care and information delivery and seeks to improve health service locally, regionally and worldwide. Health care providers must be equipped with the necessary knowledge, training and experience. We developed a questionnaire to obtain information from the physicians and nurses on various aspects of e-health.

Objectives:The aim of this study was to test the reliability and validity of this questionnaire to evaluate knowledge, attitude and practice of physicians and nurses towards e-health.

Methods: This study was carried out in Al-Sabah general hospital on 22 physicians and 20 nurses who were asked to complete a self-administered close-ended questionnaire that included 3 main aspects relevant to e-health, namely Knowledge, attitude, and practice. Each domain consisted of a number of questions (items). Test-retest reliability was tested by Spearman's correlation coefficients. To evaluate for internal consistency, parity co-variances were used to estimate Cronbach' alpha. Discrimination between participant groups (physicians and nurses) was tested by Mann-Whitney test. Spearman's correlation was utilized to test the correlations between different domains to evaluate the convergent validity.

Results: Test re-test reliability of the questionnaire revealed that all scales were reliable, with significant strong correlation for overall knowledge score ($r = 0.89$), and overall attitude score ($r = 0.80$) and intermediate significant correlation for practice score ($r = 0.46$). Testing the internal consistency revealed that coefficients of Cronbach's were ≥ 0.80 for all domains except for items of participants' attitude towards themselves (0.77) and practice (0.74). Overall, the scales of the questionnaire could discriminate between physicians and nurses with higher scores among physicians than nurses. Within each studied aspect, the scores of different domains in the questionnaire were positively correlated with each other significantly.

Conclusion: The questionnaire was reliable and valid for assessing knowledge, attitude and prac-

tice of e-health among health care providers.

Keywords: Questionnaire, validation, e-health

Short title: Validation of an e-health questionnaire.

INTRODUCTION

Information technology has radically changed the way that many people work and think. Over the years, technology has touched a new acme and now it is not confined to developed countries. Health-care professionals can no longer ignore the application of information technology to healthcare, because it is a key to e-health. (Gour N. and Srivastava D., 2010).

In 1997, the World Health Assembly considered fostering the use of science and technology for health as one of the essential functions of sustainable health systems (WHO, 1997). In 2000, the United Nations General Assembly called upon all member countries to cooperate with the private sector to “make available the benefits of new technologies, especially information and communication” (United Nations, 2000). In May 2005, the 58th World

Health Assembly adopted a resolution on e-health to leverage the use of e-health in the pursuit of health-for-all vision (WHO, 2005).

E-health emerged early in the 21st century including the combined use of electronic information and communication technology in the health sector. This term refers to that technology used for clinical, educational,

preventative, research, and administrative purposes, both at the local site and remotely. (Cashen M. et al., 2004). The term broadly refers to any electronic exchange of health related data collected or analyzed through an electronic connection to improve efficiency and effectiveness of health care delivery, though some definitions associate e-Health strictly with the internet. Therefore, it is frequently used to describe everything related to computers and medicine (Cashen M. et al., 2004; Deluca J. and Enmark R., 2000; Kwankam S., 2004).

The ultimate goals of e-health can be summarized in increasing efficiency in health care, improving quality of care, increasing commitment to evidence-based medicine, empowering of patients and consumers, and developing of new relationships between patients and health professionals (Austin C. and Boxerman S., 2003). Nursing support is important to the development and implementation of e-Health initiatives. Therefore, nurse leadership must understand the technical characteristics of health information technology as well as the clinical capabilities of e-health within the health care system. (Harrison J.P. et al., 2004; Ramsey C. et al., 2001). The essential change in focus required to improve healthcare delivery using e-health technologies has to be on clinical care. To achieve this change, clinicians must be involved at all stages of e-health implementations. (Hannan T.J. and Celia C. 2013)

The digital revolution will have a profound impact on how physicians and health care delivery organizations interact with patients and the community at-large. Over the coming decades, face-to-face patient/doctor contacts will become less common and exchanges between consumers and providers

will increasingly be mediated by electronic devices. (Weiner JP., 2012) As health care workers have the opportunity and obligation to deal with e-health in all field of health care, they must be equipped with the necessary knowledge, training and experience. Health care institutions can make significant contributions to addressing e-health implementation by supporting the required materials and equipment as well as supporting training programs for health caregivers.

There are many surveys which have assessed the knowledge, attitude, and practices regarding e-health in different health care providers. (George JT. Et al., 2007; Glinkowski W. et al., 2013; Weiner JP. et al., 2013; Ernstmann N. et al., 2009). In Kuwait, to our knowledge, no study has been conducted to evaluate health care providers' knowledge, attitude, and behaviors about e-health.

Several knowledge-attitude-behavior models have been developed to assess health care provider characteristics in relation to e-health, which have resulted in some refined tools that may guide future e-health policy interventions and training programs. (George JT. Et al., 2007; Glinkowski W. et al., 2013; Weiner JP. Et al., 2013; Ernstmann N. et al., 2009)

We developed a questionnaire to obtain information from the physicians and nurses on various aspects of e-health. It was derived from other published studies dealing with the same topic as well as from our own experience. In particular, the questionnaire was aimed at evaluating the overall attitude, willingness, internet/computer education status, PC computer access, internet access, and general attitude toward telemedicine/telenursing and knowledge about it. The aim of this study was to test the reliability and validity of this questionnaire to evaluate knowledge, attitude and practice of health care givers toward e-health.

SUBJECTS AND METHODS

Setting and design

There is an excellent level of healthcare and medical treatment in Kuwait, and the country is considered to be on a par with the facilities which are provided in the United States and Western Europe. Kuwait has one of the most modern health care infrastructures in the region, the history of healthcare of which is much older. The country has relatively strong basic health care indicators, but there is increasing pressure on its facilities. Despite its achievements, Kuwait faces tremendous challenges in its health sector. This study was carried out in July 2015 in Al- Sabah general hospitals in Kuwait. The study design is a cross-sectional descriptive one. The study sample included 22 physicians and 20 nurses who were asked to participate in the study.

Data collection

A self-administered close-ended questionnaire was used to obtain data from the participants. It included 3 main aspects relevant to e-health, namely Knowledge, attitude, and practice. Among the knowledge aspect, 3 domains were included namely definition domain (13 items), fields of use domain (7 items), and method of use domain (6 items). Under the attitude aspect 2 domains were included, namely attitude towards regarding him/herself (4 items) and regarding system attitude (5 items). The aspect of practice included only one domain. (5 items).

Scoring for knowledge was “1” for right answer and “0” for wrong answer or do not know. Percentage score for each domain equals the number of right answers / total number of domain items * 100. Scoring for attitude: participants indicated their answer for each item using a 5-point, Likert-scale ranging from “4” (Strongly agree) to “0” (strongly disagree). For each participant, the scores were summed and transformed into percentage score by the formula; score / (total number of domain items * 4) * 100. Scoring for practice was “1” for yes and “0” for no and the percentage score equals the number of right answers / total number of items * 100

Statistical analysis

To test for intra-subject variations, physicians and nurses, who participated in the study, received the same questionnaire twice, separated by a mean time interval of 2 weeks. In order to measure short-term test-retest reliability, Spearman’s correlation coefficients for the subscales were calculated. (Siegle S., 1957)

To evaluate for internal consistency, parity co-variances were used to estimate Cronbach’ alpha that summarized the inter-item correlations of all items in each domain scale in the questionnaire. Sub-scales are considered internally consistent when value of Cronbach’ alpha for these subscales that comprise more than one questions per scale equal 0.80 or more. (Cronbach L.J., 1951)

Discriminative validity evaluated whether the questionnaire could discriminate between different groups. Discrimination between participant groups (physicians and nurses) was tested by Mann-Whitney test. Convergent validity ensured that domains of the questionnaire correlated positively with one another. Spearman’s correlation was utilized to test these correlations between different domains. (Siegle S., 1957) Data were analyzed using a “SPSS for Windows” statistical package.

RESULTS

Median age was 38 for physicians and 35 years for nurses and female gender was presented in 27.3% of physicians and predominated in nurses (79.8%) ($p = 0.001$). Physicians had insignificant longer periods of experience than nurses (median = 11 versus 8 years). Kuwaiti nationality was presented in 18.2% of physicians and in 30.0% of nurses, and married subjects represented 90% and 100% of physicians and nurses respectively without a significant difference (Table I).

Table 1: General description of the study sample

Variable	Physicians No. = 22	Nurses No. = 20	P
Age: median (IQR)	38 (7)	35 (9)	0.08*
Years of experience median (IQR)	11 (11)	8 (5)	0.51*
Gender (females)	6 (27.3%)	16 (79.8%)	0.001
Nationality (Kuwaiti)	4 (18.2%)	6 (30.0%)	0.37
Marital status (married)	20 (90.0%)	20 (100.0%)	0.49**

*: Mann-Whitney U Test **: Fisher’s Exact Test

Reliability

Test re-test reliability of the questionnaire revealed that all scales used were reliable. Regarding knowledge score, all domains showed significant strong correlations between basal and re-test readings. Intra-class correlation coefficients between item scores were 0.76 for definition of e-health domain, 0.92 for fields of use of e-health domain, and 0.79 for methods of using e-health domain. Regarding the attitude scales, there was a significant strong correlation between basal and re-test reading for attitude towards participants' themselves (0.92) and significant intermediate correlation for attitude towards health system (0.63). In respect to participants' practice, correlation coefficients between item scores were significant intermediate (0.46). That is there was a high degree of repeatability and reliability of the questionnaire (TableII).

Table 2: Basal and re-test percentage score (median and Inter-quartile range), with spearman's correlation coefficients

Scales readings	Basal reading		Re-test reading		Correlation coefficients	
	median	IQR	median	IQR	r	p
Knowledge:						
Definition of E-health	69.23	63.46	61.54	57.69	0.76	0.001
Fields of applications	71.43	75.00	57.14	64.28	0.92	0.001
Methods of use	50.0	66.67	50.00	50.00	0.79	0.001
Overall	59.62	32.75	59.62	52.89	0.89	<0.001
Attitude						
Regarding him/herself	59.67	20.00	56.25	12.5	0.92	<0.001
Regarding health system	77.17	35.00	75.00	17.5	0.63	0.001
Overall	77.78	27.78	63.89	12.50	0.80	0.001
Practice	60.0	25.0	58.0	40.0	0.46	0.011

Internal consistency

Regarding knowledge score, Coefficients of Cronbach's were 0.91, for 13 definitions of e-health items, 0.89 for 7 fields of use of e-health items, and 0.79 for 6 methods of use of e-health items. Regarding the attitude scale, Coefficients of Cronbach's were 0.77 for 4 items related to participants' attitude toward him/her selves and 0.87 for 5 items related to participants' attitude towards health system. However, a lower coefficient (0.74) was detected in case of 5 items of practice domain. (TableIII).

Table 3: Scale headings and values of Cronbach's alpha

Scale headings	Number of items	Cronbach's alpha
Knowledge:		
Definition of E-health	13	0.91
Fields of applications	7	0.89
Methods of use	6	0.80
Attitude:		
Regarding him/herself	4	0.77
Regarding health system	5	0.87
Practice	5	0.74

Discriminant validity

Overall, the scales of the questionnaire could discriminate between physicians and nurses. Scores were significantly higher in physicians than in nurses regarding the overall knowledge score (78.37 versus 19.23) as well as the three domains of the knowledge score: definition of e-health (73.96 versus 15.38), fields of application of e-health (100.0 versus 21.42), and methods of use of e-health (66.67 versus 19.23).

Also, a higher overall attitude score was found in physicians than nurses (81.94 versus 65.17) as well as individual domains: attitude towards participants themselves (70.00 versus 55.00) and attitude towards health system (90.00 versus 67.50). Practice score was significantly higher in physicians (80.00) than in nurses (50.00). (Table IV).

Convergent validity

Within each studied aspect, the scores of different domains in the questionnaire were positively correlated with each other significantly (Table V).

Table 4: E-health score in physicians and nurses, median and inter-quartile range are presented

Scale headings	Physicians(n =22)		Nurses(n =20)		Mann-Whitney test	
	Median	IQR	Median	IQR	Z	P
Knowledge:						
Definition of E-health	73.96	21.15	15.38	46.15	3.72	<0.001
Fields of applications	100.00	28.57	21.42	27.37	4.36	<0.001
Methods of use	66.67	45.83	16.67	37.50	3.82	<0.001
Overall	78.37	21.15	19.23	44.23	4.20	<0.001
Attitude						
Regarding him/herself	70.00	10.00	55.00	20.00	3.01	0.003
Regarding health system	90.00	25.00	67.50	25.00	3.26	0.001
Overall	81.94	16.67	65.17	18.75	3.31	<0.001
Practice	80.00	20.00	50.00	30.00	3.03	0.002

Table 5: Correlation between different scales among 22 physicians and 20 nurses, Spearman's correlation co-efficient is presented

Scale headings		
Knowledge:		
Fields	Definition 0.82**	Fields
Methods	0.87**	0.84**
Attitude		
Regarding him/herself	Regarding health system 0.63**	

**• P < 0.01

DISCUSSION

E-health has become an important field in which health professionals create and seek information to improve health service locally, regionally and worldwide. (Eysenbach G.,2001) We are intended to assess knowledge, attitude and practice of health care providers towards e-health. A variety of different measures have been applied in this issue. Since none of these measures had been used in Kuwait before the beginning of our study, it was useful to develop a valid, rapid, and easy to complete one. One of our aims was to appraise the suitability of this questionnaire. The questionnaire was assessed regarding its reliability, internal consistency, and discriminant and convergent validity.

If test scores are to be used to make accurate inferences about an examinee's ability, they must be both reliable and valid. Reliability of the questionnaire was examined using test-retest procedure and conducted on all participants included in this study. This estimate refers to the degree of overlap between two measurements taken at two different points in time using the same scale and with the same respondents. The correlation between basal and retest overall readings, as well as for different domains in the studied aspects were strong and statistically significant. However, the basal and retest answers for participant' attitude towards health system showed significant intermediate direct correlation. This could be due to the wide range of topics mentioned in this domain. As the reliability correlation for the different domains of the questionnaire were as consistent and high as for the overall score of the questionnaire, it could be considered flexible regarding presentation of data. It could be presented as overall score or individually for each domain which would be of value in practical and research fields. (Morgan M. et al., 1994; Finlay AY. And Khan GK.;1994)

Reliability is a prerequisite for validity. However, tests can be highly reliable and still not be valid for a particular purpose. Determining the reliability of a test is an important first step, but not the defining step, in determining the validity of a test (Croker L. and Algina J, 1986; Zikmund WG.,2003).Validity was defined as an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationale support the adequacy and appropriateness of inferences and actions based on test scores and other modes of assessment. It is a matter of degree, not absolutely valid or absolutely invalid. There are many different methods that can be used to establish the validity of a test's use. (Croker L. and Algina J,1986)

Internal consistency of a scale refers to the degree to which items of the scale "hang together" and

was assessed in our study by inter-item correlation. The questionnaire demonstrated good internal consistency where coefficients of Cronbach's α were ≥ 0.80 for all domains of all aspects of the questionnaire except for participants' attitude towards themselves (0.77) and practice (0.74). This means that each domain except participants' attitude towards themselves and practice included a closely related or a homogeneous group of items. This could be due the small number of items in these two domains or the scaling of the response for items particularly in attitude domain. The items within each domain should be retained as they were in the questionnaire without modification or replacement between domains. The two domains where Cronbach's α were < 0.80 should be evaluated and modified to improve the internal consistency of these domains. Direct questioning in our study indicated that participants regarded the items as comprehensive, easy to understand and of considerable relevance to themselves.

Discriminant validity is designed to test, in our case, the ability of the questionnaire to prove the predetermined hypothesis that there was a difference between physicians and nurses regarding impact knowledge, attitude and practice towards e-health. In terms of discriminant validity, significant differences between groups were observed in all domains of the studied aspects with higher scores in physicians than nurses.

This went with the findings reported by other studies that supported the premise that in spite of expanded nursing roles emphasizing nursing authority, there are disagreements between nurses' and physicians' perceptions of the current and ideal authority of nurses as well as areas of dissatisfaction within each professional group. Implications of continuing conflicts between nurses and physicians as barriers to professional nursing role enactment, as well as strategies to address the problem are discussed. (Gour N. and Srivastava D., 2010; Katzman EM., 1989). Overall, the questionnaire could differentiate between both groups with higher score for the physician group.

Convergent validity of the questionnaire was tested, by analyzing correlation between scores of different domains. Our results revealed that the scores of the studied domains correlated together positively and significantly. It is possible, if required, to maintain and use the detailed information given in the replies, by analyzing either each question or groups of questions which form a domain.

Test validity or the validation of a test explicitly, means validating the use of a test in a specific context. Therefore, when determining the validity of a test, it is important to study the test results in the setting in which they are used. Hence, it is apparent that the questionnaire is an easily administered scale that could rapidly capture data related to knowledge, attitude and practice towards e-health among health care providers. This study further showed the reliability, internal consistency and construct validity of this scale that could be applicable and used in Kuwait. It was easy to use in this study as indicated by its completion by all participants who were selected for this validation study. It could account for the degree of knowledge of the participants and their attitude and practice towards e-health, and can differentiate between physicians and nurses. Furthermore, it allowed assessment of relevant e-health specific aspects.

CONCLUSIONS

The studied questionnaire is reliable and valid. It was proved to be a suitable tool for assessing knowledge, attitude and practice of health care providers towards E-health.

ACKNOWLEDGMENTS

This work was supported and funded by The Public Authority of Education and Training, Research project No HS-15-

03. Research Title: Perception on E-Health Among the Community People in Kuwait.

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Cite this Article: Alkhatlan H, Almutairi B, El-Shazly M (2016). Knowledge, Attitude and Practice of Primary Health Care Providers Regarding E-health: A Validation Study. *Greener Journal of Medical Sciences*, 6(1): 018-024, <http://doi.org/10.15580/GJMS.2016.1.021716040>

Abstract only**Studying Health Information in Gadjah Mada University****Nur Rokhman¹, Nuryati Nuryati¹, Angga Eko Pramono¹***Gadjah Mada University, Indonesia¹*

As a matter of fact, Gadjah Mada University (UGM) is one of the oldest and the biggest university in Indonesia. UGM alumnae spread out not only in Indonesia but around the world. Many Indonesian leaders are UGM alumnae. Their innovations and thoughts colors the Indonesian government policies. UGM alumnae play in many aspects of the development of Indonesia. Health information is part of Indonesian policy to improve the healthiness of Indonesian people. It is depicted in the health minister mission: Health Indonesia 2025. Health information plays an important role to achieve the motto in the slogan. Health information role is increasing significantly as the Indonesian government launching the National Health Insurance in 2014. UGM takes part in this policy by preparing the best health information man power. Many study programs across faculty in UGM take part in this program. Faculty of Health, Faculty of Engineering, Faculty of Mathematics and Natural Sciences, and Vocational Collage have study program which related to the preparation of health information man power. This paper describes the overall study program in UGM which has something to do with the preparation of health information man power. The descriptions are about curriculums, students, and final assignments. This will be compared to the Global Academic Curricula Competencies for Health Information Professionals.

Abstract only**Professional Education for Health Information Managers in Nagano
Health Information Management Group****Yasuko Hosoi¹, Katsuko Toba², Sadayuki Saruya³, Nobuhiro Nishizawa³,
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[Introduction]In 2000, Nagano Health Information Management (HIM) Group was established for encouragement quality management of medical information control. Continuing education for HIM is important to improve the quality of their work. We report "Seminar for coding of disease and symptoms" has provided HIM including after certification with exact coding methodology.[Methods]Coding sessions do exercises using the "ICD-10".We have set both the beginner course and update course because there is a variation in the participants experiences.All embers of a class can discuss at the same table in a workshop.We have created a curriculum that explains the concept of coding, how to use of coding, medical knowledge and medical information usage for the participants.Characteristic approach of this session is to carry out the coding in the workshop format. We made a group without

taking into account the career of the participants, conduct a case study by the KJ Method for each group. Finally make the entire debate. [Result]After seminar, we obtained information by means of questionnaires from the participants. Among them, one expressed that coding could be well understood because of the course are divided into classes for beginners and intermediates. This seminar has become a study session that leads to their practice of the medical field by performing a workshop using the actual cases after learned the basics of coding. The purpose of the exercises is in the delicate support for all participants. As a result, this seminar is adapted to all participants learn to ensure the basics of coding. [Discussion]This seminar combined with basic learning of coding skills and the practical workshop using actual cases has led to their medical field performance. The delicate support for all the participants could be provided the effective learning for the basic coding performance. [Conclusion]The seminar for coding of disease has begun as a postgraduate education program at the beginning, however person's attendance aiming at qualification acquisition has increased recently. All of junior participants are standing on the same start line. It seems to be easy to train them. However, there is variation in the postgraduate career of the participants. That is educational challenges. Members of the Nagano HIM Group intend to overcome the obstacles found through the education of repeated seminars. And we are going to focus on the future education for HIMs who have variant experiences.

Abstract only

Student Learning Outcomes as the Focus of HIM Education

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Indiana University, United States

A significant change in the curriculum of Health Information Management (HIM) programs in the US is underway. This change is directed by the Council for Excellence in Education of CAHIIM (Council on Accreditation for Health Informatics and Information Management Education). The emphasis and measurement of success will be with attainment of the various Bloom's taxonomy levels associated with specific Student Learning Outcomes. This is a significant change from a previous focus on various curricular considerations. Student learning outcomes will now drive the specific content covered in any course. Curriculum changes need to and do occur with great frequency in HIM due to the constant changing and evolution of the profession. The expectation is that Student Learning Outcomes will remain more consistent over a longer period of time. Two concepts that are woven through the curricula are Critical Thinking and Personal Branding. Critical thinking is the ability for example to work independently, use judgment skills effectively, and be innovative by thinking "outside of the box." Personal branding is having personal accountability, reliability and self-sufficiency. The specific Domains in the new curriculum will be reviewed, including examples from the Associate Degree (2 year programs), the Baccalaureate Degree (4 year programs) and the Masters, or Graduate Degree. There are a total of 6 Domains in the curricula and for each Domain there are subdomains, the identified Bloom's taxonomy level, and the student learning outcomes. The 6 Domains include: Domain I Data

Content, Structure and Standards (Information Governance) Domain II Information Protection: Access, Disclosure, Archival, Privacy and Security Domain II Informatics, Analytics, and Data Use Domain IV Revenue Management Domain V Compliance Domain VI Leadership The various Bloom's Taxonomy levels will be reviewed also, from a level one of merely remembering the information through understanding, applying, analyzing, evaluations, and finally creating. Attendees will leave with a greater understanding of the evolution of HIM education for accredited programs in the US with application worldwide.

Abstract only

The Education of Medical Records and Health Information Based on Information Technology in Indonesia In Facing The Global Era Asean Economic Community (AEC)

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In facing the challenges resulting from ASEAN Free Trade Area (AFTA) and ASEAN Economic Community (AEC), Job seekers will have greater opportunities for employment are available with a variety of needs of diverse expertise, For Indonesia, the MEA may be opportunities and challenges. Trade barriers were reduced to result in increased exports, efforts of enhancing competitiveness and competitive advantages in all business sectors are required one of wich is medical records. Medical Records and Health Information, Electronic Medical Records, Electronic Health Records, are very important in our future in healthcare. Automation has been peeking its head around the corner at us for some time now, but for the most part, it has only been adopted by the very brave. Most of the early adopters of automated patient records would give them better quality of life as providers. However, the real beneficiaries of automated patient records will be the patients themselves. An integrated Electronic Patient Health Record system could help resolve this lack of information dilemma. The Electronic Patient Health Record model explains how the integration of every department creates a synergy between each departmental system by allowing data to be captured at any location in a physician anywhere in the hospital. A physician Electronic Patient Health Record consists of an individual health/medical information from "birth to death." This paper discusses the use and impact of an EHR and the relation to the electronic patient health record model, which defines the electronic patient system and its components. Contribution of universities in the field of IT education based medical records include: Delivering competent graduates, changing the national curriculum to a competency-based curriculum, change the way of learning from Teacher Centered Learning (TCL) to Student Centered Learning (SCL), curriculum adjustments on an ongoing basis with the graduates medical records and existing professional bodies. While medical records need to be supported technologically good health to provide excellent service and fast data processing, accurate in providing information for decision-making in particular to determine the amount of capitation and Indonesian Case-Based Groups (INA-CBG), Standard Rate Service Health. This can be achieved by developing the use of technology in accor-

dance with the medical needs of health technology assessment (health technology assessment). Key-words : Education of Medical Records and Health Information, Information Technology and Asean Economic Community (AEC).

Abstract only

The Evaluation of the Competency Test for Education of Diploma 3 of Medical Record and Health Information in Indonesia

Elise Garmelia¹, Siswati Sumarto²

PORMIKI/RSAB Harapan Kita¹, PORMIKI/RS Husada²

The Evaluation of the competency test for education of Diploma 3 of Medical Record and Health Information in Indonesia. Elise Garmelia and Siswati, Indonesian Professional on Medical Record and Health Information Association. Background Indonesia have 48 Institution as a Diploma 3, 4 as a Diploma 4 and 1 as a bachelor of of Medical Record and Health Information. Indonesia have already prepare for Five institution of Medical Record and Health Information through the try out competency Exam. The Goals of competency test are as follows to make student know about Multiple Questions Vignette, to prepare the Institution and the student to follow the National Exam competency, to improve quality of Multiple Choice Questionnaire. The simple analysis for measurement the objectives to see the capability of seven Competency area, And We want to know accurate of the instrument measurement in institution curriculum. Method To assessment and measurement for Five of Medical Record and Health Information Education Institution who already done the competency test on Oct 2015 until March 2016. The Competency test already done with 180 Multiple Choice Questionnaire on 180 minutes. The Content questionnaire are 7 competence area and curriculum of Medical Record and Health Information from Institution. Result The total student 509. The difficulties of Multiple Choice questionnaire regarding to right answer from the questions as a capability index are as follows 38% difficult, 29% moderate and 33% easy. The Analysis of questions related by 7 competence area who are the students right answer: Professionalism sublime between 27% to 85% Introspective and self-development between 23% to 86% Effective Communication between 14% to 85% Health Data Management between 40% to 67% Health Statistic, Biomedical Research and Quality Management between 29% to 50% Organization, Management Health Services and Leadership between 41% to 81% Information Technology and Systems between 40% to 68% Conclusion National Competency Exam will be done on October 2016, but it is the first time Program in Indonesia for Medical Record and Health Information of Diploma 3, Diploma 4, and Bachelor, and the Lecturer not yet unusually make exam with question by vignette model. The student will to know the vignette model. Distribution of questions for competency test are not the same between Institution. we need contribution and participation from institution to improve the quantity and quality for item Bank.

Abstract only**Introduction of The e-Learning System for Studying Health Information Management in University****Koichi Muto¹, Haruka Murai¹, Tetsuya Kamei¹***Fujita Health University, Japan¹*

In recent years an E-Learning System has been introduced in the field of academic education. The learning environment has been prepared and learning opportunities for teachers to utilize the system have been increased. Introducing the E-Learning System provides both the students and teachers with a supportive learning environment. Students can choose a convenient time and place to study at their own pace and pursue their own level of academic achievement, while teachers can check the student's track records of learning as needed. In addition, the increase in mobile device use has brought studying closer to learners and has enhanced convenience thereby rapidly spreading the reality of E-Learning Systems.

<Purpose> The Faculty of Medical Management and Information Science at Fujita Health University has introduced an E-Learning System. Defining the issues and seeking improvements are critical for developing a better program.

<Methods> An E-Learning System using the open source platform "moodle" has been developed. Specific contents have been created for the accreditation exam of Health Information Managers and new contents have been launched for upgrading. Three years ' worth of original mock exams were installed. The exam question's choices were shuffled every time in order not to lack freshness. A questionnaire survey was conducted for the learners in order to define issues and to seek improvements in the system.

<Results> Learners recognized the system as satisfactory to the extent of reviewing mock exams repeatedly, and accessing chronological results that were graphically shown. However, learners noticed that the system was not very convenient as far as using the materials within the system.

<Conclusion> The E-Learning System made it possible for students to choose both a convenient time and place to study at their own level of understanding. On the other hand the E-Learning System is disadvantageous for learners that need the IT environment and autonomy for studying. In addition, at the present stage, accessing the system with personal mobile devices or PCs outside of the campus location are limited due to security matters. In the future, the development of more user-friendly environments and providing effective contents are critical for the success of an E-Learning System.

Abstract only

A Comparison of HIM Education in Canada and Australia: Similarities, Differences, and Gaps

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Canadian Health Information Management Association (CHIMA)¹,

Health Information Management Association of Australia (HIMAA)²

Background: The Canadian Health Information Management Association (CHIMA) and the Health Information Management Association of Australia (HIMAA) conducted an assessment and mapping of their learning content standards. The purpose of the mapping project was two-fold: 1) To determine the feasibility of creating an articulation agreement between the two countries that would allow graduates of accredited HIM programs to apply to challenge the respective national certification examinations without the need for further formal HIM education; and 2) To provide an in-depth review of HIM learning content as a step in the major review and potential revision of HIM learning content. Methodology: The study period took place between November 2015 and July 2016. Criteria to compare the learning content items were developed and a data collection tool was tested prior to project start. Two individuals from each country individually assessed the HIM learning content from their country with that of the other countries. The two comparisons were then reviewed for discrepancies. If agreement could not be reached, a third party was consulted and a determination made. Once all country comparisons were completed, the (2, 3, or 4) groups met to compare their results. Disagreements in ranking or assessment were discussed and agreement reached. A description of the similarities, differences, gaps, and considerations for future educational requirements per country will be presented. Results: To be determined following July 2016 data collection and analysis. Conclusion: To be discussed at the IFHIMA congress.

Abstract only

How ICD-10 Was Implemented Across Medicaid Agencies In the United States

Godwin Odia

U.S. Public Health service

Medicaid is a joint federal and state insurance program for people with low or limited income and resources. ICD-10 was recently implemented in the United States after many years of preparations, delays and postponements on October 1, 2015. Implementation across the 56 Medicaid Agencies was complex and challenging. The presentation will address how the U.S. Centers for Medicare & Medicaid Services provided technical support to Medicaid Agencies and end with an overview of the post implementation activities that supported the transition.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

New Style HIM Needs New Education - Developments in the Netherlands

Wim Tromp¹, Wybe Dekker², Marcel Van Der Haagen²

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New style HIM needs New Education Developments in the Netherlands Health Information Management has traditionally been embedded in the organization of hospitals and mental health care institutions. As a result of the increase in complexity in finance and legislation health information management is created as a separate function in other sectors of healthcare such as home care and care for the physically disabled. Registration at the source, i.e. in the primary care process is the adage. This has an impact on the profession of the health information manager. It creates new (sub) functions and the shift from health information management to health care control is ongoing. This requires implementing health information management new style. A change is needed for the structure and content of the education and training of staff in this line of work. Application of learning management systems, blended learning, learning communities, webinars, e-learning and the place of traditional classroom training in the Netherlands will be explained in this presentation. Wim A.M. Tromp BI Coordinator Education programme Health Information Management NVMA Project manager Consultant Bureau Van Aetsveld wim.tromp@aetsveld.nl www.nvma.nl www.aetsveld.nl mobile: 0031 (0)6 53982372

Abstract only**Current Trend and Future Directions for HIT Careers****Peyman Rezaei¹, Leila Ghaderi¹, Shahla Damanabi¹, Leila Kalankesh¹***Tabriz University of Medical Sciences¹*

Currently the only organizational structure for recruiting graduates of Health Information Technology in Iran is in hospitals. This structure has been criticized by the researchers. They highlighted the necessity of developing new structure for HIT careers so that it can meet the emerging needs in new paradigm of health care. Aim of this research is to identify the current trend and future direction for HIT careers in Iran based on perspectives of HIT graduates and managers. A total of 109 HIT graduates working in hospital and a total of 40 managers from hospitals, insurance companies, research centers and legal medicine centre (located in North-west of Iran) were asked to complete two different structured questionnaires in 2012. The graduates questionnaire was based on 4 main domains including working position, level of interest toward the HIT profession, awareness level of new professional opportunities and their IT skills. The managers questionnaire was also organized in 3 main themes including their awareness about HIT discipline, factors effective on recruiting rate of HIT graduates and their expectations from HIT graduates. Majority of graduates worked as inpatient admission clerk followed by those serving as staff in outpatient admission area, medical filing unit, medical coding respectively. Graduates working as the ward secretary and discharge clerk were in minority. In very rare cases, the graduates worked in revenue, accounting, recruiting and insurance units of hospitals. The highest level of interest among graduates was toward working in research centers followed by insurance companies. 90 % of the graduates believed that skills in computer and programming language have effective role in obtaining better professional position by them. The lacking skills recognized by the graduates were the ability of designing web and network followed by the statistical software. Only 17 % of managers were familiar with the HIT profession. Lack of awareness of the graduates abilities, and lack of formal permission for recruiting were among the highest reasons for not recruiting the graduates. Practical expectation of the managers from the HIT graduates included the ability of conducting research, managing data, auditing various clinical documents, supervising the insurance affair, supervising and evaluating hospital contracts and analyzing data and statistical affairs. Considering the results from this study, if the HIT graduates are to respond appropriately to the new opportunities, it is inevitable to institutionalize the culture of self learning among them and culture of retraining in health care system.

Abstract only

Providing a Head Start for Graduate Education

Susan H. Fenton

UT School of Biomedical Informatics at Houston

The University of Texas School of Biomedical Informatics (SBMI) in Houston has implemented an innovative “4+1” program with other Texas universities. SBMI is a graduate level only school providing certificates, masters and doctoral level education across Texas and the world. The 4+1 program requires signed agreements between the institutions. Extremely highly qualified undergraduate students apply to participate in the program. They are chosen by their undergraduate institution to take 15 graduate-level semester credit hours of online classes from SBMI as advanced electives. When the students graduate they will have a graduate certificate in health informatics, as well as their baccalaureate degree. Evaluations from both participating students and faculty are very positive. The majority of undergraduate participants continue on to the graduate degree. Challenges related to the program include setting up the legal arrangements and providing academic support to the undergraduate students. Advantages to the program are that students can accelerate earning their graduate degree, as well as identifying this high-growth field early in their career.

Abstract only

The Effective HIM: Leadership Lessons and Challenges

Sarah Low

World Health Organisation

How can the Health Information Management professional of today be a leader who achieves outcomes and continuous improvement amidst changing organization cultures, globalisation, increasing costs, multiple demands for data and information, and the use of emerging technology? Transversal leadership enables us to be flexible and work with the changes around us through empowering and working with the resources around us rather than trying to control variables that constantly change and multiply. It is the ability to solve problems, be professional and form effective working relationships regardless of perceived boundaries. Transversal leadership is the art of using our personal abilities with technical HIM skills to by influence and motivate stakeholders, colleagues, and clients without needing any direct formal authority. This concept is powerful because it works across cultures and boundaries to enable HIMs to balance their roles between technology, business and health management (ESHA, 2012). Internationally, organisations are looking for Health Information Management professionals who can provide leadership amidst our ever-evolving industry. Specifically, transversal leadership is the key that unlocks our full potential to embrace and thrive through change.

Innovative HIM Education with MOC-UP Lab and Practical Training to Meet the Needs of Developing Countries for 21 Century

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ABSTRACT

The developing countries with huge population to serve, coupled with many economical, social, cultural and other inherited problems, endeavor to provide effective qualitative healthcare services to the entire inhabitant. With this goal, this Innovative HIM Education program is prepared taking into all educational requirements e.g., syllabus, course content, mock-up lab and directed internship practice and project program at par with other reputed International Universities standards to address major expectation of patient e.g., swift, safe, improved quality and cost contained care in the hospital.

Objective: To provide adequate fitting HIM professionals to meet the needs of ever changing health-care system of the Developing Countries (DC) in the 21 century.

Syllabus and Course content: Four year degree program, six semesters for theoretical and mock-up laboratory practice. The subjects taught are Anatomy, Physiology, Medical Terminology, Allied Health Sciences, HIM, Biostatistics, Research, ICD, Hospital Management including; Ethical, Insurance, Re-imbursement, Legal, Quality Management, Information and Communication Technology, Hospital Information System, EHR, Health Data Management. The program having 106 credit hours including, 61 lecture, 46 laboratory and 2190 total hours. The hospital practical one year training is designed to offer experience in HIM department that develop the student cognitive, affective and psychomotor skills with positive attitude to produce a qualified innovative HIM professional.

Evaluation Methods: Regular assessment on theoretical lectures, lab work, and assignments and hands-on practical work at hospitals and project work. Student deficiencies are identified and corrected.

Teaching Faculty: One professor, 3 Asst. Professors, 3, Clinical instructors and supported by part-time and guest lectures.

Methodology of teaching and learning: The focus is faculty to learn more and teach less and student to teach more and learn less, this means more student interaction, inside and outside the classroom. Students are given topics in advance to prepare and answer, while teacher is to ensure that they are on right path. Students during lecture break spend most of the time in mock-up lab located within the institution to gain more work culture and innovative thinking. Students hands-on directed practice gets under the qualified supervisors in the hospital. In order to gain comprehensive assimilation of practical

knowledge, required skills and right attitude to perform given tasks, student to be placed initially in the “Mock-up MR Simulation laboratory and later in the HIM Departments of hospitals to have practical hands on experience. This experience will make the student a competent HIM worker and an efficient manager.

Introduction: To accomplish the objective, good strategic planning to develop required infrastructure for healthcare delivery system to be developed to meet the needs of primary, secondary and tertiary care facilities. Besides, medical, nursing, paramedical, administrative and support personnel, the Health Information Management (HIM) professionals also play a vital role in effective and efficient delivery of healthcare. There is an acute shortage of HIM professionals despite there is a huge demand.

Modification of HIM traditional education: In view of emerging technology and implementation of electronic health records, the conventional responsibilities of HIM department will diminish and need revision of HIM traditional education to corporate competing syllabus to generate innovative HIM leaders on modern lines to meet the new challenges of maintaining paperless records. There is a need to engross in the effective and efficient management of hospital administration that brings the healthcare cost which is burning issue for all the healthcare institution across the globe.

In order to produce innovative HIM professionals to meet the needs of 21st century, it is imperative that education program must encompass with most pioneering theoretical and practical program in the HIM education.

Ned of HIM Professionals: The HIM professionals are experts in processing, analyzing and reporting information vital to the healthcare industry. HIM professionals have a great role in initiating and maintaining documentation in manual or electronic that will support in efficient patient care, helps the physician in his clinical management and hospital depends on health information to monitor performance of all the professionals quantitatively and qualitatively. The national health or public health depends on controlling morbidity and mortality and eradicate the communicable diseases and the international organization such as the WHO too depends on national health information. Health information management is the body of knowledge and practice that assures the availability of health information to facilitate in real-time healthcare delivery and critical health-related decision making for multiple purposes across diverse organization setting. Dramatic change in health information management demands new thinking, about how we educate tomorrow's professionals. Redefining roles, competencies, and educational progression should be the foundation of College of HIM Education. When tomorrow's graduates enter the HIM workplace, they will have to be ready for the e-HIM environment. And the HIM program objective should be to develop curriculum that would meet the HIM professional who after successfully completing the Bachelors' degree in HIM should be able to:

- Endow with knowledge and skills necessary to become self –directed learners.
- Solve problems by critical thinking

- Attain informatics skills, communication and interpersonal skills.
- Instill a commitment to life-long learning, and important ethical values.
- Foster the acquisition of leadership abilities.
- Adapt careers within changing healthcare environment.
- Serve society and the profession through collaborative practice.
- Provide innovative teaching by generating and application of new knowledge
- Conduct research devoted to HIM in an electronic environment
- Carry out activities that are focused on evolving the strategic and operational relevance and robustness of clinical information resources of healthcare industry & PH sector.
- Participate actively in quality and performance improvement management
- Collaborate and cooperate with IT department in developing EHR

Selection method for HIM Bachelor Program: The curriculum should be designed to attract individuals from a variety of educational backgrounds and disciplines. These background and disciplines may include individuals with prior coursework at an undergraduate level in HIM or those with a baccalaureate or advanced degrees in another area of study. Students who do not have a prior background in HIM may need to take additional prerequisite and / or requisite course content as defined by the academic program in line with the goals of the program and expertise of the faculty.

Mock-up (Simulation) Medical Record Laboratory at the College Site: The mock-up medical record laboratory is essentially required to provide the student the real life experience in areas of maintaining and managing medical records (Health Information) Department. The student will have clear concept of hospital medical record system; they will have better understanding when their hands-on different sections of Medical Record Department. They will be able to absorb and learn with ease. This exposure will give them the opportunity to critical exam and learn the systems, methods, and procedures that are being practiced in the hospitals. Therefore, prior to posting to hospital field work, the exposure in mock-up lab will allow spending more time on important sections in MRD.

Generally, students can be posted to “Mock-up” lab from 2nd or 3rd year onwards and to hospital from 4th year. With this mechanism, the students will have clear idea about the sections and type of work they are going to do and learn in the hospitals. First of all they will be too curious and critical to analyze the system practiced in the hospital with their theoretical knowledge and exposure to “mock-up” lab will help them extremely and will motivate the students to be involved with the system effectively.

Typical Sample of Mock-up (Lab) Practice in the Institute

Day / Time	9-10	10-11	11-12	12-01	01-02	02-03	93-04
Monday	Classroom	Lab	Classroom	Classroom		Lab	Classroom
Tuesday	Classroom	Classroom	Lab	Classroom		Classroom	Lab
Wednesday	Lab	Lab	Classroom	Classroom		Lab	Classroom
Thursday	Classroom	Classroom	Lab	Lab		Classroom	Lab
Friday	Classroom	Lab	Classroom	Lab		Lab	Classroom
Saturday	Classroom	Lab	Lab	Classroom		Lab	Lab

The students are posted in all the sections of laboratory with dates and time schedule to cover all the functions under the supervision of clinical instructor or demonstrator. During the postings and rotation, the student should maintain a log that will gauge the effectiveness of laboratory practice.

(DAILY TIME SCHEDULE LABORATORY LOG)**Student's Name:****ID #****Year:****Semester:**

Section/ Functions	Date	Time		Activities carried out	Clinical Instructors Remarks
		From	To		

The student should maintain the log on daily basis and submit to the Clinical Instructor every week end and obtain his comments. The log will give comprehensive picture of the functions covered. Overall assessment will be done on the basis of completion of laboratory work.

A. General Rules and Guidelines:

- Each session held would consist of a lecture and practical training that follows. There should always be time for discussion.
- Each PC would have program installed on it as well as other window programs
- Each student is to write reflective essays about each day's work and assignments.
- There should be a "problems and solutions" session to see students' reactions to them and their response.
- Each procedure no matter how simple should be implemented in the training program

B. Topics to be covered:

- MR specific topics : Registration, appointment, Admission etc. and importance of MRD (HIM) in the facility and its weight.
- Management topics to ensure good people management as well the time and self management. Management topic should include peoples' skills.
- Communication topics to emphasize the importance of the latter in the smoothness of work in MRD.
- Importance of continuous education process.
- English Language and medical terms to be the hot topic

C. Areas of concentration on :

- Record assembly and consistence of all patients' record.
- Critical analysis of incomplete record
- Typing (word processing), transcription, classes and spelling session
- Quality Assurance and CQI
- Team work importance; should assign team-projects

D. General Overview:

- National Healthcare
- Administration and other department issues
- Flow of command in the facility
- Specific hospital policies and procedures as well as Job descriptions
- Lenience is some extent is good but too much; will lead to indiscipline
- Seriousness is very essential for effective learning, penalty measures should be taken if needed for the benefit of student

Directed Practice at the Hospital Site: The Directed Professional Practice Internship and Project Handbook needs to be prepared at par with the international standards universities to help the students/interns, mentor or supervisor or adviser and the hospital or health institution where the intern gets the directed practice under the authorized supervisor/s the required practice. The professional practice is designed to offer experience in a medical record department or (HIM department) that develop the student/intern's cognitive, affective and psychomotor skills to produce a qualified Health Information Management & Technology professional. The HIM department is a hub of hospital organization; has many sections; the work performed by different categories of staff; some are operational, supervisory and managerial levels. The students have to expose to all the sections without fail as each section /division has some important functions to carry out. Upon completion of Directed Practice at Mock-up lab and at hospitals / health institution, the student should be able to manage the HIM department effectively and efficiently.

4- Year Degree in Health Information Management (HIM) Program comprises Lectures, Lab Practice and Total Credit and Hours

S. No.	Subject	Lectures	Lab	Total Hrs	Credit Hrs
1	English Language and Communication Skills	2	4	150	6
2	Anatomy and Physiology	2	2	90	4
3	Medical Terminology	2	2	90	4
4	Healthcare Delivery System including Public Health and Community Care	4		60	4
5	Basic & Allied Health Sciences: Basic including introduction to biology, physics, chemistry & Allied Health Sciences	7	1	135	8

6	Health Information Management (HIM)- Medical Legal, Ethics, MR Quality Management, Medical Legal, Privacy, Confidentiality, Medical Transcription, Telemedicine, Application of HIM in Non-Traditional settings.	7	8	345	15
7	Information Management (IT): Basic computers, Computer applications, Database management system, Communication, IT system data information, File structure, Data storage & Retrieval, Healthcare Information System	5	6	255	11
8	General and Bio-Statistics, Research Methodology, Healthcare statistics, Biomedical research	4	5	210	9
9	Hospital Organization and Management: Introduction to various departments of hospital. Medical Laws, Ethics, Consumer Protection Act, Healthcare Policies and Standards, Reimbursement, Insurance & Cost-Analysis	7	1	135	8
10	International Classification of Diseases (ICD): Indexing methods of diseases and procedures	2	3	120	5
11	Quality Assurance & Quality Management, Research and Performance Management	4	2	120	6
12	Hospital Information System (HIS)	2	2	90	4
13	Principals of Organization & Management (POM): Strategic Planning, Organization and Development, Project & Operational Management HR Management, Financial & Resource Management, Reimbursement, Insurance and Cost-Analysis	6	2	150	8
14	Health Data Management: Overview, Health Data Structure, Content, Standards, Health Information Requirements and Standards, Clinical Classification System	7	7	315	14
		61	45	2265	106
	Practical Training and Project work	Semester			
15	Practical (Directed Practice) Training at Hospital	7 th Semester			
16	Project work for implementation and improvement	8 th Semester			

Evaluation Methods: Regular assessment on theoretical lectures, lab work, and assignments and hands-on practical work at hospitals and project work. Student deficiencies are identified and corrected. The grading should be based on: Assessment sheet, written reports by student, Student Log, Observation of a job duties explanation and Written Test.

Grading Points:

Grade	Percentage of Marks	Reported as	Points
A	>90% (>95% = A+ ; >90% =A)	Excellent	4
B	>80% (>85% = B+; >80% =B)	Very Good	3
C	>70 % (>75% = C+; >70% =C)	Good	2
D	>60%) (>65% = D+; >60% =D)	Pass	1
E	< 60%	Fail	0

Conclusion: The idea of innovative HIM education with mock-up lab and practical training to encompass the syllabus and course content to enable the HIM student to gain utmost knowledge, skills and required attitude to deal with the latest technology and challenging issues faced by the hospitals in view of spiraling cost and high expectation of quality of care by patients. HIM professionals have to work with passion, dedication, and have to widen their focus and broaden their horizons. Everyone has to prove their skills and to provide vision to the organization. In view of finding the ways to contain cost without scarifying the quality of care, the hospital management needs help to address this continual problem. This is an opportunity for Health Information Managers to assume leadership roles and be part of the senior management team to support them in providing facts for business opportunities, clinical care improvement, efficient Revenue Cycle Management etc. This can lift the status of the HIM professional to a new level, with different dimensions of roles and functionalities with emergence of EMR that would play a pivotal role for planning and executing data collection and performing big data analytics, educating physicians and care providers on documentation needs and providing extensive support in revenue cycle management. This Can be achieved by having continuous audits and quality assurance programs involving all the healthcare providers. Although technology is taking over traditional methods, HI Managers have to be vigilant with their educational background and professional expertise to prove indispensable healthcare team member.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Effect of Relaxation Techniques in Reducing Stress Level among Mothers of Children with Autism Spectrum Disorder

**Jay A Ablog¹, Dyanne Rocaberte Del Carmen¹, Joselle Dara M Estrada¹,
Luke Clifferson M Gagarin¹, Florence T Lang-ay¹, Dayanara O Marinas¹,
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Background: To date, the evidence on the effects of relaxation training on the stress level of mothers of children with Autism Spectrum Disorder (ASD) is scarce. The number of children with ASD in the country is significantly increasing. Objective: The aim of this study is to investigate the effect of 4-week structured relaxation techniques particularly deep breathing, progressive muscle relaxation, and mindful eating exercise in stress level reduction. Methods: A quasi-experimental design was used utilizing 25 mothers (10 in the experimental group; 15 in the control). Subjects were chosen via purposive sampling and were gathered in different SPED centers in Baguio City, La Trinidad, Pangasinan, La Union, Nueva Ecija and Ilocos Sur. Stress levels were measured using Parenting Stress Index- Short Form (PSI-SF). Statistical tests used were T-Test and Related T-test. Results: The post-intervention mean score of mothers in the experimental group was significantly lower compared to the pre-intervention mean score. The overall weighted mean score after 4 weeks of relaxation training show effectiveness in lowering stress level of mothers. Likewise, there is significant difference in the stress level reduction of mothers in the control and the experimental group. Discussion: The 4-week structured relaxation techniques such as DBE, PMR, and mindful eating show evidence of effectiveness in reducing stress level of mothers of children with autism spectrum disorder. These techniques are cost effective, easy to perform, and non-pharmacological interventions to manage stress level. Recommendations: The researchers recommend that mothers to incorporate these relaxation techniques in their daily activities to decrease their stress level; and for future research studies to test the effectiveness of the relaxation techniques to family caregivers of children with other neuro-developmental disorders and other psychiatric disorders. Keywords: Relaxation Techniques, Mindful Eating, Progressive Muscle Relaxation, Breathing Exercise, Autism Spectrum Disorder

Abstract only

Mortality Statistics in Sbrana Psychiatric Hospital

Veronica Maemo Moswang

Sbrana Psychiatric Hospital

Sbrana Psychiatric Hospital (SPH) formerly known as Lobatse Mental Hospital started Operating in 1938. It is the one and only Psychiatric Hospital in Botswana and it is based in a town called Lobatse, about 70km south of the capital city Gaborone. At first it was an observation centre for forensic patients (Mentally ill prisoners) and an observation wing for psychiatric patients from Athlone hospital. The hospital has been named after the first Psychiatric specialist -in 1969 to work at Lobatse Mental Hospital, Dr Giuseppe Sbrana who was from Italy. The naming of the Hospital is in recognition and appreciation of the contribution and legacy of the late Dr Sbrana to the development of Mental health in Botswana. The new hospital is one of the most modern psychiatric hospitals in Africa. It is also the only national referral hospital for Psychiatric illnesses in Botswana. It has a bed capacity of 6 complexes: the Day Hospital, Adolescent ward, Forensic ward for mentally unstable offenders, Rehabilitation ward, Observation ward and Psycho-geriatric ward for elderly citizens. The Mortality rate between 2010 and 2015 is 17 patients. The causes of death range from cardio vascular conditions to Organic Psychosis Caused by underlying diseases e.g. AIDS related condition.

Abstract only

The Western Medicine, How Much It Has Been Influenced on Japanese Medicine during the 14 Centuries

Akiko Kasama

IFHIMA associate member / Living in Japan

I looked over Japanese medical word in retrospect. The survey period from Asuka era to Showa era which continued about 1400 years. From medical terminology and medicine' point, I decided to divide three parts. The first part is from about 600A.D. to about 1860A.D., the second part is from about 1860A.D. to about 1950A.D., the third part is from about 1950A.D. to about 1970A.D.. Study materials for the first part were the Japanese famous literatures, the literature of the each Period such as Nara, Heian, Azuchi Momoyama, Kamakura, Edo Period used. For the second part study materials, the medical dictionaries published in Japanese and in English during Meiji era (around 1900A.D.) printed and published. For the third part study materials mainly the early version ICD published in Japanese government. At the result the first part mentioned 'treatment', the second part mentioned 'diagnosis', the third part mentioned 'usage health data'. It was concluded through the study, two times foreign pressures to change old era's Japanese medicine.

Mother Responsiveness Model on Children Under 2 Years Development

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ABSTRACT

Early Detection of Children Growth and Development carried in bulk in Blitar in 2008. As much as 5545 examined children were suspected of having problems of child development as many as 404 children, or about 7.2%. This research was observational, with two stages namely exploratory and descriptive research. This was cross sectional study on mothers and children aged 3 months to 2 years in Blitar. The variables studied were: mother factor, child factor, father support, health care, mother responsiveness, emotions, and child development. Results of the study were: (1) Mother responsiveness model was confirmatory theory models built from blanded theory namely mother role attainment and ecology with the substitution of mother responsiveness. (2) The model has good predictive power because all the constructs of the latent variables of each parameter estimates provide a strong effect on the performance of nurses. (3) The value GoF of 0.35 means that this model can increase mother responsiveness to the child's development. Inferential data analysis was using PLS 2.0. The new findings, mother responsiveness models on development of children aged under two years. There are two factor that affect mother responsiveness, namely child factor and the father factor. Furthermore, Things affecting the development of children are mother factor, health care and emotional factor.

Keywords: mother responsiveness, child development

1. Background

Children in developing countries are faced with several risks, such as: poverty, malnutrition, poor health, and lack of stimulation in the environment. Those conditions are the facts relating to the development of cognitive, motor and emotional. It is estimated that over 200 million children under five years old fail to reach potential development related to things above.

Growth and development of children associated with the condition of the family, including their parents. In the family, there is a mother who has big role in growth and development of children. In China, a mother's role is very important to practice positive parenting and child development.

There were 10.3% of women in great conditions and as much as 4.9% mom in a helpless condition. Indicators of mother empowerment in the family was the dominant determinant of the incidence of child mortality was mother participation in decision-making in the family and the differences in mother age were not far from her husband was a protective factor of the incidence of child mortality. The absence of support by health care workers such as doctors, midwives, nurses and health workers

caused some mothers did not manage to do Early Initiation of breastfeeding.

2. Method

The study started with data about the psychological state of the mother and the child development is used as material exploration variables that affect the mother responsiveness, the child's emotions to development. Developmental screening used Pre-Screening Questionnaire Development. It is used to know the status of development. Further arranged early models were obtained through analysis of the appropriate model and interpret. Based on the formula rule of the thumb in the SEM (Structural Equation Modeling), as stated that the use SEM with a Maximum Likelihood method requires minimal sample five times the indicator (observed variables) that exist in the model.

3. Results and Discussion

3.1 Mother Psychological Factor

Table 1 Frequency Distribution of Psychological Factor Variable of Mother in Blitar Year 2014

Number	Mother Factor	Category						Total	
		Good		Fair		Poor			
		(f)	(%)	(f)	(%)	(f)	(%)	Σ	(%)
1	Emphaty	151	54.1	85	30.5	43	15.4	279	100
2	Pride	101	36.2	129	46.2	49	17.6	279	100
3	Child Acceptance	57	20.4	147	52.7	75	26.9	279	100
4	Maturity	206	73.6	11	3.9	62	22.2	279	100
5	Difficult experience of pregnancy and giving birth								
6	Depression	39	14.0	69	24.7	171	61.3	279	100
7	Role conflict and tension	45	16.1	47	16.8	187	67.0	279	100
		80	28.7	14	5.0	185	66.3	279	100

Mother factor variable consist of empathy, self-esteem, acceptance of the child, maturity, birth pregnancy experience, depression, role conflict, and tension. From Table 1, it can be seen that the highest mother factor categories are maturity, empathy and self-esteem, as well as the acceptance of the children. Most of the mothers had lower levels of depression, low role conflict and tension, had good experience of pregnancy and birth as well.

3.2 Children Factor

Table 2 Frequency Distribution of Child Variable Factor in Blitar Year 2014

No	Child Factor	Category						Total	
		Good		Fair		Poor			
		(f)	(%)	(f)	(%)	(f)	(%)	Σ	(%)
1	Health status	71	25.4	111	39.8	97	34.8	279	100
2	Temperament	17	6.1	262	93.9	0	0	279	100

3	Responsiveness	70	25.1	132	47.3	77	27.6	279	100
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From table 2 of the factor variable frequency of the child, it can be seen that most were children with a good and fair temperament. The children health status was also good and fair. Children had good and fair responsiveness. Not even a child who had bad temperament.

3.3 Father Factor

Table 3 Frequency Distribution of Father Factor in Blitar Year 2014

No	Father Factor	Category						Total	
		Good		Fair		Poor			
		(f)	(%)	(f)	(%)	(f)	(%)	Σ	(%)
1	Emotional	192	68.8	16	5.7	71	25.4	279	100
2	Information	116	41.6	86	30.8	77	27.6	279	100
3	Instrument	163	58.4	53	19.0	63	22.6	279	100
4	Rewards	126	45.2	96	34.1	58	20.8	279	100

From table 3 of the father factor variable frequency can be seen that the majority of fathers had good category in terms of providing emotional support to the mother, providing information or explanation to the mother, giving the facility during pregnancy and birth of her child, and also rewarding the wife.

3.4 Health Services Factor

Table 4 Frequency Distribution of Health Services Factor in Blitar Year 2014

No	Health Services Support	Category						Total	
		Good		Fair		Poor			
		(f)	(%)	(f)	(%)	(f)	(%)	Σ	(%)
1	Public Health Center	117	41,9	85	30,5	77	27,6	279	100
2	Integrated Service Post	111	39,8	93	33,3	75	26,9	279	100

From table 4 of the health services factor variable frequency can be seen that most of the Public Health Center had a good and fair category. Likewise, Integrated Service Post (Posyandu) mostly with the category of good and fair.

3.5 Mother Responsiveness

Table 5 Frequency distribution of Mother Responsiveness Variabel in Blitar Year 2014

No	Responsiveness Ibu	Category						Total	
		Good		Fair		Poor			
		(f)	(%)	(f)	(%)	(f)	(%)	Σ	(%)
1	Fast and effective treatment	208	74.6	43	15.4	28	10.0	279	100
2	Emotional support	15	5.4	230	82.4	34	12.2	279	100

3	Mother response on children attention focus	9	3.2	164	58.8	106	38.0	279	100
4	Language utilization	220	78.9	49	17.6	10	3.6	279	100

From table 5 on mother responsiveness frequency variables it was known that most mothers have a good category in using language that was easy to understand. Likewise, the mother was taking care of her child fast and effectively. Most mothers had fair category in providing emotional support or affection to their children. Mostly mothers gave their focus attention response to the children well.

3.6 Child Emotion

From table 6 of variable frequency of child emotion variable can be seen that children mostly had a happy emotions on adequate category, while sadness, fear and anger had inadequate category.

Table 6 Frequency distribution of Child Emotion Variable in Blitar Year 2014

No	Child Emotion	Category				Total	
		Adequate		Inadequate			
		(f)	(%)	(f)	(%)	Σ	(%)
1	Happy	239	85.6	40	14.4	279	100
2	Sad	71	25.6	208	74.4	279	100
3	Afraid	159	57.0	120	43.0	279	100
4	Angry	62	22.2	217	77.8	279	100

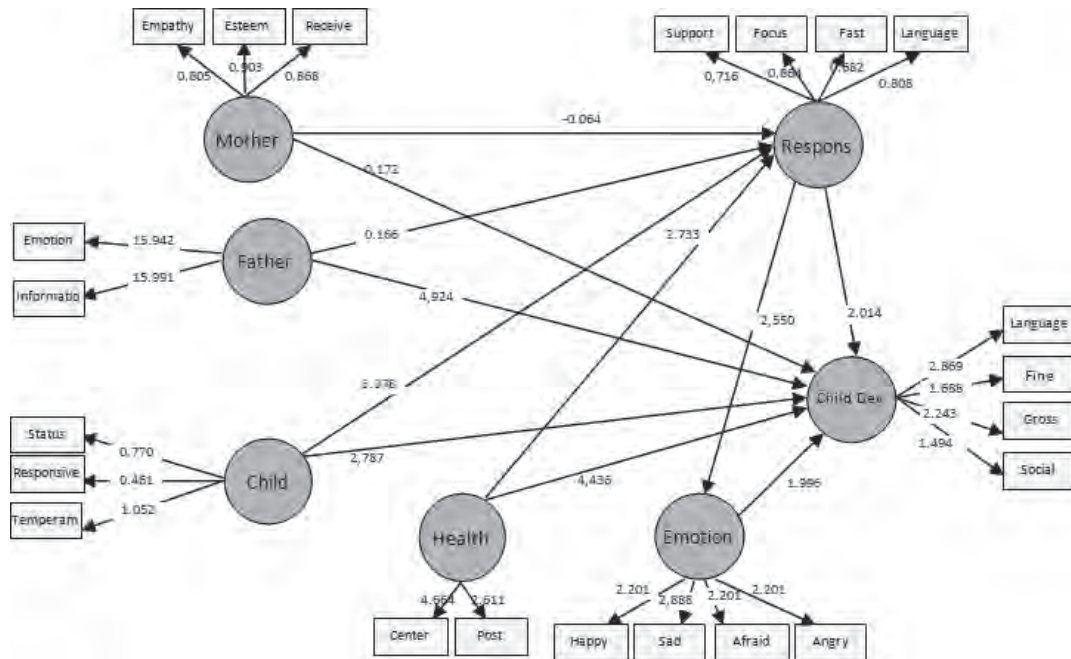
3.7 Child development

Table 7 Frequency distribution of Child Development Variable in Blitar Year 2014

No	Child Development	Category (KPSP)				Total	
		Yes		No			
		(f)	(%)	(f)	(%)	Σ	(%)
1	Gross Motor	225	80.6	54	19.4	279	100
2	Fine Motor	255	91.4	24	8.6	279	100
3	Socialization	263	94.3	16	5.7	279	100
4	Language	257	92.1	22	7.9	279	100

From table 7 of the variable frequency of the child's development can be seen that the development of a child's rough motor, smooth motor, children with socialization development, and children with language development were in good categories. Group with the highest category was the development of socialization and the least is gross motor development.

Figure 1 Analysis of the Exogenous Variables Relationship Model after Invalid Eliminated



3.8 Children's emotions on child development

From the research revealed that parents who train their emotions can help children develop into healthy adults, earn higher grades academically, and more successful. Children get along better with friends and did not experience behavioral problems, and are not easy to commit acts of violence and less under stress [36].

In response to the stimulus, the children will express their emotions in order with their appropriate level of moral development. As proposed by Kohlberg, that early childhood are still at the stage of pre-conventional, so that the child shows certain behaviors or responses based on the idea of children.

3.9 Health Services Support Factor on Child under Two Years Development

There are four main factors that affected the degree of public health. The fourth factor is the determinant factor of health problems as explained by HL Blum. These four factors consisted of factors behavior / lifestyle (life style), environmental factors (social, economic, political, cultural), health service factors (prevention, treatment, care, and rehabilitation) and genetic factors (heredity). These four factors interact and affect individual health and the health of society.

Health Services such as Community Health Center (Puskesmas) and Integrated Service Post (Posyandu) in this study were found to have a positive correlation with the development of children aged under two years. It is related with Blum concept that the health status of the children affected by health care. Prevention of child development delay (gross motor, fine motor, language and socialization) can be done as early as possible so that children can develop optimally.

Health care services to public, in this case the mother and child are given by health professionals such as doctors, nurses, midwives, nutritionists and volunteers that provide support to the mother to

do a health check children regularly, spend some special time to communicate with the mother, give a boost to the mother in order to carry out regular checks on schedule examinations such as during pregnancy, after childbirth, child immunization and other examinations.

4. Conclusion

Mother Responsiveness on the development of children under two years of age created by factors that include the father's emotional support and information and child factors which consist of health status, child responsiveness to stimuli and child temperament. Development of children aged under two years affected by children's emotions (sad, happy, fearful), mother factors namely self-esteem / self-concept, Empathy-sensitivity to cues, parenting received as child and health care. Mother responsiveness on the aspect of speed and accuracy to act, emotional support for the child, mother's response to child attention focus, and the use of mother tongue) by children's emotions (happy, sad, afraid) can improve the child development level in all aspects such as language development, gross motor skills, socialization and Fine motor.

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Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Documentation of Proforma on Knowledge Attitude and Practice Related to Yoga Therapy among Patients of Anxiety Disorder

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Introduction Anxiety disorders are the most common of all mental health problems and often are chronic requiring ongoing medical or psychiatric care, including psychosocial therapies. The non drug therapies such as Cognitive behavioral therapy, Relaxation techniques, and bio feed back have proved efficacious. There has been a paucity of research on the role of yoga therapy on anxiety disorders. Yoga therapy is a practical discipline incorporating a wide variety of techniques whose goal is the development of a state of mental and physical health, wellbeing and inner harmony. **Methodology** The present paper examines the knowledge, attitude, practice related to Yoga therapy among patients of Anxiety disorder. The objective is to assess how these documentation methods help in decision making for yoga treatment and intervention in patients of Anxiety disorder. One hundred and thirty two patients diagnosed as suffering from Anxiety disorders according to ICD 10 aged between 20 to 50 years, were recruited and assessed on anxiety severity scale and those who were of mild-moderate categories who were willing to practice yoga were considered. Patients having medical disorders and other psychiatry disorders were excluded. Written consents were taken. Patients were assessed prior to yoga training in the department of Yoga, Manipal University on Interview schedule on knowledge, attitude and practice related to yoga therapy which was devised by the researcher. This questionnaire contained 9 main questions with 7 sub questions. **Results** Among total 132 patients, maximum 94% reported as they were having knowledge about yoga, 96% reported as yoga can be used as a form of treatment in psychiatric problems, 96% to improve quality of life. 90% of them did think that, patients with various disorders can be advised to practice yoga in addition to medicines or any other treatment. The other findings would be discussed with implications and further recommendations. **Discussion and Conclusion** In the present study the documentation of knowledge, attitude, practice related to Yoga therapy among patients helped in decision making as yoga treatment and intervention may add positive effects in Anxiety disorder. **Key words** Documentation, Knowledge, Attitude, Practice, Yoga therapy

Inconsistency of Per-Diem Charges of Japan Diagnosis Procedure Combination (DPC) Reimbursement System

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ABSTRACT

[Background] Japan's diagnosis-procedure-combination (DPC) is a case-mix classification introduced in 2003 for reimbursement of acute care hospitals. Japan's DPC distinguishes itself from American DRG in that its reimbursement is per-diem payment system (PDPS) as opposed to per-case payment system (PCPS) reflecting Japan's long length of stay.

However, the per-diem prices (covering hospital fees) are staged in three periods after admission, and this anomalously staged pricing results in an inconsistent inter-group ranking in cumulative per-diem prices (e.g., a disease priced higher in an early stage of admission may become low priced in a later stage of hospitalization).

Since the primary diagnosis (most-resource intensive diagnosis, MRD) is finalized upon discharge, such anomalous staging in reimbursement carries a risk of retrospective reconsideration of MRD in favour of increased cumulative reimbursement.

[Methods] The author calculated the cumulative per-diem prices of every DPCs (N=2307) compared the change of their inter-group ranking during 30 days admission.

[Results] Of 2,307 DPCs, only 15 of them showed consistent inter-group ranking in cumulative per-diem prices during 30 days of admission. On average, the inter-group ranking varied by 448 during 30 days of admission.

[Discussion] The current three-stage pricing may carry a risk of "up-coding" such as retrospectively reconsider the MRD in favour of increased per-diem reimbursement. Such anomalous staging in price should be revised to ensure a consistent inter-group ranking in price.

1. Background

1.1 Structure of Japan's DPC system

DRG classification starts with determining a most resource-intensive diagnosis (MRD). If a patient has multiple diseases, MRD is defined as 'a diagnosis consuming the most resources (cost)'. Then the patient will be subclassified by the presence/absence of procedures (hence the name of diagnosis-procedure combination).

This is a sharp contrast to DRG in US, which classifies patients first by the presence/absence of procedures and then subclassified by a primary diagnosis.

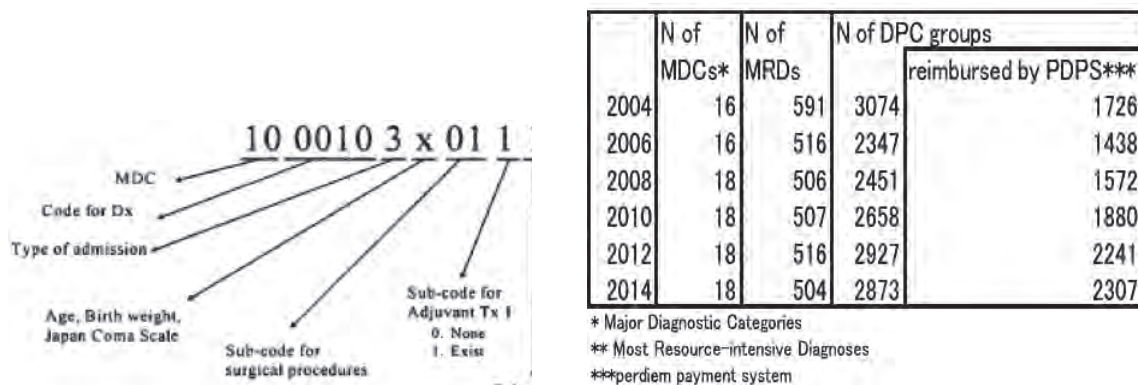
DPC classification of starting with diagnosis is amenable to doctors' clinical judgment and is believed to be one of the reasons why it was accepted by clinical doctors [1].

However, it defies the principle of classification, "*starting with more certain to less certain*". Conse-

quently, Japan's DPC incorporated in its essence a risk of "up-coding".

Another character of DPC is its numerosity and complexity. It consists of nearly 3000 groups. Not all DPCs are used for PDPS. To ensure statistical accuracy, DPC with at least 20 cases can be used for PDPS (otherwise, patients are reimbursed by traditional fee-for-service, FFS).

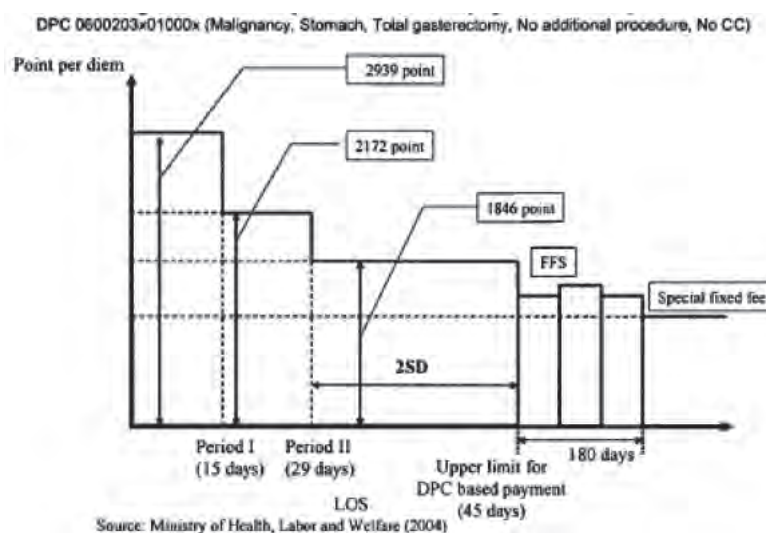
Given its numerosity and complexity, many DPCs cannot fulfill the minimal cases of 20. According to the author's analysis, 200 DPCs out of 2927 (2012 DPC classification) had cases less than 10 and as many as 34 DPCs had no cases throughout a year [2]. The number of DPC under PDPS increased gradually as years passed, still only 2307 DPCs are included in PDPS payment system.



1.2 Per-diem payment system using DPC system

Japan introduced a case-mix reimbursement system in 2003, apparently inspired by DRG system of US. However, given Japan's unusually long length of stay (16.9 days in 2014, OECD average :7.5 days), it was not practical to introduce the DRG-like per-case payment system (PCPS). As a compromise, per-diem payment system (PDPS) was introduced.

PDPS covers hospital fee (room and board, nursing and laboratories and IV) excluding doctors' fee (such as surgery and anesthesia), which are reimbursed traditional FFS.



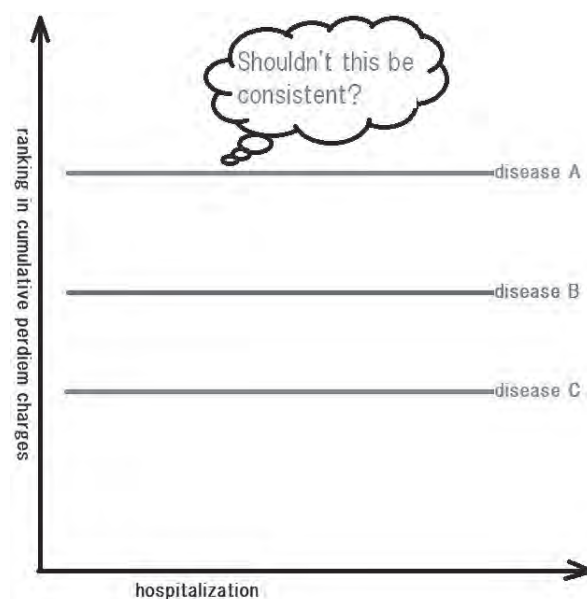
Per-diem prices are fixed on every DPC, but the prices are stages in three stages. The right figure

shows that for a particular DPC, a per-diem price of 2939 points (=10yen) set for the first 15 days of admission (period I), 2172 for the 16th through 29th day (period II) and 1846 for the 30th through 45th day (period III). There is a limit for PDPS (in this particular case, the limit is 45 days), beyond which, the remaining hospitalization period will be reimbursed by FFS.

The three stages and limit varies from DPC to DPC. Some DPCs have anomalous stagings. For example, the DPC 130030xx99x7xx (a primary diagnosis of “non-Hodgkin lymphoma” with no surgery but using Ibritumomab tiuxetan), has the per-diem charge set at 477,449 yen on the first day but will be reduced to only 1,770 yen during the stay between 2 and 13th day and the per-diem charge will be increased to 31,657 yen on the 14th day and after.

Because of such anomalous price-setting, there is an inconsistency in inter-group rank of cumulative per-diem charges. The inconsistency of inter-group rank is exemplified as disease A is priced higher than disease B until the 10th of hospitalization but the disease B becomes more expensive than A on the 11th day and after.

If the inter-group ranking of DPC were consistent, the graph would be parallel among DPCs (as shown right).



2. Methods

The cumulative per-diem charges were calculated for every 2,307 groups and their ranks in cumulative per-diem charges were calculated for every day up to 30 days of hospitalization.

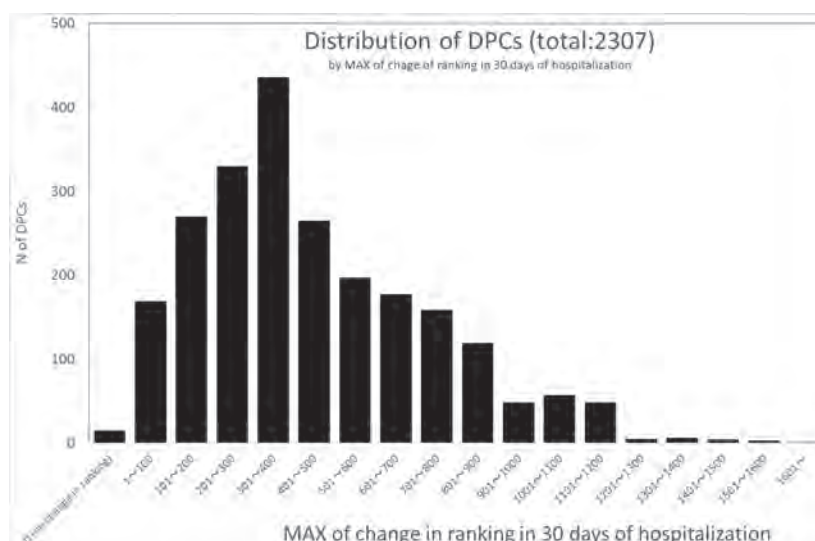
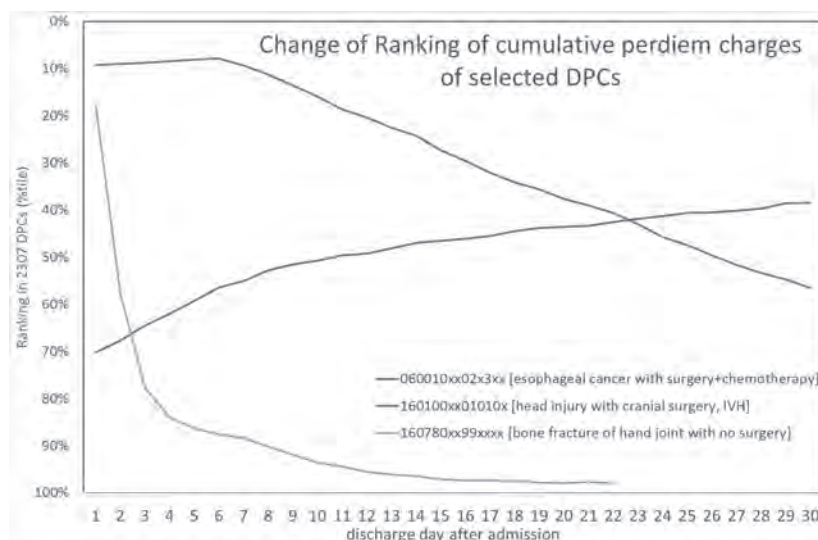
3. Results

Many DPCs showed a considerable change in rankings in cumulative per-diem prices. Typical three cases are shown in the graph (right).

DPC 160100xx01010x [head injury with cranial surgery, IVH] has one of the highest per-diem price

in the beginning of hospitalization but the cumulative per-diem prices declines gradually as the hospitalization prolongs. On the other hand, DPC 060010xx02x3xx [esophageal cancer with surgery+chemotherapy] has relatively low per-diem price in the beginning but its cumulative per-diem price increases as the hospitalization prolongs eventually surpassing DPC 160100xx01010x on the 22nd day of hospitalization. Some DPCs, namely DPC 160780xx99xxxx [bone fracture of hand joint with no surgery], showed an extraordinary pattern: it has one of the highest per-diem price on the first day (413th) but declines sharply to 2006th on the 6th day.

Overall, only 15 DPCs had a consistent rankings throughout 30 day hospitalization. When compared by the difference between the maximum vs. minimal rankings of each DPC, rankings varied by 448 during 30 days of hospitalization.



4. Discussion

The observed inconsistency of inter-group ranking of per-diem charges are attributable to the complexity of DPC classification (in addition to the numerousness of 2,307 groups, the complexity is augmented by staging by varying length of stay).

Since the DPC classification is finalized at the time of discharge (not on admission), the observed inconsistency may provoke undesirable “upcoding (changing the DPC grouping retrospectively to maximize the cumulative per-diem charges upon discharge)”. The observed inconsistency and potential upcoding may necessitate inclusion of professional coding specialists into the “Claims Review Committee” to verify the appropriateness of DPC classification

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Abstract only

Accurate and Complete Documentation is Essential to DRG Based Payment Systems

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3M Health Information Systems¹

As quality care, patient safety and the increased reliance on morbidity data collections for decision making at all levels of management becomes more prevalent combined with the linking of morbidity data to prospective payment systems the need for accurate, specific and complete clinical documentation in the medical record has never been more important. With Diagnosis Related Groups (DRGs) used increasingly throughout the world as the source of payment for acute inpatient care, it is essential to provide accurate coded data in order to drive accurate payment. In the United States concurrent review models dominate, ensuring the documentation has been reviewed and is complete at the time discharge so that accurate coded data is reported. In Australia the country uses the AR-DRG payment system but had limited documentation review programs established. Recently interest in establishment of these programs has increased with hospitals adapting the US model. Adapting a model from one country to another raises many issues such as the nuances of each payment system, the differences in the Diagnosis Related Groups and how they are formed, the classification system in use and the application of the Coding rules amongst ever evolving health care systems. This abstract will share the path to establishing a clinical documentation program in a country where few programs have existed, and will discuss the implications for this type of program in the context of the needs of the classification and payment systems. In addition, the authors will share the modifications required to apply the concepts within different systems.

Abstract only

Coding to Standards or Funding Incentives? A Question of Health Data Integrity

Vera Dimitropoulos

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Coded data are used for many purposes and funding is only one use case. Coded data are also required for epidemiology, research, planning and evaluation and quality improvement activities to name a few. The design of health classification systems should not be compromised by attempts to drive the primary focus towards funding of our health services. This is an important principle. It is easier to maintain data integrity when no one is offering to buy it out. It has never been more important to ensure that the quality and integrity of coded health data is maintained and in some instances improved. We must not sacrifice the integrity of our work for short term financial gains; and we must empower professional pride in all aspects of our work including: classification and standards development. No matter whether ICD or DRGs; clinical documentation from our clinicians and the process of clinical coding needs to be of optimum quality in order to create an accurate clinical picture of the patient episode of care regardless of episode type (e.g. acute, non-admitted, rehabilitation, etc.) The introduction of a national activity based funding scheme in Australia has focused our attention on the reliability and validity of coded data. Education of clinicians on the relationship between ICD10AM, ACHI, ACS and ARDRGs, and the effect that clinical documentation has on the quality of coded data and resultant ARDRG allocation is imperative. However, we must not forget the impact that data integrity has on the quality of patient care and the wider implications of public health. It is really not a question of whether we are coding to standards or funding incentives but really we should be asking ourselves what are we developing health classification systems and standards for? Over the years we have grappled with what and how we should be coding an episode of care. We may need to go back to basics and do some rethinking in relation to primary coding standards. Clinical coding should not have to be so difficult. Accurate, complete and timely coded data plays a major role in the continuity of patient care and health services and providers also need to be reimbursed appropriately via a grouping system that reflects the totality of care. Optimising patient care and reimbursement is a better way of thinking about the situation. Maximisation is thwart with connotations of exploitation.

Utilization of Medical Receipt Information with the Aim of Data Health Plan Using Data From the Hiroshima Local City

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Rie Shimizu⁴, Michiko Moriyama⁵**

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ABSTRACT

In Japan, electronic management of medical information advances, has become can be analyzed utilizing health medical information. Done on the medical insurance has performed the analysis, data health plan that refers to the effective and efficient health service has been promoted from the line with the health status of the subscriber. In this study, using the health care information in the region, it was examined the use for the data health plan. It analyzed data, Hiroshima Prefecture A city National Health Insurance subscribers medical fee bill of July practice worth 2012 from August 2011. First, in order to explore the medical expenses structure of the entire A city, it was calculated by medical costs and patient-specific medical disease. Next, in order to explore the district another disease structure and the structure of health care expenditure of A city, in each district, the structure of the disease large classification, a comparison of the structure of the high-frequency disease code went. As a result of aggregate patient-specific medical expenses, it accounted for 77% of the medical expenses for the entire 20% of the patients. As a result of counting by the medical expenses disease Schizophrenia, hypertension, chronic renal failure, and diabetes was listed in the top. In each district, as a result of comparing the disease structure. The configuration of the disease large classification in hospitalization were compared 6-cho. Mental and behavioral disorders and diseases of the nervous system was often in a specific area. Characterized by town. These results were observed. By taking advantage of the regional health medical information, it was possible to understand the characteristics and regional characteristics of the health care consumer. To examine the entire medical structure of A City. By were able to grasp the medical consumer by using the regional health medical information, it is possible to find efficient intervention that can be subject by the health business. It helps make the health service strategy for each region, by performing efficient health services, consider that it is possible to reduce medical expenses. By analyzing the regional healthcare information, it is possible to find the subject's grasp and business of health care consumers and regional characteristics efficiently. To analyze the health medical information, it is possible for efficient health business strategy of each region.

1. Background

Lifestyle-related disease account for about 60 percent of cause of death in Japan. Development and progression of lifestyle-related diseases are greatly affected by aging and lifestyle and so on. For example, compare with early 30s male, early 40s has 3 times higher death rate of heart diseases including myocardial infarction, and beyond 7 times in early 50s. In other words, the age composition of

the employee, will be one of important index for measuring lifestyle-related disease risk in the workplace. The government policy was indicated in 2011 that using receipt online for the insurance claim processing of insurance medical examination was mandatory. As a result, the electronic receipt rate of total medical receipt, is 97% for medical and approximately 100 % for drug in 2013.

Based on the policy, every health insurance association started data health planning and execution, for efficient and effective health service along with PDCA cycle, using medical examination and health information. Based on this background, the Japanese Government decided to utilize special medical examination information and receipt information to data health care plan in 2015. The purpose is to enhance efficient and effective medical insurance services to prevent serious diseases of the people in advance.

2. Purpose

we considered utilization for data health plan using medical receipt data information of the city.

3. Method

We used personal medical receipt data of National Health Insurance of A city for one year. As a survey method, analyzed medical expenses for each disease and for each patient. Using electronic receipt data, however, uncoded outside data is existing. The reason is, without using the main disease name of the Ministry of Health, Labour and Welfare, and described with unique disease name. Therefore, in this time, we encoded un-coded disease name using comparison retrieval process with original dictionary information of Data Horizon Company. The problem is, difficult to obtain the medical expenses by each disease name due to no information to connect disease name to medical examination, including perception and medical examination. With statistical method of the Ministry of Health, Labour and Welfare, only disease name is collected despite of existing medical examination other than main diseases name. Therefore, associating applied medicine and treatment with all disease name described on the receipt, and analyzed and totaled medical expenses.

4. Result

Classified using ICD-10 code, for analyzing total amount of medical expenses. Dominant upper 13 diseases are shown in Figure 1. Spending medical expenses for schizophrenia is most common, following Hypertensive disease, chronic kidney failure and diabetes.

N=5461

Ranking	ICD-10 code	ICD10 name	Number of persons	Total	Per person medical expenses	Ratio among the whole of the net total
1	F20	Schizophrenia	223	248,435,994	1,114,063	8.7%
2	I10	Hypertensive diseases	1,789	229,554,407	128,314	8.0%
3	N18	Chronic kidney disease	59	135,409,538	2,295,077	4.7%
4	E14	Unspecified diabetes mellitus	636	116,176,256	182,667	4.1%
5	E75	Disorders of sphingolipid metabolism and other lipid storage disorders	4	94,776,980	23,694,245	3.3%
6	E78	Disorders of lipoprotein metabolism and other lipidaemias	774	71,805,984	92,773	2.5%
7	C34	Malignant neoplasm of bronchus and lung	95	53,806,029	566,379	1.9%
8	I63	Cerebral infarction	239	52,732,649	217,572	1.8%
9	C18	Malignant neoplasm of colon	140	50,732,649	362,376	1.8%
10	E11	Type 2 diabetes mellitus	232	48,281,894	208,112	1.7%
11	I20	Angina	176	33,263,848	188,999	1.2%
12	H25	senile cataract	958	31,998,513	33,401	1.1%
13	C16	Malignant neoplasm of stomach	136	30,639,782	225,293	1.1%

Figure 1. Disease to the higher thirteenth place judging from the whole medical expenses with the ICD10 code.

This chart shows a Figure2 of grand total for the number of patients and medical expenses.

Horizontal axis shows accumulated rate for total number of patients arranged in descending order of medical expenses. Ordinate axis shows the patient rate among all medical expenses arranged in descending order of medical expenses. As shown this chart, 20 percent of the patient with large medical expenses, accounts for 80 percent of the medical expenses in the A city. Figured Pareto's curve of economics is reconfirmed.

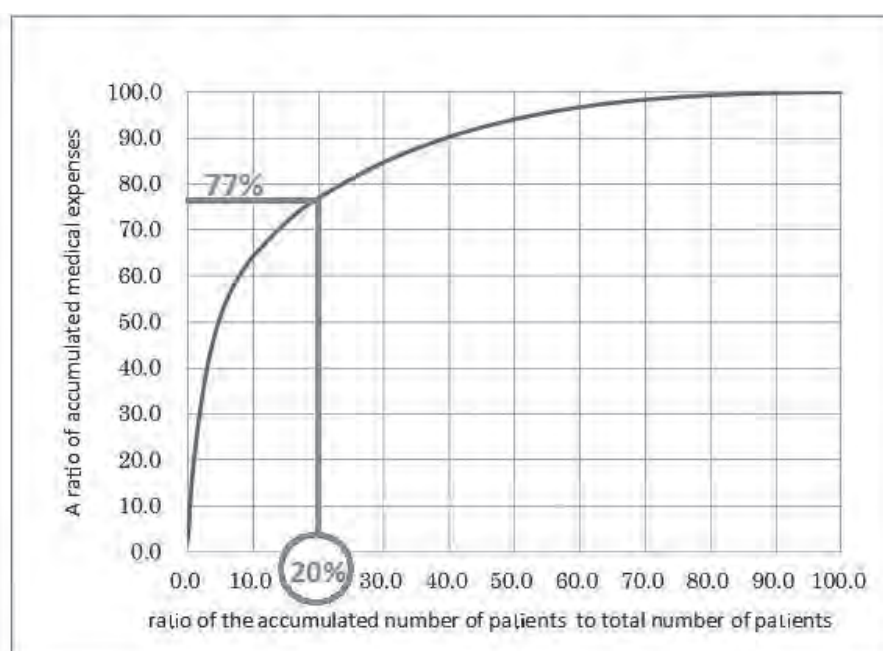


Figure2. Accumulated medical expenses

Next, the Figure3 shows total number of patients by number of disease name and the total medical expenses of A city. Horizontal axis on the table is the number of disease name. As shown on the Figure, the medical expenses tend to high for the patient who has many disease name. However, some patient continued visiting in spite of completed treatment. The reason is, with current Japanese system, difficult to determine medical department by the medical institution name. Difficult to judge whether undergoing disease treatment or past remaining record. In the current state, determination whether the disease name is for the specific examination, disease name for prescribe medicine, or actual disease name, is difficult.

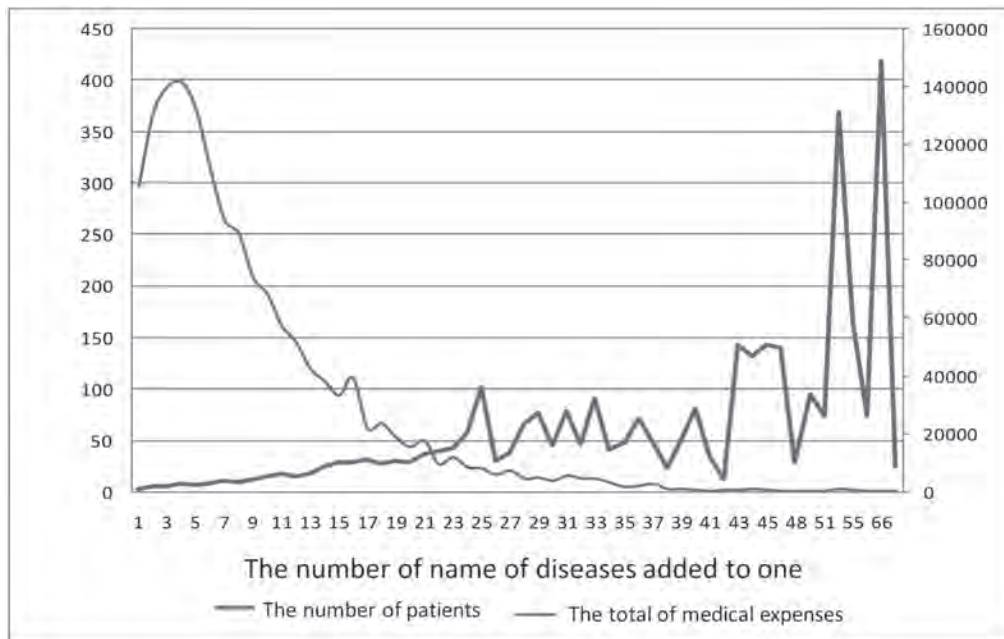


Figure3. Analysis of the number of disease name per patient
inflection of data health plan and the medical treatment information

5. Consideration

With utilizing medical data, can be obtained the characteristics of the medical consumer of entire A city and the characteristics of the town. Because the expensive medical costs are spent for psychiatric disorder, government, local medical associations, and medical institutions with psychiatry, are required consideration for this solution. Depending on the patient, visiting more than one medical institution, and medical expenses are tending to high for the patients with many disease name. Health nurse of insurer or nurse visit to the upper 10% medical expense patients home every month, and support for effective medical examination of required services, are required. We found that many disease names which are not treated currently on the receipts, and most of them are difficult to determine, what is the main disease name, for which disease the treatment is conducted, whether or not completed the treatment. Depending on insured patient, having dozens of disease name, and for many patient, difficult to determine whether they had proper examination. I think to ask ordered disease name on the medical receipt to medical institution, is required from this point. I consider that, from now, if more accurate medical receipt data can be obtained for the data health plan, more efficient and effective inter-

vention could be conducted. And it might promote saving medical expenses and maintaining public health.

6. Conclusion

With utilization of medical receipt data, facilitated obtaining medical consumers and regional characteristics easily, and could be found target customer of health service efficiently.

With analyzing health care information, efficient health service strategies for each area is available.

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Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Exploring Levels and Determinants of Infant and Child Mortality in India

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Background: Child survival remains a major task for developing country like India after abundant efforts from the governance. Reducing child mortality is one of the eight Millennium Development Goals i.e. MDGs and India is a respective signatory of Millennium Summit Declaration since 2000. Child survival indicators like the Infant Mortality Rate and Under Five Mortality Rate are critical and widely accepted indicators of well-being of children. The survival indicators broadly measure the probability of death before the age of one and before the age of five respectively and expressed in 1000 live births. Methodology: The study is based on extensive analysis of three rounds of National Family Health Survey (NFHS- I, II and III) and Sample Registration System (SRS), 1978 to 2008 reports from India. The detailed analysis of levels and determinants of Infant and Under-Five Mortality represents a holistic situation of child survival goals in India. Further, it also identifies socio-economic reasons that determine child survival in India. Results: The results aimed at two research questions: Whether Indian states will achieve MDG 4 by 2015 and what are the key socio-economic determinants of child mor-

tality in India? The results produced useful insights stating most of the states are not likely to achieve MDG 4. Only six Indian states namely, Punjab and Himachal Pradesh in North, West Bengal in East, Kerala and Tamil Nadu in South and Maharashtra in West will be able to achieve the MDG 4 by 2015. Going beyond statistical information on child mortality, the study provides convincing evidences on the role of social and economic determinants in explaining high levels of mortality in most of the states. Significant results i.e. P-value less than 0.001 showed impact of maternal education on child survival is one of the most striking results of the study. Conclusion: The study findings showed, enhancing girl's and women's education in the country will indirectly accelerate the decline in child mortality especially among poor and rural population. The study results are also useful for policymakers, health information managers, academicians and research oriented personnel those who work with in domain of child mortality and survival.

Title of Presentation: About the Reliability of Data for the Cancer Registration Data Utilization

Reliability of Cancer Registration Data

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School of Medicine, Japan², Institute of Medical Data Sciences, Japan³

ABSTRACT

A hospital-based cancer registration system was initiated at our hospital during October 2006.

However, the registration data were used only for reports to the National Cancer Center (NCC) and was never analyzed or applied at our institution. Therefore the reliability of the data is unknown.

The present study aimed to determine the reliability of hospital-based cancer registration data at our hospital and to clarify the causes of unreliable data.

We compared five basic items that are common to both systems between hospital-based cancer registration data and Diagnosis Procedure Classification/Per-Diem Payment System (DPC/PDPS) data.

Agreement of five basic items between the two datasets was low (79%) and ratios of the number and age distributions of the patients were unclear.

The number of patients with cancer who enrolled in the hospital-based system and received hospital care for the first time between April 2010 and March 2011 was 919 and data about these patients were also registered with DPC.

The age distribution of patients with five major sites of cancer among the 919 patients was determined in a group in whom date of birth and sex information was revised. Data about five basic items agreed in only 79% of the patients, indicating that 21% of the data about cancer varied between the two systems. Because only 79% of the data was usable, the age distribution was based on 79% of the total. Thus, the original age distribution differed by 21% and deflection of cancer was evident.

These results indicated that the basic five items were insufficient for precise registration. Which data in hospital-based cancer registration systems are appropriate to obtain information about five major **sites of** cancers requires further investigation.

1. INTRODUCTION

The purpose of a hospital-based registration system is to understand the current status of cancer at facilities within specific areas nationwide. The registered data are used for the early detection of cancer and to improve the medical treatment and prognosis of patients with cancer. The registration format is based on a national standard.

The hospital-based cancer registration system was established at our hospital in October 2006. The registration system was used only for the National Cancer Center (NCC) and was never analyzed or applied at our hospital. Therefore, the reliability of these data remains unknown.

The data content of this registration system is derived from patients with tumors determined at the time of a first medical examination and treatment. Other information must be matched to be relevant to later issues such as patient care. Diagnosis, treatment and convalescence information related to cancer are registered in the DPC system. Matched data between the DPC system and hospital-based cancer registration can reveal useful information about cancer, including the background of patients, survival and death.

Therefore the reliability of the hospital-based cancer registration data at our hospital was investigated.

2. PURPOSE

To determine the reliability of data extracted from a hospital-based cancer registration at our hospital and to clarify the causes of unreliable data.

3. METHODS

3.1 Subjects

The subjects of this study were the following data sets. One was from patients entered into a hospital-based cancer registration system between April 2010 and March 2011 and the other was from the Diagnosis Procedure Combination Classification / Per-Diem Payment System (DPC/PDPS; DPC data) between April 2010 and March 2012. The latter served as the reference data.

3.2 Analysis

(1) Five common basic items

The following five common basic items were compared between DPC and registration data: patient registration ID number, admission date, discharge date, sex and date of birth.

We estimated the number of patients for whom the value of an item (such as discharge date) among the five basic items of registration is equal to the value of the same item in the DPC data. When the values of two items (such as ID number and discharge date) were equal between the two data sets, they were referred to as agreement between two items. When the value of five items in the registration data equalled that in DPC data, it was referred to as agreement between five items. The combination of agreed items was divided into ten groups. The number of patients in each group and its ratio to the total number of patients were estimated for ten combinations.

(2) Five major sites of cancer

Patients with major cancers of the stomach, colon/rectum, liver, lung or breast were extracted from all registration data. The number of patients with cancer at one of any of these five sites was counted into three datasets comprising agreement between two items and between five items and all data.

(3) Age distribution of the patients with five major sites of cancer

After correcting wrong dates of birth and the sex of patients with five major sites of cancer in the











registration data, the age distribution of the patients was generated in the datasets of agreement between five items and all data. Patients were divided by age into the following groups: < 20 and ≥ 20 years in 5-year increments.

4. RESULTS

4.1 Five basic items

Figure 1 shows the combination of agreed items divided into ten groups. The number of patients in each group and its ratio to the total number of patients are shown on the right of the figure. The upper two banks show agreements between two items, that is, patient ID and discharge date, or patient ID and admission date. The number of patient with agreement between patient ID and discharge date was 798 (87%) of 919, and this accounted for the highest ratio of patients with any of the 10 combinations (Fig.1, top).

The number of patients for who five basic items agreed between the two sources of data was 728 (79%) of 919, which accounted for the lowest ratio of patients with any of the 10 combinations.

Combination of five basic items	No. of patients (Total:919)	Ratio for total No.
	798	87%
	757	82%
	756	82%
	746	81%
	739	80%
	797	87%
	788	86%
	738	80%
	729	79%
	728	79%






 Patient registration number
  Discharge date
  Admission date
 Gender
  Date of birth

Figure 1. Agreement among basic items.

4.2 Five major sites of cancer

Figure 2 shows the numbers of patients with five major cancers with agreement for two or five items and all registration data.

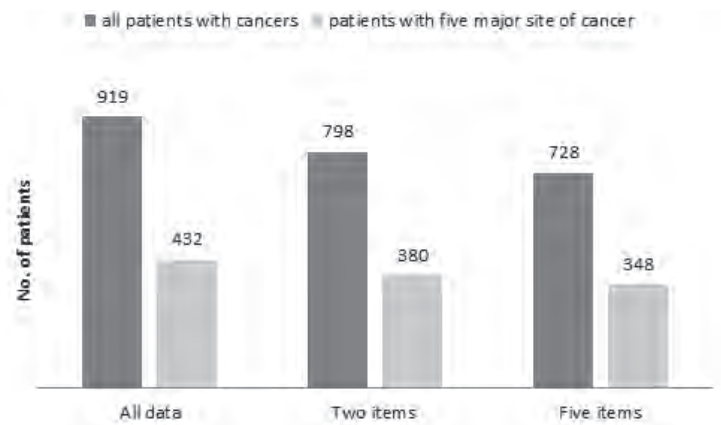


Figure 2. No. of patients with five major cancers in which all, two and five items agree between the two sources of data.

4.3 Age distribution

Figure 3 compares the age distribution of patients with five major cancers between all data and those for whom five items agreed.

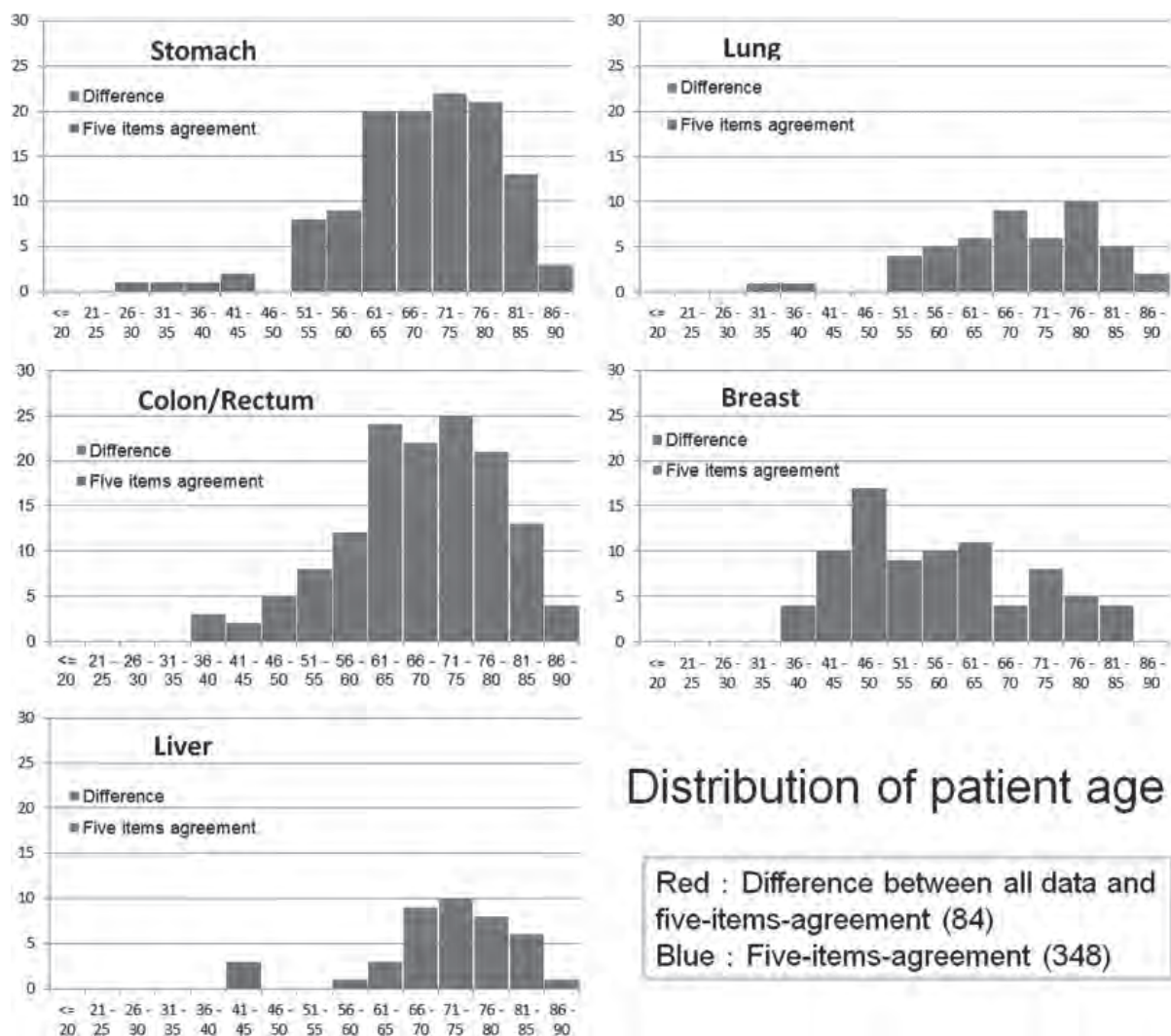


Figure 3. Comparison of age distribution among patients with five major cancers between all data and those for whom five items agreed.

Few patients with cancer of colon/rectum or lung had agreement between the two sources of data for five items-agreement in all generations. In contrast, few older patients with liver or Breast cancer had any agreement between the two sources of data.

5. DISCUSSION

Five items were selected for comparison because they are basic items that identify patients. This information is indispensable for connecting with data derived from other systems and for generating accurate statistical data about treatment and prognosis.

Many input errors about these five basic items were found. Age distribution could not be defined and the five items agreed only in 79% of patients, and thus only 79% of data was usable.

One reason for these errors is that items are entered manually. Therefore, instead of entering items manually, an automated system whereby data is directly updated from the health information system is necessary. Only analysis of data can improve reliability. Errors are unlikely to be noticed only while inputting during registration data.

Precise data are needed for accurate analysis and data reliability could be improved by performing double checks to minimize input error.

Data must be reliably input before starting any analysis.

6. CONCLUSION

The reliability of hospital-based cancer registration data at our hospital was investigated using two methods. Agreement among five basic items extracted from registration and DPC data was only 79% and the ratios of the numbers of patients and age distribution were not definite. Manual entry of data is considered to be the main source of errors in patient information. Therefore, data must be updated directly from the health information system by an automated system.

Data reliability was shown by investigation. Analysis that is simultaneous with registration will improve the reliability of the data.

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Abstract only

Role of Health Information Management in Research

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Australia

The author makes the case for greater collaboration between Health Information Managers (HIMs) and researchers to enhance the quality of research and evidence. There are ongoing issues with the

quality of research, which in turn, impacts the quality of evidence used to make clinical decisions. One area where the quality of research can be improved is in the description of the target patient group and the interventions being studied. Researchers are clinicians and use medical terms to describe the same. There are inherent variations in these descriptions and the detail provided in the journal articles may not always be sufficient to distinguish variations of the disease or indeed of the treatment. This presents difficulties in comparing the research work done in any particular field. There exists an established system for translating these medical descriptions into specific codes with distinct subdivisions, which is the international classification of diseases (ICD). The author believes by using the ICD to describe patient populations and interventions/treatments used, we can take an important step in the standardisation of research. By standardising research with an international classification system, we enhance the accurate applicability of research worldwide. Using the well established classification system may also help understand the variation in results obtained by researchers who are studying the same patient population and/or using the same intervention. Codifying the patient population and intervention would also facilitate the long term follow up of patients and evaluation of research. Health Information Managers have an important role to play in enhancing the rigour, standardisation and applicability of research. They can do this by applying their knowledge of the international classification system (ICD) which is their distinctive asset. Researchers would benefit by engaging with HIMs in the study design to distinctly describe their patient population and target interventions.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Significance of Diagnosis Procedure Combination (DPC) Database in Assessing Complications Following the Endoscopic Procedures

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Diagnosis Procedure Combination (DPC) is a case-mix medical reimbursement system that is used in majority of hospitals in Japan during hospitalization since 2003. The medical fee is basically fixed on main diagnosis, along with procedure and length of hospitalization. DPC data is not only used for reimbursement calculation, but may also work as material for epidemiological research and estimating adverse outcomes of the patients who were admitted for certain diagnosis. In this study, we focused on the data of “endoscopic submucosal resection (ESD, procedure)” for “early gastric cancers (diagnosis)”, which is one of the most frequent diagnosis-procedure combinations in gastroenterology department in our hospital. One of the most frequent complications of the upper gastrointestinal ESD is aspiration pneumonia, but the details are unknown. Using DPC database in our hospital, we assessed the feature of these patients and medical fee. A total of 100 patients went through ESD from April 2015 to March 2016. Fourteen patients were noted to have pneumonia after the procedure according to DPC data, and 4 of them were excluded since it was considered that pneumonia was unrelated to the

endoscopic procedure. Remaining 10 patients were defined to have ESD related pneumonia. Mean age of the patients that complicated pneumonia after ESD was 81.9 years, which was significantly higher than those who did not complicate pneumonia (71.9 year). According to the DPC analyzing software EVE, average total medical fee of pneumonia complicating patients were significantly higher than those who did not complicate pneumonia (836,569 yen vs 683,068 yen, $p<0.01$). In addition, the total cost of injection drugs were significantly higher in the patients who had pneumonia (22,783 yen vs 10,599 yen, pneumonia patients vs non-pneumonia patients, $p<0.05$). The patients with pneumonia had tendency to stay at the hospital longer than non-pneumonia patients (15.1 days vs 12.7 days), although the difference was not statistically different. In average, the hospital lost approximately 22,565 yen per admission by employing DPC system in pneumonia patients, compared to hypothetical “fee-for-service system” based re-imbursement, that was previously applied in Japan before introduction of DPC, whereas the hospital gained approximately 6,753 yen per patient by DPC application. In conclusion, the DPC data analysis confirmed that pneumonia complication in ESD patients increased both the hospitalization fee and financial loss of the hospital. The method to prevent pneumonia may benefit both the clinical and financial conditions for the patients undergoing ESD.

Abstract only

Measurement System of Quality Indicators for Assessing Healthcare Quality

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Background: Emergency medical technicians (EMTs) in Japan sometimes encounter difficulty in identifying a suitable medical facility for the patient. Establishing a cooperative relationship between EMTs and not only acute care hospitals but also regular-service hospitals is important for improving this situation. It will also help with transfer of patients to facilities for continued treatment. Quality Indicators (QIs) are a tool for assessing healthcare quality, and QIs monitoring works to improve the quality of care and the cooperative relationship among hospitals that perform different functions as a regional healthcare service. However, gathering data for QIs calculation is intricate and requires extensive time and effort. We work with Nara Prefecture under entrustment to develop a QIs measurement system to facilitate convenient QIs monitoring.

Methods: The developed system for acute care hospitals uses both emergency Medical Alliance for Total Coordination in Healthcare (e-MATCH®, Bird's View Inc.) and Diagnosis Procedure Combination (DPC) data. e-MATCH® is a supportive system for resolving mismatches between patients' needs and

available hospitals; it collects patients' medical data ahead of their arrival at a hospital. It also contains a time-recording function. DPC has been introduced in Japanese hospitals as a per-diem payment system (PDPS). The system automatically integrates the two using a patient identification number. Data submission and QIs report downloading works as follows: 1) install a local application and download e-MATCH® and DPC data; 2) input missing data and upload them to a server, then calculate QIs automatically; and 3) download QIs reports via a website. We also developed less-complex systems for rehabilitation, chronic illness, and perinatal care hospitals.

Results: The system has been in operation since April 2013. Currently in September 2016, 15 of the 58 acute care hospitals in Nara are participating. A total of 37 QIs have been established for four prevalent illnesses, with 60 items needed to calculate them. Among these, 55 are extracted by integrated data. Comparison of QIs results has shown: 1) hospitals have more frequently accepted stroke patients from ambulances; and 2) number of days to transfer from an acute care hospital to the next hospital has differed depending on the patient's area of residence.

Conclusions: The developed systems allow practical monitoring of QIs changes. Appropriate demand-based transfer of care between hospitals across Nara Prefecture can also be analyzed by using accumulated data. In the future, monitoring results can be used to construct measures suited to a prefecture.

Working in Regional Australia. The Application, Implementation and Dissemination of Programmes to Support Regional Health Information Managers**Cassandra Rupnik***Health Information Management Association of Australia***ABSTRACT**

One of our biggest challenges in Australia is the tyranny of distance. Regional HIMs have focused on the following questions:

How does this affect our working life? How do we keep our knowledge and skills current? How do we network with our metropolitan colleagues? How do we reach out and support other HIMs in the same predicament? What about the loneliness of being a sole HIM? What about your staff and furthering their education and knowledge? How do we recruit staff with the appropriate skills? How do we promote our knowledge and skills to the executive, clinicians and managers in our current positions?

Over the last few years Australian regional and rural HIMs have been working with their state branches and the National HIMAA board on ways to ensure dissemination of information, implementing ways to educate and support of each other in overcoming the obstacle of distance.

Every year at the National HIMAA Conference the attending rural and regional HIMs meet to discuss the issues we face on a daily basis. The Regional Health Special Interest Group expands on these questions during the year and relay results, suggestions and theories to their state branches and the National Board.

From these discussions being expanded and supported by the National Board, a mentoring programme is being developed to support Regional HIMs, and include those HIMs working in a sole position and new graduates. We will link through this mentoring programme with our metropolitan cousins and those HIMs that are working in specialised fields of information management.

Branches are looking into how to reach those HIMs isolated and unable to attend face-to-face professional development programmes by using available technology. It is being looked at also educating isolated and regional Clinical Coders and other specialised staff within our regional health system.

As Jenny Gilder, HIMAA President stated in Pulse IT It's time we came out of the closet and introduced ourselves.

It is imperative that regional HIMs stand up and be counted, to expand their knowledge and skills and not be left behind. With the support of State Branches, the National Board and our metropolitan colleagues, we will be emerging on mass to revolutionise regional health information management.

1. Where I Live

I live 9 hours drive from Sydney and 2 ½ hour drive from Brisbane.

I work in a major regional teaching hospital. We have 33,000 acute inpatient admissions and over 9

000 surgical procedures per year. I am actually quite lucky as I live near major roads and airports so I can travel quite quickly and freely to major cities in Australia.

Others are not so lucky.

I hope today that I can give you an idea of working and living outside of major cities and how we, the HIMAA are working to offer education, Support and embrace our isolated colleagues.

2. Australia and Japan

HIMAA's biggest challenge in supporting regional HIMs is the tyranny of distance. This is common for most organisations in Australia. We have a lot of physical land with a relatively small population.

Australia is approximately 20 times larger than Japan.

Japan has a population of 127 million people where as we have only 24 million people. That equates to 336 people per square kilometre in Japan, and only 3.1 people per square kilometre in Australia. Out of interest I have added the USA – they have 33 people per square kilometre.

3. Who are we trying to reach?

HIMAA is based in Sydney but who are we trying to reach in regional Australia?

We are trying to engage with HIMs and clinical coders in Tasmania, country Victoria, islands off the coast of Queensland, Alice Springs, Broome, Kimberley Ranges, South Australia country region and outback NSW.

4. What are Regional HIMs asking?

- *How does distance effect our working lives?*
- *How do we keep our knowledge and skills current?*
- *How do we network with our colleagues from the cities?*
- *How do we support Regional HIMs and Clinical Coders?*
- *How do we support our staff with furthering their knowledge and expertise?*

I can see many of you thinking 'we face these issues on a daily basis and we are in populated areas, why would I think it is harder in the regional area?'

I agree with you – we all face these challenges but it comes down to the physical of distance between myself and my colleagues.

These questions were part of a larger group of queries that arose at the National Health Information Management Association of Australia and the National Centre for the Classification in Health annual conference in 2013. This conference was held in Adelaide, south Australia.

5. How we support Regional HIMs

- Currently
- In the Future

5.1 Currently

We have a time devoted at each National HIMAA NCCH annual conference where we can meet and discuss issues that members have arise since we last met. At this time we also welcome HIMs that are not current members to the meeting and offer them our support and hopefully they will join HIMAA so that they continue being part of the conversations we have. From this meeting email addresses and telephone numbers are exchanged so that everyone leaves with a contact that they feel comfortable with contacting for advice or support when they need it.

Sharon Campbell is the current chair for the Regional Health Special Interest Group and she is doing an admirable job by organising at a minimum 3 meetings between the yearly conferences. These meetings are held via teleconference, that is over the telephone. Consideration must be given to the time zones that we have over Australia at any one time when putting these meetings together.

To assist with keeping our knowledge current Sharon organises a guest speaker at each meeting for a short talk about a relevant topic for example Activity Base Funding or electronic health record.

I am sure you would agree that face to face meetings are of much more benefit to all of us compared to teleconferences. When you are teleconferencing you realise how important facial expressions and body language are as part of the conversation. People also tend to listen to the conversation rather than listen so that they can speak.

5.2 Future

This is where I get excited about our future technology! I must stress at this point the following ideas are my opinion only and even though I have had casual conversations with HIMAA Board members and Branch Presidents and Convenors there is more to discuss before any of these things can occur.

5.2.1 Meetings

Our annual face to face meetings will continue as it is always great to meet your colleagues and shake hands and continue conversations after a meeting.

For our meetings outside of the annual conference we would like to try Webex or Skype. How many people here facetime their family and friends while they are away? Wouldn't it be great to call your colleague Alice Springs and have a face to face meeting with her?

Now even though we have the technology not all hospitals in regional Australia have the capacity for their HIMs and clinical coders to have meetings this way. And the technology in those areas may not be of good enough standard to carry out what we want. Again, the tyranny of distance.

But it is worth a try and Sharon and I will have further discussions to have a trial of this type of meeting in the near future.

The various branches within HIMAA could also reach their committee members that are not in the metropolitan area of their meetings. I believe it would be of great benefit when making decisions that effect your membership by 'seeing' if people are receiving the information as expected. There has been ad hoc conversations between various Branch conveners and presidents about trying this method but we need to further this idea with the HIMAA Board.

5.2.2 Education

Continuing education is difficult for those of us living outside of the cities.

The cost to most of us personally includes days away from work – usually one day to travel to the event, day at event and travel back home; cost of flights and accommodation and the cost of the event. Sometimes some people are able to have their employers pay for the event but more often than not, the HIM has to pay their own way. But I must say, this doesn't stop those that believe keeping their skills current from attending!

If we could broadcast the event to participants via a webinar or skype I believe that we would have more regional participation.

Of course, costs to attend via this medium would have to be allocated but it is a way to distribute much needed education to isolated HIMs.

What a great app YouTube is! You can find the words to your favourite song, how to tie a fishing hook or how to knit bed socks!

HIMAA Tube could give us a way to distribute education and professional development to isolated professionals. Again, this needs further discussion but my thought is that a password is allocated when you have paid a nominal fee to access the information. The material would have to be uploaded after a time period so that people don't choose HIMAA Tube over attending the event – we want people to be there, to network, create new friendships as well as learn from the presenters first hand.

5.2.3 Mentoring

Since our meeting in Adelaide in 2013 these original discussions have now expanded and supported by the National Board which has eventuated into HIMAA introducing a mentoring programme. This is being developed to support Regional HIMs, and include those HIMs working in a sole position and new graduates. We will link through this mentoring programme with our metropolitan cousins and those HIMs that are working in specialised fields of information management.

How would it work?

A volunteer in each branch is identified willing to act as a local contact to introduce a HIMAA member seeking a mentor to another HIMAA member they have identified from a national list of HIMAA mentors on the HIMAA website, and to maintain local data on the scheme.

HIMAA calls on members nationally, and through its branches and SIGs, to volunteer services to a mentoring scheme. Volunteers would be asked to specify:

Geographical limits (city, region, state/territory, national)

Phone/email/skype/face-to-face availability/preference

Level of industry exposure available

Areas of special interest, expertise or experience

HIMAA offers an online and face-to-face module in mentoring skills to support HIMAA mentors.

The list is compiled and posted on the website.

HIMAA publicises the list, and invites associated agencies (such as the HIM universities and HIMAA Education Services) to publicise mentor availability to their constituencies.

Publicity invites HIMAA members interested in accessing a mentor to contact the mentor coordinator in their state or territory. The mentor coordinator arranges an introduction, and manages a local 'mentor uptake' database to ensure mentors are not overloaded. A parallel mentee database is also maintained.

Branch mentor coordinators notify the HIMAA national office of changes needed in the master database as mentor availability, interest and expertise changes, and as mentees enter or leave the scheme.

Branch mentor coordinators provide quarterly reports on mentor uptake as part of the branch report to the HIMAA Board.

Regular reports on Mentor Scheme uptake in the HIMAA eNewsletter, including testimonials from mentors and mentees, are used to recruit mentors on an ongoing basis.

Mentors who complete the HIMAA mentoring module or course are awarded a certificate of completion.

Branches periodically celebrate their mentors through mentor networking events (at which mentors get together and discuss experiences and techniques).

Mentees are encouraged to nominate mentors for an annual HIMAA Mentor of the Year award.

I would love to talk to any of you about the mentoring programme, especially if you have one running. I would appreciate hearing what went well and what should be avoided.

As Jenny Gilder, HIMAA President stated in Australia's Pulse IT « It's time we came out of the closet and introduced ourselves. »

It is imperative that regional HIMs stand up and be counted, to expand their knowledge and skills and not be left behind. With the support of State Branches, the National Board and our metropolitan colleagues, we will be emerging on mass to revolutionise regional health information management.

I hope by 2019 I can give you an update in Dubai on where we are in supporting regional HIMs.

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Abstract only

Components of Privacy Protection Education in Healthcare Organization

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In the traditional health organization where all medical services are provided internally, a patient can have higher confidence that his/her personal data will be treated properly and anonymity will not be needed. On the other hand, in an open environment with thousands of medical providers, privacy concerns are much higher and security and privacy measures need to be much tighter. Security and privacy requirements also differ in different situations, such as organization's internal or external usage of health informa-

tion, usage by clinical professionals or administrative professionals, usage by medical service act or other related acts, or health insurance environments. In spite of increasing demands for privacy assurance of health information, privacy and security techniques and process are not enough and educational systems have not been arranged or standardized yet. Especially the legal conditions of various countries are so complicated, and differences of standard are blocking progress in international exchanging of health information. The report aims to provide the essential educational components for healthcare personnel to protect the privacy of health information in healthcare institution. It also provides foundation to establish, operate and audit Privacy Management in healthcare institution and health related organization.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Mortality Coding and Reporting - Issues and Challenges for HIM Professionals in India

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Mortality statistics form an integral part of the vital statistics of any country. The cause of specific mortality rates are key indicators of health trends in the population and helps in assessing the effectiveness of public health programs and provides a feedback for future policy and implementation. The reliability of the statistics depends on the completeness and promptness with which events are registered and the accuracy of the information in the registration records. In India, Medical Certificate of Cause of Deaths to be certified by the Medical Practitioner who attended the deceased during the last illness as per the Registration of Birth and Deaths Act, 1969. The standard format of certificate is incorporated in the rules made by the State government and is not uniform among States. The format of certificate proper conforms to the standard prescribed by the World Health Organization. Although in India, World Organization format of cause of death is practiced, the format itself do not guarantee the accuracy and completeness of data entered for reporting. The physicians responsibility is to complete the medical part of the certificate and causes of death is classified, coded and grouped according to revision 10 of International Classification of Diseases is done by trained medical record department staff or Health Information Management Professional. The vital statistics division, Office of Registrar General, with local branches of Indian Medical Association of all States and Union Territories is conducting awareness programs by conducting workshops to sensitize their members about the importance of medical certification of cause of death. Parallel efforts have beeb taken up by Health Information Management professionals in creating awareness about classification system, World Health Organization mandates of health reporting, garbage codes and support in implemenation of classification system in private hospitals. The current paper discusses the issues, challenges, professional barriers faced by Health information management professionals in mortality coding and reporting supported by a case study.

Abstract only**Improving Activity Based Funding (Casemix) and DRG Outcomes at Broome Health Service Western Australia. A Team effort****Sharon Maree Campbell***WA Country Health Service Broome Health Service*

There are many challenges to both implementing and improving Activity Based Funding outcomes in a remote rural hospital, as I will discuss in relation to Broome Hospital located in the Kimberley Region of Western Australia. Due to the fact that rural hospitals can be affected by isolation and consequently increased costs (Hindle, Francis and Pearce 1998) the correct management of DRG funding systems is even more important to ensure improved efficiencies and quality in hospital services and ensure optimal and accurate funding reimbursements (Scott 2011). I implemented a number of measures as at November 2015 and ongoing that will ensure that we receive optimal reimbursement and improve quality outcomes. Some of the measures introduced include: Presentations and information sessions on Activity Based Funding to all levels of staff involved in patient care, including, allied Health, Clinicians, Clerical and Nursing. Provision of ongoing education for clinical coding staff and encouragement of attendance at clinical education sessions. Introduction of individual clinical coding auditing and peer review auditing for clinical coders. Initiation of casemix information for the Nurse Manager at ward level. Project work to review discharge summary quality and clinical documentation improvement with senior Clinicians and the Health Information Manager. Development of clinical documentation guidelines as a poster resource. Improved clinician query process for vague or misleading documentation. As measures introduced to improve Activity Based Funding at Broome Hospital are still in the early stages, I feel that the measures discussed have led to an increased awareness of the importance of accurate documentation and clinical coding. In relation to the clinical coding audits carried out there has been improvement in clinical coding knowledge and understanding for the clinical coder and the executive team, plus Clinicians and other staff, further highlighting the impact of reduced funding and poor quality of information on the hospital.

Abstract only**Using Underlying Cause of Death Selection Rules: Influence on Improving the Quality of Perinatal Mortality Statistics****Zakieh Piri¹, Zeinab Mollaahmad¹, Faezeh Haafezi¹, Fereshte Khaled¹, Sahar Enayati¹***Tabriz university of medical Science, tabriz, Iran¹*

Introduction: Perinatal mortality is one of the important health indicators of a society, which can be significantly decreased by recognizing the causes of perinatal mortality and enhancing the pregnant women knowledge about paying attention to and caring about medical care during pregnancy. The

purpose of the research was to show the importance of using underlying cause of death selection rules. Methods: The research was a descriptive and analytical study, which was done at Taleghani teaching hospital in Tabriz. All perinatal mortalities during the period(2004-2013)were the population of the study. all 1319 neonatal medical records were studied. A checklist was used for collecting data. Then data were imported into SPSS v22 and analyzed by descriptive and inferential statistics (chi-square). Results: The perinatal and neonatal deaths were not separated in the Taleghani hospital infants death statistics. Most frequent causes of infant' death, using hospital statistics, were intrauterine death with %58, immaturity %5.4, RDS(Respiratory Disease Syndrome) %3.6, and congenital disorder %4.47.By using perinatal coding rules, it was %7.29, %9.13, %8.13, and %1.9 respectively. Regarding to p-value=0.000, selection the underlying cause using perinatal coding rules, has had effect on perinatal mortality statistics. Conclusion: According to the results, using the underlying cause of death, affects on perinatal mortality statistics and there was a significant differences between statistics before and after coding. In order to improve the quality statistics of perinatal mortality causes, coding the causes of death and selection of the underlying cause of death is recommended

Abstract only

Accurate and Timely Reporting of Potentially Preventable Hospitalisations Enhances Patient-Centred Healthcare

Laura R Harris¹, Irene H Soo², Kerrynt Butler-Henderson³

Sydney Local Health District; The University of Tasmania, Australia¹, Sydney Local Health District, Australia², The University of Tasmania, Australia³

Background: Potentially Preventable Hospitalisations (PPH) for the Sydney Local Health District in 2013-2014 were the sixth highest in NSW, resulting in a substantial proportion of the population being admitted to hospital for conditions that could have potentially been managed/treated by preventative healthcare [1]. Correct distribution of referrals to high-cost acute and low-cost primary care services are required to reduce the demand placed on public hospitals [2]. Methods: Hospital administrative data for the top 5 PPH Diagnostic Related Groups for Concord Hospital in 2014-2015 financial year were analysed to determine the proportion of patients admitted to an acute ward or Hospital in the Home (HiH), and non-admitted presentations. Secondary analysis of medical records and PPH coded data was undertaken to determine if preventative healthcare could effectively manage/treat the PPH condition; if an incorrect allocation of a PPH code occurred; or if PPH coding was correct and a hospitalisation was clinically required. PPH length of stay, readmission within 28 days, complications and co-morbidity data were analysed to determine if PPH management was optimal taking into consideration PPH patient casemix complexity. Results: This presentation will report the proportion of PPH patients that were or were not admitted into acute wards and HiH; PPH coding accuracy; PPH length of stay, readmission within 28 days, complications and co-morbidity data. Discussion & Conclusion: Despite organisational referral refinement to non-acute and community services assisting in the reduction of PPH presentations, primary healthcare services should be reviewed and potentially modified to

optimise healthcare for PPH conditions. Due to public hospitals being unable to deny clinical care of PPH presentations, preventative measures from a primary healthcare perspective are required. Factors such as General Practitioner (GP) referral knowledge and the number of Bulk Billing Medical Centres and Community Health Services, directly impacts the frequency and quantity of PPH presentations in public hospitals. Organisational changes that were considered include revision of clinical inclusion categories for the HiH and Emergency Department 'Fast Track' services, and the implementation of an Emergency Department Short Stay Unit or after hours GP service. References: [1] Australian Institute of Health and Welfare 2015. National Healthcare Agreement: PI 18-selected potentially preventable hospitalisations, viewed 11 January 2016. [2] Royal Melbourne Hospital 2009. Potentially preventable hospitalisations: a review of the literature and Australian policies: final report, Clinical Epidemiology & Health Service Evaluation Unit, viewed 11 January 2016.

Title of Presentation: Heroda: a Health Routine Data Application for Resource Limited Environments
Health Routine Data Application For Resource Limited Environments

Rik Dhaen

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Abstract

Heroda_Desktop_2030 is a user-friendly Windows Application for routine health data handling from the Health Facility upwards in resource limited environments based on 25 years of field experience.

Background: Heroda_Desktop_2030 originates from a first software application, named 'T5', that became the national HIS (Health Information Systems) application at the Ministry of Health in Zimbabwe (1993-2010). In 2004, a revised version, named 'Modulo Basico' was rolled out for the Ministry of Health in Mozambique (2004-2016), under the EU Health Systems Strengthening project. In 2009, an adapted version named 'Merlin HIS' was rolled out by Merlin, a British medical relief organization, for its health projects in 12 countries.

In 2012 started the development of a total new software application using the latest technology platforms. The application has been finalised in 2016 and has been named '**Heroda_Desktop_2030**'.

Objective: To provide governments and non-governmental organizations with a user- friendly tool that does not rely on complicated and expensive server based technology or infrastructure, and that can function on a local computer without needing access to the internet.

The type of health information that can be handled by **Heroda_Desktop_2030** are the standard Aggregated Data Forms from the Ministries of Health (Morbidity, Mortality, Tuberculosis, Malaria, HIV, Reproductive Health, Nutrition, EPI, among many others).

The **Heroda_Desktop_2030** software provides data screens and reports tailor made specific for each Ministry of Health or NGO, identical to the original paper formats.

Heroda_Desktop_2030 is a Health Routine Data Application that

- uses existing low cost technology
- works in all remote areas and in any conditions
- comes with all data forms and reports "pre-packed" identical to the country original formats.
- can be delivered and rolled-out in a matter of weeks
- provides extreme user friendliness
- can be linked with any other system
- is based on 25 years of field experience

The paper highlights the strengths and advantages of the **Heroda_Desktop_2030** software in resource constraint settings. It will also show the outcome of implementations in Zimbabwe, Mozambique and at Merlin.

INTRODUCTION

Availability and comprehensiveness of accurate health information is critical for realizing universal health coverage. This however requires a well-functioning health information system (HIS) and sufficient capacity motivated health workers. In order to achieve this, we partially need a resilient and well-functioning HIS computer software, especially at district and health centre level.

Our worldwide technology is evolving at a very fast pace. However, many developing countries do not yet have adequate infrastructure nor have they adequately trained staff. The methodology and technology used by some modern applications has created a gap between what is 'meant' to be achieved and what is actually 'being' achieved. This is particularly the case in rural areas.

To close this gap, there is an urgent need for a resilient, user friendly HIS software that does not depend on an advanced ITC-infrastructure, high level skills, complicated configuration, expensive setup, extensive trainings, high cost maintenance, and more important on the need for a high quality internet access.

Heroda_Desktop_2030 is a newly available HIS software application that is specifically developed for use by Ministries of Health or for any organization that needs to collect health information for its projects.

HEALTH INFORMATION SYSTEMS (HIS)

Health Information Systems General Methodology.

Every Ministry of Health in developing countries has specific sets of health information data collection forms. At health centre and hospital level, tally sheets are used to collect this information. At the end of every month, the tally sheets are summed up onto according aggregated data forms. These sets of monthly aggregated data forms are sent to the district, where they get compiled onto aggregated district data forms. This process is repeated at provincial level, from where the sets of data forms are finally sent to central level.

Computerising Health Information Systems.

The aim of computerising HIS is to digitise the health facility data collection forms. From thereon, all further data aggregation, analysis and reporting at health centre, district, provincial and central level is processed by the HIS computer application.

HISTORY, LESSONS LEARNED

History.

- 1991-2010 '**T5**' National HIS computer application in Zimbabwe.
- 2003-2016 '**Modulo Basico**' National HIS computer application in Mozambique.
- 2009-2015 '**Merlin HIS**' Merlin HIS computer application implemented in 12 project countries.
- 2012-2016 Development and completion of **Heroda_Desktop_2030**.

Some Lessons Learned

What proved to be crucial in order to successfully implement HIS software in Zimbabwe and in Mozambique:

- User friendliness and resilience ('mis-use'-proof).
- Data entry screens equal to paper formats.
- Automatic reports equal to paper formats.
- Tailor made fixed datasets pre-configured by professionals.
- The use of standard available and installed Microsoft technology (Ms- Windows, Ms-Office) without the need for additional software installations or downloads.
- User friendly and user performed software upgrades.
- Easy data transfer processes between any computers in any direction.
- One permanent and dedicated IT (Information Technology) officer available in each province to resolve general computer problems in the districts.
- Years of continuous 'in-house' software development and experience.

Other Countries

From 2009 until 2012 I visited and worked with different national HIS systems in 12 other developing countries. (Ethiopia, Sudan, South Sudan, Pakistan, Afghanistan, CAR, DRC, Kenya, Somalia, Haiti, Nepal, Liberia)

I found that most countries had hardly any HIS software at all. The only exceptions where the Kivu region in East-Congo and Afghanistan, that both had great 'in-house' developed systems for over 10 years. Pakistan also had a working software, they used the Windows based UNHCR system. Some countries had tried to implement a system called DHIS1, developed in Cape Town by an organization called Hisp, without any success.

Other countries used a variety of locally made smaller systems, often produced in Excel, or had no system at all.

Recent (2010 -2016) standardisation

More and more countries try to implement the online based DHIS2, developed by Hisp, based in Oslo, Norway. However, DHIS2 comes with many challenges. This paper highlights most of these challenges.

This paper also tries to demonstrate the urgent need for a resilient software application that manages health information systems LOCALLY, especially at district and health centre level.

GENERAL CHALLENGES

General challenges that hinder the deployment and functionality of HIS software in resource constraint environments:

I divide the challenges in 6 main categories: Data Forms, ICT-Environment, Connectivity, User skills, Training, Accessibility.

1. DataForms

All Ministries of Health have extended and complex data forms to collect their HIS data. Regardless the fact that the amount of data forms and data fields per form should be reduced in order to try to improve the quality of the collected data, the reality on the ground is that today's data forms are still complex and they are still many.

Figure 1 Data Forms.

The image shows a complex data form titled "CHALLENGES Data Forms". It is a form for "SNIS RDC - Province Orientale : Canevas mensuel de centre de santé ou dispensaire" (page 3/12). The form is divided into several sections:

- 2.3 NOTIFICATION DES NOUVEAUX CAS MALADIES**: A table with columns for age groups (0-11 mois, 12-59 mois, 5-14 ans, 15 ans +) and a Total column. Rows list various diseases like Choléra, Coqueluch, Diarrhée, etc.
- II. ACTIVITES CURATIVES**: Includes "2.1 CONSULTATIONS" with a table for AS, HAS, HZ, and Total.
- III. ACTIVITES PREVENTIVES**: Includes "3.1. SANTE DE LA MERE" and "3.1.1. CPN" with various indicators and calculation formulas.
- 2.2 LABORATOIRE**: Includes a table for "Chimie Urines" and "Gouttes épaissies".
- 3.1.2 PTME**: Includes a table for "Femmes enceintes" and "Grosses".
- 3.1.3. a Accouchements**: Includes a table for "Nb Acc. Eutociques", "Nb Acc. Dystociques", and "Nb Acc. au CS".
- 3.1.3. b Naissances, décès**: Includes a table for "Nb naissances vivantes", "Nb Mort-nés", and "Nb Décès maternels au CS".
- 3.1.3. c Suivi**: Includes a table for "Nb décès maternels au CS" and "Références mère et bébé".

A large watermark "Many Complex Different Lay-outs" is overlaid on the form.

Arguably the biggest problem in computerising HIS is the configuration and setup of data screens and underlying data tables for all these data forms.

In the case of Dhis2, the configuration and setup of data screens and reports is done by the user (Ministry of Health or NGO's). However, these are the common challenges encountered:

- No available ICT/HIS skilled staff resulting in an inadequate setup of data screens, conflicting datasets with repeated indicators and a lack of reports.
- Outsourcing this configuration to private ICT companies that have limited HIS experience is expensive and ineffective.
- Source code modifications sometimes cause configurations to be no longer functional.
- Endless amounts of trainings and workshops are very expensive and keep staff from performing their daily duties.
- Failure to accurately handover the technical skills to the staff at the Ministry.
- Planned roll-outs delayed with YEARS.

2. ICT Environment

Online systems are server based. Setup and maintenance of such systems require high level ICT skills, advanced ICT infrastructure, high level technical support. They are very expensive to acquire

and to maintain.

3. Connectivity

Health information data entry screens and reports are complex and when using online systems you need a fast internet connection. The vast majority of rural areas simply don't have such internet connections, or have no internet access at all. No internet means no data access.

Internet in developing countries, when available, is often very slow and is still very expensive.

4. Userskills

In district and health centre settings, educational levels are low and computers skills are minimal.

5. Training

Increasing the amount of training and workshops does not result in better use of a poor system. The mere benefit for the participants is free food, extra money and a certificate. The consultants that provide these trainings are often very expensive and the real beneficiaries are the companies that provide the consultants.

All too often scarcely available staff is pulled away from their daily duties. The patient becomes the victim.

6. Accessibility

When data remains in the cloud, data confidentiality, safety and access are real concerns.

SOLUTION: HERODA_DESKTOP_2013

'Bridging the gap'.

We forecast the need for a resilient Desktop Application in low level income countries until at least 2030. This is also the estimated scope of the technical validity of the application.

Heroda_Desktop_2030 resolves the challenges:

1. Data forms

All data forms and reports are tailor made for each Ministry of Health or organization, by professional programmers, using standard, resilient and highly tested routines.

The average delivery time per data form (including standard reports per data field or indicator) is about two weeks, depending on the size and complexity of the form.

As a result, the client (Ministry of Health or organization) receives a resilient, fully preconfigured software system. Changes towards existing data forms, and an unlimited amount of future new forms can be added at anytime by the same professionals.

2. ICT-Environment

- Works on existing computers with any Windowsversion.

- Does not depend on highly skilled ICTcapacity.
- Requires no advanced ICTinfrastructure.
- Drastically reduces investment and maintenancecost.

3. Connectivity

- Is fully operationaloffline.
- Is applicable in all remotesareas.
- Stores data on localcomputer.
- Transfers data online AND on memorydevices.
- Reduces internetcost.

4. Userskills

- Requires very basic computer skillsonly.
- Provokes user confidence andhappiness.
- Is software“misuse-proof”.

5. Training

- Is extremely easy tolearn.
- Requires just one day oftraining.
- Allows local handover during staffrotation.

6. Accessibility

- Standard DataArchitecture.
- Data tables readily available for any third party(protected).
- Automatic linking with any other system can beprovided.

TECHNICAL INFO

Heroda_Desktop_2030

- Front-End: Application forMs-Windows
- Developing tool: Ms-Visual Studio(VB.NET)
- Back-End: Ms-Access orSQL

COMPARED TO OTHER SYSTEMS

Table 1. Comparison with other systems

	Heroda_Desktop_2030	DHIS2	UNHCR
ICT-infrastructure	Stand-alone	Server based	Server based
Data Forms	Pre-configured	User-configured	Standard UNHCR Forms
Full functionality	Offline	Online	Online
Data transfer	On- and Offline	Online	Online
Data access	Offline / Local computer	Online / Web	Online / Web

AVAILABILITY AND DISTRIBUTION

Services: HIS_ICTadvise.

Conception of data forms and reports. Configuration, setup and implementation. Training.

Maintenance and follow-up.

Delivery Time: On average 2 weeks per data form.

Costbreakdown: Data formsconfiguration.

Health facility coding. Population data integration. Historic data conversion.

Installation and training. Maintenance.

Contact: RikDhaenrdhaen@gmail.com

Management of Accuracy and Timeliness of Electronic Medical Record

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ABSTRACT

In the 21st century health care, most patients are usually provided with medical treatments by multiple medical departments rather than one single department. Therefore, it is very important to share information with all the members of a patient's care team. Therefore, making up the medical record in proper time is an essential factor to provide speedy and timely medical care for patients especially in urgent-care. By managing timeliness and accuracy of medical record, continuing medical process can be ensured and quality of patient's care will be improved.

1. INTRODUCTON

Why is completing medical record in time so important?

First, it's about 'Accuracy'. Everyone slowly forgets their memory as time goes by. It is highly likely that the information becomes inaccurate unless recorded in due time and in a propermanner.

Moreover, under the current system, doctors have to treat multiple patients, making it difficult to remember their detailed status and process of treatments if there is no documented record intime.

Second,Cooperitive treatments have been done more frequently. As time passes, departments in hospitals are diversified and cooperation system has formed where various departments make a team to participate in treating patients. When a patient needs treatment, specialists in each field become a treatment team and make the best solution. So In providing with real-time management of patient-care system, recording and sharing of the state of the patient in time with accuracy are getting more important.

In addition, various Accreditation Institutions have required that medical statements in the record must be documented in a timely manner. Joint Commission International and Korea institute for health-care accreditation are suggesting the detailed requirement of timely documentation in their standards.

In 2nd edition of Korean Health care Accreditation's standards, the criteria of the time limit in completing medical records had been more reinforced.

2. METHOD

1.1. What are the problems?

The first thing is the issue of Management. There was a lack of a sound management system where managers can timely and easily access various records. Such limitations make it harder for managers to establish coherent systemic plan. Besides, there were no organized plans if physicians couldn't document the record in time. Secondly, the educational factor. There was also a lack of a sound standardized guideline of documenting each medical record forms in time which physician can access and share. In addition, Boramae hospital is a branch hospital of Seoul national university medical center and physicians periodically rotate to different locations. So, there was a need for the coherent system that can educate and train physician and maintain their awareness of timely recording. There is the issue of user-authentication process. In the past, Authentication system of our hospital used physical media, that is an smart card, to identify who has access and right to documenting records. Which is essential to complete medical records. Physicians had to carry their smart card in order to complete electronic medical records every time, making it harder for doctors to complete the records in time.

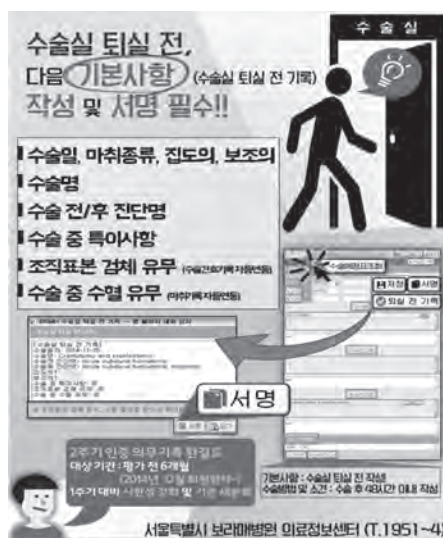


Figure1. Poster for Brief Operative Note

1.2. CoreIndex

No.	Kinds of Medical Record	Time Limit
1	Admission Note	within 24hours after admitting
2	Operation Note	within 48hours since the operation is ended
3	Brief Operative Note	before the time when patients check out the operating room

Table1. Core Index

We selected 3 major records and define the time frame that must be documented. These are the Admission Note, Operation Note and Brief Operative Note. Admission Note must be documented within 24hours after admitting and operation Note must be documented within 48hours since the operation is ended. We compared the rates of completing these records in time during 8 months before and 8 months after our activities.

Starting this research, the Brief Operation Note was newly introduced in our hospital complying with the requirement of Korean healthcare accreditation institute. The note must be documented before the time when patients check out the operating room. We aimed the rates of Brief operative note to over 90% that is suggested by the Korea Healthcare Accreditation Institute.

1.3. Implementation

In the Management aspect, we established the system where we can check the medical records during specific time of events. The system enabled us to confirm each form for every medical event such as admission, discharge, operation, transfer and so on.

Also we created the medical record management guideline inside our team checked the medical record everyday by constructing the guideline inside our team. Whether medical record has been documented on time and there were errors has been confirmed. According to this process, we required adjustments of physicians if there were inappropriate contents in the record.

On the other hand, we executed the education for Physician by visiting all medical departments in our hospital. The education was followed by various forms of medical record that should be recorded and what contents must be described in each form, deadline of each form that must be documented and management standards in our team etc. We also particularly emphasized the importance of observing timely recording. And then we had the Question and answer time and checked if there is any complaint about the difficulties and errors in perspective of a physician as well. At the same time, we created posters and banners to raise awareness about timely and accurate documenting of medical record.

We also tried to make the environment of recording more convenient. We improved User- Authentication system. As previously stated, the previous authentication system of our hospital used the physical device(smart card), so we had limitations of time and space. By altering user-authentication system from smart card to server authentication system, we realized medical record to be completed in anywhere and anytime in hospital.

3. RESULT



Figure 2. Results of Completion rates Admission and Operation Note

The average completion rate of Admission note increased from 95.6% to 98.0% and the average completion rate Operation record increased from 89.8% to 98.4%. The completion rate of Brief Operative note in time keeps above 90%, which is suggested by the Korea Healthcare Accreditation, over the duration of activities.

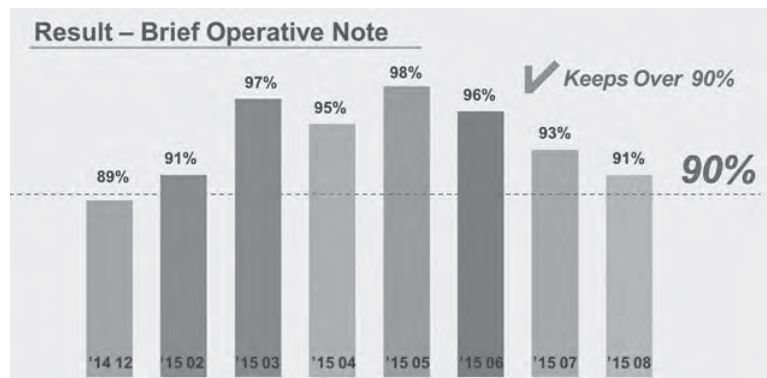


Figure 3. Result of completion rate of Brief Operative Note

4. CONCLUSION

It is a great opportunity to change the paradigm in completing medical records from just documenting their contents into satisfying both timely and accurate recording. This makes it possible to provide smoothly process in communication of treatments. Furthermore, it will provide patients with the best treatments that are results of decision making based on all the accurate information. Moreover, this will also ensure patient's safety and rights.

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Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Transforming HIM Role In EHR Implementation, PHCC Qatar

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Primary Health Care Corporation, Qatar¹

TRANSFORMING HIM ROLE IN EHR IMPLEMENTATION, PHCC QATAR

Introduction

This abstract outlines structural and functional transformation of Health information Management Department of Qatar's Primary Healthcare Corporation PHCC in line with its EHR implementation. PHCC Management recognized that switching HIM role from paper to electronic system require systematic plan and phased transitions. The enterprise HIM department was accomplished and successfully managed all three phases of HIM include paper, hybrid and electronic medical records systems.

Plan and Do

With the overall plan is to achieve 100 percent paperless medical records from the day one of EMR go live, 10 strategic goals were set for Health Information Management based on the philosophy of doing first thing first. The essence of the goals is to roll out structured and systematic data migration process without compromising the very need of health information management. Adoption of Information Technology Project Management Principles and quality improvement model such as PDCA, Health Information Management Best Practices, and nurturing quality culture among the staff ensured that the milestones of every HIM transformations are materialized.

Results

HIM transformation project initiated with migration of 1 million master patient data and progressed with successful data abstraction from over 350,000 patient records and migrated to EMR clinical database and that facilitated 100 percent paperless EMR implementation from day one. Further, centralization of clinical coding and documentation quality review and implementation in all EHR go live locations; uninterrupted switching of HIM personnel's role in key HIM activities and improved communication between clinicians and HIM personnel using electronic messaging system and a full fledged implementation of data analytics and data management under HIM's control also successfully achieved during the transition between 2012 and 2015.

Discussion

In PHCC Qatar's context, it was crucial to adapt the philosophy of doing the first thing for implementing health information management concepts as it was inevitable to streamline the basic medical records standards and functions at the early stages of transition such as: implementation of retention policy and purging of medical records, standardization of clinical forms, establishing ROI, CDI and Data Analytics for the existing paper based system were considered as prerequisites of the transition; subsequently, HIM continued its efforts in nurturing needed EHR and information governance competency among the team members that had enabled hassle free transition of HIM's personnel's roles and accountability when EHR replaced paper records.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

MediCloud, Electronic Health Record based of Internet Cloud Storage

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Medical record is one of the most important parts of the health services. The data which documented in the medical record system is very useful to monitor the health of patients seeking treatment, so that health care providers are able to tracking the history of diagnosis to drug history was ever given to the patients. All data is recorded in a Medical Identification Card or MIC. Each of the patients who visit the hospital will get MIC as media documentation of medical records within medical record number. Some disadvantages of conventional MIC and or medical records is the difficulties of diagnose decision especially if patients are going to different hospital to get medical services. There is no certain relation between each diagnose which might complicate health practitioner to stating the diagnose and its treatment. Beside that, if the patient lost the card, they will get the new one, which means that they will have their new records. In other hand, in this paperless era, we should reduce the number of paper and try to develop a backup for patient's information. MediCloud system enables us to work in a practical, effective, and efficient storing patient medical records online so it can be accessed with an internet connection. MediCloud using electronics medical record number to identify the patient's identity is certainly more practical compared with the MIC itself. Every hospital which has MediCloud system will be able to access the medical records of patients with ease through MediCloud server. MediCloud also very consistent with the concept of paperless in an era of technological development, which using the Internet as a medium for medical records storage.

Abstract only

**International Collaboration on Mobile Application for Functioning,
Disability, and Health Classification**

Joanne D Valerius

OHSU, Portland, OR USA

The International Classification of Functioning, Disability and Health (ICF) provides a framework used for rehabilitation in order to conceptualize health and well being .Currently there is no user-friendly and cost-efficient method for collecting functional and contextual health-related data. To address the needs for universal health coverage and patient-centeredness, a mobile-based version of the ICF is collaboratively being developed with international health care partners..

**Health Information Management Professionals [Present Circumstances
and Future Expectations]**

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ABSTRACT

Health information management (HIM) is the heart of a health organization; with each beat, it supplies much-needed information to users such as physicians, staff nurses, allied health professionals, health administrators, insurance companies and government health departments. The traditional role of a HIM professional has been to maintain organized and accurate data, which is available for patient care and for management purposes. HIM professionals undertake numerous tasks to fulfil this goal. HIM specialists, therefore, need to integrate a variety of skills, such as a strong knowledge of medical terminology and disease processes, application of clinical classification systems, excellent managerial skills and computer and information technology (IT) expertise, to manage the range of health information and human services for which they are responsible.

However, the growth in information technology has had a huge influence on HIM responsibilities. Technology has automated many of the routine functions of data collection and thus the role of the HIM professional has become more divergent and strategic in nature, particularly with the increasing development of electronic health records. Records must now be made available to increasing numbers of health care providers and various other parties simultaneously.

The changing role of HIM personnel in health care has increased the need for HIM professionals who understand the use and meaning of health record information as well as the language used to describe the reality of clinical treatments and financial operations. In addition, more employment path-

ways and opportunities have become available for HIM professionals.

However, many HIM experts still believe that providing a simple answer to the question, “What is HIM?” is one of the greatest challenges in the current electronic world. HIM professionals believe that, unless they can clearly articulate what they do and what makes them unique, the profession will struggle to convince others of their importance in the future. Other studies state that, in spite of the importance of HIM in protecting hospital and patient clinical information and ensuring appropriate hospital funding, it is considered a hidden profession.

The aim of this paper is to outline the current strategic challenges facing the HIM profession and to explore what those challenges mean for reconfiguring the future workforce needs and professional enablers’ specific education. It is important for the HIM authorities to evaluate and identify the future needs of professionals and the role that they play, in order to maintain their sustainability.

1. INTRODUCTION

Health Information Management (HIM) plays a significant role in the maintenance of health information. The Global Health Workforce Council has defined Health Information Management (HIM) as “the practice of acquiring, analysing, and protecting digital and paper-based medical and health information vital to providing quality patient care and maintaining the daily operations management of health information and electronic health records” (Global Health Workforce Council 2015).

The main role of a HIM professional is to maintain organised and accurate information, and to do that they need to perform several complex tasks across the lifecycle of information, from acquisition to archiving to destruction, in their health care organisations. They play a critical role in completing, protecting and ensuring the availability of high-quality clinical information for purposes including patient care, reimbursement, quality assurance, research, statistics gathering and management decision making (Safian 2012, Goedert 2013).

For optimum delivery of these information intensive tasks, HIM professionals need to integrate a variety of skills, such as expertise in computer and information technology (IT), a strong knowledge of medical terminology, profound understanding of disease processes and other conditions, experience in using clinical classification systems and excellent managerial skills, to enable them to manage the range of health information services for which they are responsible, including human resources (Green and Bowie 2011, Abdelhak, Grostick et al. 2012).

As the booming information technology trends have resulted in significant changes to healthcare delivery, the changes experienced by the Health Information Management (HIM) discipline over the past decade have been unprecedented. One of the recent challenges has been the emergence of so-called “Big Data”. Because of the now ubiquitous availability of digital data, HIMs are being challenged to understand how Big Data can be harnessed, managed and made available for improving decision making and health care performance (Sandefer, DeAlmeida et al. 2014). Several studies have identified multi-dimensional issues in relation to the HIM discipline that need to be addressed (Bennett 2010, Street 2012, Jacob 2013, Sandefer, DeAlmeida et al. 2014, Sandefer and Karl 2015) to make the discipline sustainable for safe healthcare delivery. Perhaps one of the most fundamental challenges

for HIM is the ability to provide a simple answer to the question, what is HIM? Other studies state that in spite of the importance of HIM in protecting hospitals' and patients' clinical information, and in ensuring appropriate funding for hospitals, it is a "hidden" profession (Shepherd 2010, Safian 2012, Goedert 2013). Together these observations provide insights into the importance of assessing the status of the HIM discipline and indicate the factors that may threaten its sustainability, which may, in fact, influence the entire health system.

As such, there is a critical need to define the HIM profession precisely and to determine its key roles in the healthcare system. The aim of this paper is to outline the current strategic contemporary challenges facing the HIM profession and to explore what those challenges mean, for reconfiguring the future workforce needs and professional enablers' specific education, and influencing their sustainability. Specifically, defining the profession, the impact of technology, workforce planning, education, research and the importance of collaboration and planning is emphasized.

2. HIM PROFESSIONALS' MAJOR CHALLENGES

1.1 Defining The Profession

The HIM profession takes responsibility for assessing the quality of health information in the health sector, particularly in hospitals. However, despite this important role, previous studies have indicated that many healthcare professionals have only a vague idea about what HIM entails. The lack of understanding and appreciation of the profession has affected the status of HIM and the sustainability of the profession in some countries.

One of the most significant issues perceived from the literature is the inconsistency in the name or definition of HIM. It is referred to in some studies as "health information" and in others as "health information systems" or "information management". The transformation of the professionals' title, from being known as "medical record librarians" to "medical records administrators" and currently to "health information managers", based on the rapid development and changes in the nature of work (Bennett 2010), may be the reason for this inconsistency. In addition, the different disciplines covered in the HIM study field, such as health science, leadership and management, law and finance and IT (Walton 2012), have contributed to the misinterpretation of the nature of the profession.

Therefore, an essential step for the profession is to attain a clear consensus on the scope of practice, roles, job titles, competencies and educational needs of HIMs. Otherwise, it will remain difficult to promote the importance and uniqueness of the profession to others in the health-care system (Bennett 2010).

1.2 Implications Of Technological Advancements On HIM

In the healthcare field, technology has been firstly developed and used to promote direct patient care through diagnostic, therapeutic, and educational activities. Consequently, with the advancement in technology and the increasing interest in health information, technology has sustained rapid advances that have affected information systems in the healthcare field, especially for capturing and maintaining data (Abdelhak, Grostick et al. 2015). Accordingly, the Electronic Health Record (EHR)

was developed, an innovation that helps in transitioning health information from paper medical records to electronic formats (Abdelhak, Grostick et al. 2015, Gibson, Abrams et al. 2015).

Literature has emphasized the importance of information technology in the improvement of HIM performance and in empowering employees in the health care system (Ajami and Arab- Chadegani 2014, Ajami, Ketabi et al. 2015). In addition, the advent of EHRs is considered significant in facilitating the capture and use of health data for supporting patient care, disease monitoring, health system planning and management, financial planning, education and research (Gibson, Abrams et al. 2015).

Despite the importance of IT in the health care system, many issues affecting HIT adoption have been described. These include financial issues, setting, capabilities of the system, and aspects relating to the users (Agarwal, Gao et al. 2010). Several studies from different countries have confirmed that the failure of, or dissatisfaction arising from the implementation of HIT, is related to the ignorance or shortage of qualified human resources

(Abdekhoda, Ahmadi et al. 2014, Adeleke, Lawal et al. 2014, Hasanain, Vallmuur et al. 2014, Gibson, Abrams et al. 2015). HIMs, because of their knowledge of both the IT and clinical aspects of health care, are well placed to support IT implementation.

Furthermore, the literature shows that the use of all the data collected in a health information system is now always effective. In an analysis of educational perspectives of health information management, Palkie (2013) identifies problems related to the limited IT knowledge of existing health care staff in addition to the shortage of a qualified (HIM) workforce. Cowey and Abrams (2013) highlight that in the past, the efforts to acquire and manage HIT were the concern, but more recently it has been recognized that technology is a tool to assist in the management of information and the quality of that information. The technology needs to be managed by qualified personnel to best harness its potential.

1.3 Workforce Planning

In the UK, the Department of Health has defined workforce planning and development as “a dynamic process, where the right staff with the right skills are in the right place at the right time at the right price” (Hurst and Kelley Patterson 2014). The exploration of workforce-related issues is one of the major areas of interest in the field of HIM. Several studies have sought to determine the HIM shortage and its implications, required qualifications and skills, need for clear planning, and the available opportunities for the HIM profession.

Several studies from Australia, Canada, US, Iran, Kenya, Nigeria and Saudi Arabia have identified obstacles and difficulties in IT implementation relating to a health information management workforce shortage (Bennett 2010, Shephard 2010, Abrams and Crook 2011, Ahmadi, Jeddi et al. 2012, Palkie 2013, Abdekhoda, Ahmadi et al. 2014, Hasanain, Vallmuur et al. 2014, Gibson, Abrams et al. 2015, Hasanain, Vallmuur et al. 2015). Reports from the US and Canada indicate a required increase of up to 40% in the HIT workforce if the high level of IT adoption in health is to be maintained (Smith, Drake et al. 2011). In Australia, a recent health information workforce report has indicated that there are shortages of HIM professionals (HealthWorkforce Australia 2013). However, the profile of the existing HIM workforce is not well-known (Shephard 2010), and there is currently no quantitative measure

available to understand supply and demand for the HIM workforce (HealthWorkforce Australia 2013).

Rapid technological changes in the collection and management of health information require professionals who are able to understand and manipulate the data in electronic health information systems. Much of the reviewed literature discusses a concern about the availability of HIM professionals who can work in this area (Hersh 2010, Fenton, Joost et al. 2013, Palkie 2013, Kiilu, Okero et al. 2015, Whittaker, Hodge et al. 2015). The importance of appropriate knowledge and skills to work in the area means that HIM roles cannot be filled by staff with on-the-job training only. Therefore, it is necessary to determine the skills and qualifications required and set that expectation clearly while recruiting for HIM positions.

Literature indicates several opportunities for HIM as a result of moves to electronic health information systems (Watzlaf, Rudman et al. 2009, Bailey-Woods, Dooling et al. 2014). Information governance is one of the major roles that HIM professionals are expected to lead, based on their unique skills (Cassidy, Watzlaf et al. 2011, Jacob 2013, Bailey-Woods, Dooling et al. 2014, Anna 2015). In addition, the American Health Information Management Association (AHIMA) and the Canadian Health Information Management Association

(CHIMA) have created career pathways that include many emerging roles for the HIM professionals that can be considered a guide for the potential HIM candidates or professionals working in HIM (Butler 2014). Therefore, it is important to understand the opportunities for HIM in the health system and align these with educational and training requirements to ensure a competent workforce.

It is important to state clear recruitment process goals in selecting candidates for health information-related positions to ensure that the skilled and qualified workforce required to sustain an electronic health information system is engaged (Hersh and Wright 2008, Hersh 2010, Hersh, Margolis et al. 2010, Shephard 2010, Abrams and Crook 2011). It is important to identify the field clearly to ensure understanding of the capabilities and competencies of HIM professionals and their role in maintaining good health information systems.

In view of all that has been mentioned so far, these studies indicate the need for changes to the future configuration of the HIM workforce to take on new roles and responsibilities and the importance of capacity development as a means of improving data quality (Safian 2012, Ledikwe, Reason et al. 2013, Hurst and Kelley Patterson 2014, Sheridan and Smith 2009). Therefore, to provide high-quality data for decision making, either for patient care or management and planning, it is critical to be able to determine clearly the status of the HIM profession and develop a detailed plan for the health information workforce because, as Hurst and Kelley Patterson (2014) state, the relationship between staffing and service quality is irrefutable. It is also necessary to determine a means of entry into the HIM workforce, and to set clear criteria for recruitment into that workforce based on position descriptions, job titles and the qualifications required at each level (Dyson, Greene et al. 2004, Hurst and Kelley Patterson 2014). Finally, it is important to construct an effective and efficient recruitment strategy that is aimed at encouraging more people to become competent HIM professionals (Safian 2012).

1.4 EducationalAspects

1.4.1 Education

Education is a cornerstone in supplying the healthcare system with qualified and trained personnel to provide a quality service and, specifically for the HIM profession, to provide high-quality data. Much of the current literature on HIM pays particular attention to education. A number of authors have considered education as an essential key for HIMs to survive in the expanding world of technological advancement in the health system (Abrams and Crook 2011, Adeleke, Lawal et al. 2014, Butler 2014). Consequently, the responsibilities and roles of HIM professionals have changed and become more divergent, which requires education that emphasizes analytical and critical thinking skills (Bennett 2010, Dimick 2012, Desai 2013, Goedert 2013).

The US Bureau of Labour Statistics showed that the HIM field is growing; the role of medical records officers and health information technicians is one of the 20 fastest-growing occupations in the USA, with an expected growth of 22% between 2012 and 2022 (Bureau of Labor Statistics 2014). In addition, according to an article by US News and World Report, HIM is now considered to be among the top developing study majors in the USA (AHIMA 2012).

There is a consensus among HIMs experts that education levels for HIMs must be upgraded to remain significant in the contemporary health system (Macpherson 2010, Dimick 2012, Goedert 2013, Palkie 2013, Sandefer and Karl 2015). Several studies have indicated the importance of degree programs to the development of HIMs (Cassidy, Watzlaf et al. 2011, Goedert 2013). Recently, a survey that was conducted by Sandefer and Karl (2015) has shown that participants with a higher educational level indicated higher competence in leadership and management, data analysis, statistics, and research, which are considered the core competencies for the HIM profession. AHIMA has promoted the addition of specialization tracks into the associate degree programs in the USA (Dimick 2012, Goedert 2013). These studies highlight the critical demand to clearly identify and modify the educational programs required based on health system needs and currency with industry changes.

However, several sources have identified that students are not attracted to enrol in HIM courses due to the lack of recognition of the HIM profession and its unclear career path (Dyson, Greene et al. 2004, Bennett 2010, Hurst and Kelley Patterson 2014). (Dimick 2012) argues that people who are interested in data analytics, data integrity and statistics should be encouraged to study and work in the HIM field. This view is supported by Keeton (2015), who notes that successful students will demonstrate interest in the profession that will, in turn, promote its development. Jacob (2013) and Safian (2012) have indicated that the HIM profession now offers a range of new career opportunities.

There are many new job titles and responsibilities for HIM professionals and AHIMA has created a career map for the HIM profession (Sandefer, DeAlmeida et al. 2014). In addition, another study has recommended creating a website focused on the job opportunities available within the HIM field as a means to motivate students to enrol in HIM programs (Safian 2012).

Previous studies have demonstrated the difficulty in tracking the numbers of HIM graduates due to the variation in the education modes for the HIM workforce, which has led to employers being, in some cases, unable to align HIM qualifications with work criteria (Dyson, Greene et al. 2004). Therefore, it is

necessary to determine required HIM competencies in the workplace and to use these competencies to inform HIM educational developments (Hurst and Kelley Patterson 2014).

All of the reviewed studies have identified that the competencies required by HIMs now include IT, health informatics and data analytics skills. Macpherson (2010) argues that data transformation requires HIM fundamental skills plus IT knowledge. Similarly, Butler (2014) states that the advancement in HIT is the result of dealing with data and that should be the core of an HIM educational curriculum.

However, Hersh, Margolis et al. (2010), in their study conducted to identify the HI workforce needs in developing countries, stated that it is critical to determine the skills and competencies that are consistent with the culture, language, and health system to really be able to fully utilize the benefits of HIT.

One of the methods for assessing competence in the HIM field is through the certification and/or credentialing of HIM professionals. However, HIM certification in many countries is considered optional, and may be carried out by different authorities (Dyson, Greene et al.

2004). Certification can be used to clearly define the profession, and articulate job titles, competencies and educational requirements. In Australia, HIMAA is responsible for the development of professional competency standards for Health Information Managers, which are used for assessing undergraduate HIM courses in universities. These entry-level competencies provide a robust framework for course curriculum design and content to facilitate new graduate performance. The HIM entry-level competencies are not intended to be used to measure workplace performance (HIMAA 2013) but intermediate and advanced competencies have been developed for this purpose.

1.4.2 Research

It is necessary for HIM professionals to engage in research activities to update the profession's body of knowledge and to provide an evidence base to define Health Information Management and outline its scope of practice (Brodnik and Houser 2009). These authors note that it is the responsibility of HIM professionals to research the effectiveness of proposed systems or programs and related aspects and to use this evidence to address implementation difficulties. Palkie (2013) highlights the necessity of research studies to determine competencies for HIM professionals and suggests the need for a roadmap to demonstrate future competencies. Despite this, there are some obstacles for HIM professionals to participate in research activities such as workload, time and financial issues (Brodnik and Houser 2009).

1.5 Collaboration & Planning Issues

1.5.1 Collaboration

Goedert (2013) highlights the fact that HIM professionals are required to work collaboratively with information technology departments, and with other staff in the health care system. For example, the process of data integration, stewardship and governance needs collaborative efforts from HIM, IT, and clinical informaticians (Butler 2015). These collaborative efforts allow HIM professionals to contribute to ensuring that the implemented information systems support the documentation process as well as safeguard health information and patient safety and confidentiality (Goedert 2013). The literature notes

the relative absence of HIMs at IT summits related to health care technologies, in spite of the key role HIMs can play as change managers to support IT introduction (Bennett 2010). Therefore, it is essential to identify the barriers and facilitate collaborative efforts between Health Information Management professionals and other stakeholders in order to achieve a high quality health informationsystem.

1.5.2 Planning

The questions raised in the literature for HIM strategic planning and workforce planning are: Which body is responsible for ensuring the effectiveness and efficiencies in both kinds of planning? Which body is responsible for following up these issues? (Shepherd 2010). It has been noted that HIM professionals are not always present at, or invited to attend, decision- making forums that create policies that are relevant to health information or which consider employment and contracts in the field (Abrams and Crook 2011, Goedert 2013). This has the potential to affect the sustainability of the HIM profession as the voice of the profession goes unheard and unconsidered (Shepherd 2010, Goedert 2013). Previous studies have

acknowledged that responsibility for ensuring the sustainability and availability of the HIM workforce generally lies with the government, educational and training institutions, healthcare institutions and HIM professionals themselves (Shepherd 2010). However, it is important to determine clearly the bodies responsible for planning, and to specify the extent of their input, to ensure transparency when addressing the issues currently facing the HIM profession such as those related to workforce demands and career opportunities. For instance in Australia, the recommendation from the Health Information Workforce Report is to form strategic relationships by developing a single body to represent and support all HIM stakeholders on workforce issues and work with both employers and the education sector to ensure there is a qualified workforce for HIM (HealthWorkforce Australia 2013, Lawrance 2014).

3. CONCLUSION

In spite of the importance of HIM to the healthcare system, policy makers and leaders have paid scant review to the role of HIM professionals and their contribution to health system development in the 21st century. Thus, there is now a specific and crucial need to increase recognition of the HIM profession by addressing current challenges and making plans to manage future transformations in health care. This will require all loyal HIM professionals to join their hands together each in their own contexts to work closely with their colleagues in the health field for the benefit of the health care system. In addition, HIM professionals must maintain their own strengths and motivations, and that of their subordinates and peers, because as stated by HIM expert, Professor Phyllis Watson: Are we still strong enough to face the challenges and raise the status of the profession? (Watson 2008).

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Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Hallmarks of Electric Health Records in Patients Care Management

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Purpose Scientific collection, collation, compilation, and presentation of health data in a timely manner is very instructive, if only the work force in health care facility were to remain alive and alert to their responsibilities. Presently, health data collection methods are grossly inadequate and vary in most facilities. To this end, the hallmarks of EHR in patients care managements should be well defined to gain across the board standard format devoid of conflicting methods of data arrangement and organization in the layout of pages and document flow-linkable. Collected data must be good enough for evaluation purposes. Background Errors arising from poor judgments occasioned inaccurately collected data by care givers in the course of patient management, had often led to wrong diagnosis. As a result, patient becomes exposed to abuse and mismanagement, which could ultimately aggravate the patient situation through compilations, arising from wrongly applied treatment and inappropriate drug usage. To eliminate this, painstaking collection of faultless data, collected under a serene condition cannot be wised away; knowing that the prognosis or the diagnosis as the case may be, will be instructive on the patient management planning, and the train of treatment that will follow. SOLUTION

1. The solution to these challenges is to ensure date integrity, availability dependability, accessibility, security and maintenance of prescribed standard in formatting templates.
2. Exposure of care givers to training and re-training to enable them keep abreast the trends in their various fields.
3. Painstaking collection of data and its entry into the computer system must not be compromised.
4. Sharing should be made easy among users.

Thus, there is need for networking of computers across a geographical region to reduce: a) Costs b) Time, and c) Waste

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Design, Implementation and Operation of Health Management Information System: A Case of Kenyatta National Hospital

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ABSTRACT Embracing modern technology is one among very many ways of improving efficiency and reducing costs within Health care organizations. While the integration of information and health services potential benefits cannot be disputed, there are many challenges which affect its adoption, in fact, majority of organizations have abandoned their newly acquired system only to go back to their old manual system. This study sought to review the design, implementation and operation of Health Management Information System (HMIS) in Kenyatta National Hospital (KNH). Specific objectives were a) to determine the design criteria phase in the implementation of HMIS at KNH, b) to assess the implementation criteria phase in the implementation of HMIS at KNH, and c) to evaluate the operation criteria phase in the implementation of HMIS at KNH. The theoretical and conceptual frameworks provided a foundation to the proposed model of post-choice satisfaction and the ensuing discussion highlighted the relationship and the influence of these theoretical concepts in relation to development of the model. This study was a descriptive purposeful cross-sectional study. The target population of the study were 35 in-depth interviewees, 4,490 healthcare workers from 19 Departments directly involved with HMIS at the KNH and thus a sample size of 263 respondents who filled a structured questionnaire and 40 key informant interviewees. Data collected from the field was analyzed through the use of univariate and bivariate statistics. The study reviewed that in the design phase, There was significant stakeholder involvement in the design criteria and these manifested through definition and identification of the KNH's HMIS, clear understanding of the purpose and process in the design criteria and thus an indication that the design criteria was observed during the HMIS implementation. In the implementation criterion, the findings indicated that while the other attributes had a significance, gender did not have a significant association with organizational factors influence of HMIS implementation (OR = 0.97, 0.59 - 1.59, P = 0.901). Refer table 4.3. The findings indicated that two factors: level of management and duration of employment were significantly associated with technical and individual factors affecting HMIS implementation at KNH. From the findings in the operation criteria the benefits of the electronic HMIS included improved efficiency and reduced workload, most health workers (53.1%) felt that the electronic HMIS in KNH had achieved its objectives which will lead to effective utilization of HMIS and better healthcare service delivery. Overall KNH successfully implemented HMIS.

The New Exploration of Style of Medical Record Storage and Retention

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ABSTRACT

The medical record storage and retention in medical record management is a global problem. Our hospital is located in the coast of the Bohai sea, large comprehensive traditional Chinese hospital with a history of 62 years, medical records have amounted to 500 thousands, the total storage warehouses scattered in the hospital, medical records provided service requiring much time and effort, as new hospital has been constructed, the number of hospital beds will be expanded, the total number of medical records is up to 20 thousands every year, in the face of so much of the medical records storage, retention and provide service pressure, thinking deeply about solution is extremely urgent. Logistics warehousing business services in Tianjin started early, it has become a new industry of the metropolis. Whether can use the business model, and solve the problem of medical record storage, retention, and provide service? Through our more than three years with Dongli Economic Development Zone logistics warehousing services company in the medical record storage, retention and provide fax service cooperation practice prove: medical record storage, retention and provide medical record information service, completely can be done by logistics warehousing services company collaboration. Medical record of logistics warehousing services has become a medical record storage, retention, and a new model of medical record information to provide services.

1. Introduction

Medical record storage and retention in medical records management in^[1] is a global problem. Usually think, as long as the medical, law, scientific research and teaching needs, medical record should be saved, but due to the development of the medical record endless formed a pair of contradiction and its storage space. Explore the new way that paper medical record storage is a new topic research.

2. Laws and Regulations

In 1982, <<The national hospital work management regulations>> of The Minister of Health of The People's Republic of China formulated: "Hospital inpatient medical record in principle should be kept permanently". In 1994, <<Rules for the implementation of the regulations on the administration of medical institutions>> No.35 Order of MOHC provided again clearly: "medical institutions of outpatient medical record retention period shall not be less than 15 years, the hospital medical record retention period shall not be less than 30 years". In 2002, <<Provisions on medical records management of medical institutions>> of MOHC and State Administration of Traditional Chinese Medicine issued: "Out-patient(emergence) confirmed through the file save time from the date of last clinic patients shall not be less than 15 years". For the hospital inpatient medical record storage life file is not clear^[1]. According to National health and family planning commission of People's Republic of China and State

Administration of Traditional Chinese Medicine <<Provisions on medical records management of medical institutions (2013) >> ruled that the medical record of outpatients (emergence) in principle by the responsible for own. Medical institution has an outpatients(emergence) medical records room or the electronic medical records has been established, with the approval of the patient or his legal representative, its medical record outpatients (emergence) can adjust calendar by medical institutions responsible for safekeeping; hospital medical records kept by the medical institutions in charge of ^[2].

3. Situation at Home and Abroad

Abroad for medical record retention made specific provision also, namely 10 to 30 years. Some countries keep the children's medical record to the age of 18, prolong for 7 years again, generally kept in medical record for 25 years, they think more than 25 years of medical record generally no longer has the practical value, according to government regulations, medical record can be destroyed, but many hospitals still retains abroad. International Federation of Health Record Organizations (IFHRO) rules: (1) The law can be mandatory medical record kept 30 years. (2) Some cases (such as neonatal medical record, mental patient's medical record, etc.) must be retained for a longer time. As the highlight of the role of medical record in many aspects, Out of consideration for legal action especially, the hospital medical record should be kept permanently^[1].

4. Our Hospital

4.1 History

Our hospital (The first teaching hospital of Tianjin University of Traditional Chinese Medicine) was founded in 1954, is the largest in Tianjin to open the first construction of Traditional Chinese Medicine medical institutions at the earliest. It is the national provincial demonstration traditional Chinese hospital, the national top hospital, the nationwide people trust model best hospital, third-grade class-A hospital Tianjin, medical center of Traditional Chinese Medicine Tianjin, the acupuncture clinical research center and national Chinese medicine clinical research base. Hospital is divided into two hospitals in the north and south, total 260,000 square meters, open 2,600 beds, average daily outpatient amount nearly thousand, outpatient service volume in 7 consecutive years more than 2 million people .In 2015, more than 3 million people, to the forefront of outpatient volume in Tianjin^[3].

4.2 Specialists

Hospital has 2 Chinese academy of engineering, it has 4 of national outstanding contribution expert, enjoy special government contribution to the experts of 12, 5 Tianjin government commissioned experts and PhD supervisor of 24, Tianjin famous doctor of TCM 23, National Key Disciplines (specialized subject) 30, including acupuncture (Tuina) Chinese Internal Medicine of The ministry of education key subject 2, pediatrics (Department of Oncology) and other national health and family planning commission key disciplines 4, 10 key disciplines of TCM heart disease and TCM kidney disease and TCM sore of the state administration of traditional Chinese medicine, hematology, rheumatism, endocrinology, and bone traumatology department lead of the state administration, traditional Chinese medicine

specialized subject 13, the state administration of traditional Chinese medicine, combine traditional Chinese and western medicine of traditional Chinese medicine emergency clinical base 1; “Studies of acupuncture treatment of encephalopathy and prevention of cardiovascular disease in TCM” ministry of education innovation team 2.

4.3 Academic Achievements

In recent five years, the hospital received a total of 205 scientific research projects at all levels, to obtain 93 identification of scientific and technological achievements, awarded 42 prizes at all levels of science and technology, 2 first prize of Tianjin science and technology progress . Hospital has with Japan, South Korea, Germany, France, Switzerland, the United States, Russia, Oman and so on more than 40 countries set up medical cooperation, by overseas patients more than one thousand people each year, famous both at home and abroad, and for two consecutive years won the “Tianjin people’s livelihood contribution award” become a city beautiful card in Tianjin.

4.4 Two Centers

Over the years, the hospital “stroke”, “coronary heart disease (CHD)” two “national Chinese medicine clinical research base” for the core competitiveness, and gradually formed a multidisciplinary go hand in hand, common development of good momentum which combines traditional Chinese medicine with western medicine. Hospital has always adhere to the “development, social service, health maintenance, the benefit of mankind” principle, adhere to the “outstanding play to the advantages of traditional Chinese medicine, acupuncture, adhere to the five model, using western medicine advantage discipline, construction of the domestic first-class, world-renowned modernization of traditional Chinese medicine hospital” development strategy, put forward the “three changes” (The pursuit of a number of hospitals to improve the quality of the hospital, Transformation from a medical hospital to a research oriented hospital, from the experience management to scientific management), and strive to build a center (Chinese acupuncture center), two base (two research base of stroke and coronary heart disease), four specialist clinic (combine traditional Chinese and western medicine tumor, kidney disease, pediatric, bone fracture, of four specialist clinic department), strengthening health characteristics and advantages, improve the level of medical services, efforts to build a people’s satisfaction, the distinctive characteristic of traditional Chinese medicine modernization of traditional Chinese medicine hospital.

5. Medical Record Storage and Retention

Our hospital has amounted to 500 thousands medical record the total number of hospital medical record storage warehouses, medical record provides services consumption of time-consuming, an annual increase of medical record number of twenty thousand, in the face of so much of the medical record storage, retention and provide service pressure, think about solution is imminent.

Logistics warehousing modern business services started early in Tianjin, has become a new industry of the metropolis. Whether can use the business model, and solve the problem of medical record

storage, retention, and provide service?

After our hospital with Toray industries development zone the development of Toray Wan Shilong international logistics warehousing services company more than three years in the medical record storage, retention and provide fax service cooperation practice prove: medical record storage, retention and provide medical record information service, completely can be done by logistics warehousing services company collaboration.

Medical record of logistics warehousing services has become a medical record storage, retention, and a new model of medical record information to provide services. Socialization of medical record management is the embodiment of medical record management to keep pace with The Times ^[4].

6. Conclusion

Medical record storage outsourcing is a new and feasible medical record management model ^[5]. Medical record management must be further standardized, standardized, legalized, socialized to advance with The Times ^[4]. While for paper-based medical records saving, paper-based medical records and the digital conversion, digital preservation and transmission, realize the paper medical record digitization ^[6]. In completes the digital transformation of paper-based medical records in hospital patients at the same time, to do a good job of digital studio basis old experts, contribute to inherit the old expert medical precious wealth ^[7].

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Title of Presentation: Patient Portals

Driving Outcomes: Patient Portals and Physician Engagement

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Abstract

Healthcare organizations utilize patient portals in the United States through an electronic health record format. Our country transitioned from a system of paper-based records to an electronic format. These enhanced capabilities of new technology continue to manifest improved results in patient outcomes. This technology has provided Instant access to patient health data and information. Patient portals provide a window into a patient's life that allows physicians to stay engaged with them. Imagine the improved outcomes for a patient with multiple chronic illnesses when a physician is able to electronically monitor their plan of care and medication between appointments. In addition to these portals, there are software applications that serve as a patient repository and is not connected to an Electronic Health Record. These particular portals act as a Personal Health Record (PHR), and is an added benefit to the patient who may want to maintain a portrait of their health by uploading recent lab or other tests results to share with other healthcare providers at future doctor appointments.

Background of the problem

The United States government understood the importance of increasing quality within the healthcare system. Currently, 200 million people in the United States suffer from chronic conditions (Key Management Group [KMG], 2015). Chronic conditions are consuming more health care funding than any other illness category. The United States Center for Disease Control (CDC) reports that 86% of healthcare expenditures in the United States are used to treat chronic conditions alone (CDC, 2016). The connectivity between the Healthcare provider and patient has become a major component in reducing the costs associated with chronic care treatment. Driving better patient outcomes has become the focal point with the need for patient portals.

Patient Portals in the United States

The inception of patient portals in the United States has led to positive results. Among the top results have been reduced readmission rates, increases in clinical revenue, and instant access to vital signs and symptoms for the purpose of early diagnosis and intervention (KMG, 2015). Presently, healthcare providers have no means to track patient progress in their plan of care between office visits. Patient portals help bridge this gap by allowing physicians to have a clear view of the patient's progress, identify harmful health situations before they progress to a critical status, and increase clinical revenue through improved appointment attendance.

The Health Information Technology for Economic and Clinical Health (HITECH) Act, enacted as part of the American Recovery and Reinvestment Act of 2009 was signed into law on February 17, 2009,

to promote the adoption and meaningful use of health information technology (U.S. Department of Health and Human Services [HHS], 2009). This program allows for cash incentives to be awarded to certified healthcare organizations in the United States who implement an electronic health record (HealthIT.gov, 2013). Establishing an incentive for healthcare providers to move their record systems into the electronic environment has helped fuel new opportunities for physician-patient engagement through connectivity.

Patient portal success

Health information technology helps close the disconnection between the patient and healthcare provider. In the United States, Over 90% of patients that suffer from chronic conditions have no plan of care (KMG, 2015). An increase in healthcare spending is related to an absence of patient portals and a system where chronic conditions are miss-managed. Patient portals keep the physician connected in between appointments to monitor patient compliance and immediately identify any situation that warrants a change in the patient's plan of care. This connectivity reduces unnecessary and expensive services that arise from treating chronic condition complications that could have been avoided through corrective action.

"With providers facing regulatory changes, mounting costs, and patients who increasingly seek access to more information, our survey points to an opportunity to address issues by simply opening dialogue with patients about patient portals," said Tamara St. Claire, chief innovation officer, Commercial Healthcare for Xerox in a statement. "Educating patients will empower them to participate more fully in their own care while helping providers demonstrate that electronic health records are being used in a meaningful way."

Patients driving change

Statistics show that patients desire to take responsibility for the management of their care; 70% of patents state they have little or no direct access to their healthcare providers (KMG, 2015). Patients with electronic connectivity to their healthcare provider are more likely to achieve successful management of their conditions. Unfortunately, 82% will never follow up with their physician once they have an initial appointment (KMG, 2015). Patients who set follow-up appointments manage their illnesses better and increase chances of achieving healthy results. Up to 23% of patients say they would happily utilize patient portals to schedule appointments (HIT Consultant, 2014). Everyone from millennials to baby boomers are interested in becoming more involved with their healthcare through electronic portals (Xerox, 2014). Patients indicate that among the most desirable characteristics to view electronically are test results, bills and bill pay options, prescription re-fill status, and requesting re-fills (HIT Consultant, 2014). Patients are asking the healthcare industry for more electronic access to their health information.

Technology driving patient outcomes

As health information becomes electronic a progressive mind-set is needed to continuously identify

ways technology can improve patient outcomes. Electronic health record implementation provides an excellent platform for driving patient outcomes through increased connectivity. Physicians have reported successes as it pertains to tracking patient outcomes with simply implementing an electronic health record. A physician at Phoenix Children's Hospital has been able to keep track of the increasing number of homeless children with chronic conditions and document their care (HealthIT.gov, 2013). Patient outcomes have improved due to the accessibility of electronic information. There is a direct correlation between successfully managing those with chronic conditions and tracking their plan of care and medication management (Parekh, 2011). A healthcare provider's access to quality and timely healthcare data through electronic connectivity improves patient health. Electronic connectivity with patients through patient portals will continue to drive improved patient outcomes.

Far Reaching Efforts

Improving the quality of life for the ever growing homeless population in some regions of the United States has been far reaching. Dr. Randy Christensen, Medical Director at Phoenix Children's Hospital, says their group is in love with the Electronic Health Record because of the efforts in being able to track the patients who lives on the streets.

The Phoenix Health Project (PCHP) treats thousands of young people who live on the streets of Phoenix and Tempe Arizona and do not have access to traditional healthcare services. Moreover, This Project consists of 24 programs and affiliates and is set up to track patients and follow them throughout the healthcare process. After several enhancements, the Phoenix Children's Health Project has a system that works and provides the following:

(1)

Clear and concise follow up instructions for the families through appropriate medicine discharge sheets, as required by hospital accrediting agency.

With the patient portal, diagnoses are communicated and concrete instructions to the patient's families.



Figure 1.

Case in Point

The enhancements to provider communications were brought to light in January 2010, during the treatment of a patient with malignant hypertension » (very high blood pressure). The child was to be admitted directly to the pediatric intensive care unit (ICU) and, before the ambulance arrived to transport the child, PCHP was able to print the child's entire chart (including data rolled over from the first EHR system). At the hospital, the nephrologists were impressed with the comprehensive data provided by the EHR system including blood pressure measurement history, height/weight charts, medication sheets, and diagnosis codes for the previous two years. The pediatric ICU appreciated the access to such valuable data, stating how important that level of provider communication efficiency is for making a diagnosis earlier in the child's care process.

Lessons Learned

- Based on PCHP's experience successfully implementing health IT, Dr. Christensen offers these recommendations to other organizations implementing health IT:
- Do the system implementation all at once in a period no longer than one week.
- Schedule the patient load lighter for only a short time after implementation then resume your normal patient load to push proficiency with using the EHR system.
- Schedule short bi-weekly meetings with providers to discuss lessons learned from the week as a means to share information, making everyone's learning curve less steep.
- After implementation, schedule a six month visit from your trainers to review larger process, or system use questions
- Play around with your EHR as much as possible to familiarize yourself and discover new possibilities
- Designate a "super user" who buys into the adoption process and has the time to be the advocate the EHR system needs.
- Don't let your providers get away with writing notes and then transfer them to the EHR chart later—they will never get used to using the EHR system if they're permitted to circumvent its use.
- Practice over and over how to enter data into the EHR while continually engaging the patient. Where you place the computer is very important; give it lots of thought.
- Explore wireless capabilities, because they provide flexibility allowing your staff to move with patients as they move through your care system.

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Abstract only**Education of Health Information Managers: The Nigerian Experience****Kayode Olayiwola Adepoju¹, Mami Ibrahim Mohammed², Jacob Kehinde Opele³***School of Health Information Management, OAU, Teaching Hospitals Complex, Ile-Ife, Nigeria¹,**Health Records Officers Registration Board of Nigeria², National Centre for Technology**Management (NACETEM), OAU, Ile-Ife, Nigeria³*

Education is universally agreed to be central to the growth of individuals, families, communities and the Nations at large. This study provide an overview of the education of Health Information Managers as distinguished professionals in Nigeria's health care industry. Education often promote national development. Research has shown that education is one of the most effective development investments, countries and their donor partners can make. The education and training of Health Information Management (HIM) professionals in Nigeria through its certificate, diploma, degree and postgraduate programmes exposes these professionals to the practice of acquiring, analyzing and protecting digital and traditional medical information vital to providing quality patient care. These group of professional have the skills and competencies to plan information systems, develop health policy, and identify current and future information needs. The professional education and training exposes them to the science of informatics to the collection, storage, analysis, use, and transmission of information to meet legal, professional, ethical and administrative records-keeping requirements of health care delivery. The education and training of Health Information Management (HIM) professionals, position them in a central spot in the provision of health service delivery at all levels of health care across the globe. The education and training of Health Information Management (HIM) professionals instill in them the importance of confidentiality in the management of patient health information and ethical principles guiding health information management. This paper concluded that education and training for Health Information Managers in Nigeria is more urgent now that the country is fully embracing the deployment of electronic health information management for national sustainable development. Keyword: Education, Training, Health Information and Management

Abstract only**Building Strong Bridges Between Education and Industry****Susan H. Fenton***United States*

The University of Texas School of Biomedical Informatics (SBMI) at Houston is a graduate level school devoted to training health informatics professionals with certificates, masters and a doctoral degree. SBMI has implemented a health informatics innovation lab where students work together to complete projects for industry partners. The industry partners pay the university to have access to the student teams working on their project and assigns a point of contact to work with the student team.

Multiple businesses, including health technology startups working with technology incubators, have signed agreements with the lab. More students have expressed an interest in the projects than there were positions available. Students take either a directed study or practicum course for their participation and course credit. Faculty provide general guidance and oversight, but the project team is responsible for organizing themselves and developing a project plan to meet the goals of the project. Technical tools and database acquisition are provided by the school. The overarching goal for the students is to acquire real-world experience working on health informatics projects. The long-term goal for the school is to grow its industry contacts and support for all of its graduate programs.

Abstract only

Depiction of HIT and HIM Education in Iran

Leila Kalankesh¹, Leila Ghaderi²

Tabriz University¹, Tabriz University of Medical Sciences²

First steps for education in health information technology in Iran was taken in 1985 through developing curriculum for 1 year period professional certificates as well as establishing associate degree of medical records. During past 30 years the HIM has evolved from associate degree to PhD level. The number of universities offering academic programs in different degree of HIT and HIM has been increased. This research aims to depict profile of HIT and HIM education throughout Iran. HIT and HIM education were mapped in terms of universities, degree, and geographic location, number of academic educators, their academic ranks and their field of study. Finding revealed that a total number of 20 universities offered academic HIT and HIM programs in 3 different degree including B.SC, M.Sc and PhD. About 90 academic full time educators are in charge for training in these universities and most of these educators are assistant and associate professors. Geographic distribution of both programs and educators revealed the equity in educational development in HIT and HIM discipline. High educational level of HIT and HIM in Iran opens great opportunities for improving this field in health care system

Abstract only

A “Fair Go” For Whom? The Need for Educational Standards for the HIM Profession

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Gilder, Australia¹, HIMAA²

[Background] Members in HIMAA’s Victorian Branch feared role substitution through the admission of skilled migrants not qualified to HIMAA standards. Lobbying state migration authorities yielded recognition of HIMAA-accredited qualifications as a gateway for state sponsorship of skilled migration in the HIM category. The Queensland state government followed suit. Consequently HIMAA began to receive enquiries from overseas skilled migration aspirants for HIMAA accreditation of their qualifications.

These aspirants volunteered not only copies of their qualifications and curriculum vitae, but a positive assessment by the National Assessor for the Australian Government in the HIM category, VETASSESS. Not only were the qualifications of these aspirants non-HIMAA accredited, they were not even in health information management. Skills and experience were usually marginal. HIMAA decided that assumption of this National Assessor role would ensure HIMAA's Entry Level HIM Competency Standards were the barrier criteria for positive assessment. HIMAA's aim was to preserve the industry standard for local graduates. [Methodology] In April 2015 HIMAA submitted its application to the Australian Government Department of Education (DoE). HIMAA formed a Qualifications Equivalence Review Panel (QERP) to develop a process for assessing overseas qualifications in anticipation of achieving National Assessor status. HIMAA also raised its concerns with the Department of Education about the current quality of VETASSESS assessments. [Results] While HIMAA received positive feedback from the Department, personnel asked how HIMAA would assess the contribution of skills gained from experience to complement qualifications assessment. HIMAA's QERP undertook two reviews of non-HIM qualifications from two applicants, and was unable to accept skills gained from experience as standards-based in either instance. DoE responded to HIMAA's concern with VETASSESS assessments by brokering two teleconferences with VETASSESS. In the second of these, VETASSESS disclosed an assay of adverts for HIMs and Clinical Coders in which employers did not require HIMAA-accredited qualifications, and so did not recognise these as the industry standard. The DoE supported VETASSESS's view. [Conclusions] VETASSESS will continue to issue HIM positive assessments for non-HIM qualifications. HIMAA is determined not undermine its accreditation of local HIM education by retro-fitting individual non-HIM degrees, particularly with skills assessment from inadequate documentation. As a result, HIMAA has withdrawn its National Assessor application and published a policy calling for an end to Australian Government practice of undermining the standard of local HIM graduates by importing non-HIMs for HIM roles. HIMAA's policy preference is for reciprocal recognition with fellow IFHIMA member countries.

Abstract only**Leading the Adoption of Information Governance for Healthcare****Deborah Green¹, Kathryn Downing¹***American Health Information Association, USA¹*

Recognition of the need for reliable and trusted information in healthcare has no boundaries. Around the globe there are healthcare delivery transformation initiatives geared toward improving the safety and quality of care, and the health of populations, while reducing the costs of care. These initiatives cannot be achieved without trustworthy information. The growth of data, rapid adoption of information technologies, and proliferation of devices and applications are contributing to concerns regarding data and information integrity. These concerns are leading to acceptance that governance practices are essential to getting to a state of trust in our information. Across industries, there is growing acceptance of the strategic value of information and the need for adoption of Information Governance (IG) to ensure that information is valued at the level of any strategic capital asset. Recent surveys indicate that adoption of IG in healthcare is at or slightly ahead of adoption levels across other industries. Since 2013 AHIMA has been actively promoting the adoption of Information Governance for Healthcare, and has led multi-stakeholder and multi-disciplinary efforts to develop a framework for the industry. This paper and oral presentation will summarize: 1. Survey findings on the state of Information Governance adoption and professional readiness, 2. The AHIMA developed framework for Information Governance in Healthcare, including its principles, organizational competencies and recommended approach for assessment and advancing adoption maturity, and 3. AHIMA efforts to promote IG nationally and internationally. The oral presentation will be delivered by Deborah Green, RHIA, MBA, BS, AHIMA's EVP and Chief Innovation and Global Services Officer. Deborah has led the AHIMA Information Governance initiative from its inception.

Abstract only**Accuracy of Outpatient Service Data for Activity Based Funding****Ester Munyisia¹, David Reid², Ping Yu³***Latrobe University, Australia¹, Drug & Alcohol Service, Ministry of Health, Australia², The University of Wollongong, Australia³*

Abstract: Background: Despite increasing research on activity based funding, there is no empirical evidence on accuracy of outpatient service data for payment. Objective: This study aims to identify data entry errors affecting activity based funding in an outpatient service in Australia. Methods: An audit was carried out on clinicians' data entry errors in an electronic documentation system. Results: A total of 518 data entry errors were identified. 68.7% were related to wrong primary activity, 14.5% were due to a wrong activity category, 14.5% were as a result of a wrong combination of primary activity and mode of care. 1.9% were due to inaccurate information on a client's presence during service

delivery, and 0.4% were related to a wrong mode of care. Conclusion: These errors may affect the amount of funding received by a healthcare organisation and in turn, the quality of treatment provided to clients. To reduce the errors or achieve an error free environment, clinicians need to pay adequate attention to their recording of activities. Their efforts however, needs to be complimented by embedding safeguards in the system such as flags for inaccurate data elements.

Abstract only

Active Record Review Impact

Roderick Manzo Napulan¹, Mha-an Sastrillo¹, Craig Stalker¹, Juan Rosas¹

FV Hospital, Vietnam¹

Medical record is the window to access and document the quality of care provided to a patient. A timely and accurate assessment of the condition and outcomes are essential in documentation. The latter indicating the next course in patient management with the former indicating home medication and follow-up essential for effective recovery. This initiative determines the effect of Quality Assurance. The Medical Record and Medical Departments communicating to provide feedback to Doctors results of active medical records review leading to improvements in the completion of medical records. Since March 2015, FV Hospital has implemented an Open Medical Records Review assessing all medical record completion on the second day of admission continuing until patient discharge. The initial contingent had 3 staff and 302 Files reviewed (monthly). After three months this was increased to 5 staff due to the recognition of the benefits of the resource. The Medical Records Compliance Officer (MRCO) feedback deficiencies found both on the ward and through email and SMS directly to the Medical Staff. The Medical Director and respective Head of Department are also informed. Doctors can then correct the deficiency during their rounds the following morning. After recognizing trends all Doctors were trained on the use of forms and importance of completeness in July 2015 by the QA Department. From April to September, increase coverage of open records reviewed and completion of the Initial Medical Assessment & Discharge Summary were observed and decreasing number of deficiencies. The increase in open medical records reviewed resulted in decrease in the number of deficiencies found per record. With specific improvements recorded in the completion of the Initial Medical Assessment and Discharge Summary. Significant improvements on the number of deficiencies quantified 5.5 decrease for every 10 patient files reviewed, 0.88 percent increase in the initial medical assessment for every percentage increase in the coverage, and 0.64 percent increase in the discharge summary completion for every percentage increase in the coverage. It is empirical that increasing engagement with the Open Medical Records Review and intensified coordination with doctors, improvement of medical records completion could be expected.

Abstract only

Regional Analysis Using GIS in Our Hospital

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[Introduction]

We can grasp the patient's distribution by Geographic Information System (GIS) analysis.

In the management of acute care hospital, it is significant to accept a new inpatient.

This time, we conjecture that we are able to get the medical service area by performing GIS analysis.

[Methods]

We analyzed by using the DPC (Diagnosis Procedure Combination) data in 2014 each MDC (Major Diagnostic Category) and K-code (surgery code of medical fee points table).

It was processed using the GIS software MANDARA in the aggregate data. Methods are following three types.

1. Each MDC using the postal code
2. Each MDC using Living area (old municipality)
3. Each MDC using K-code

[Results]

MDC01 (the nervous system), MDC05 (the circulatory system) and MDC16 (trauma) provide medical care in a wide area. However, MDC02 (ophthalmology), MDC11 (Kidney and urinary tract organs) and MDC15 (Pediatrics) have care of patients with a focus on Hofu City. In addition, patient's flow in Hofu City from the neighboring regions is small. Analysis in the Living area, MDC07 (Musculoskeletal) shows an influx of patients from neighboring regions. By K-code, for the surgery of urology and ophthalmology, medical service area have been limited.

Performing Postal code analysis, we have found medical service area of our hospital. Living area analysis is useful to grasp the trend of the patient. Analysis by K-code, It was found more detailed patient's trend compared to the MDC analysis.

[Discussion]

GIS analysis, the Case that the medical care at the center of Hofu City, centered on the secondary medical area, accepting the patients beyond the secondary medical area, and so on, it is possible to grasp patient's trend by disease or surgery.

We assume that patient's trend is affected by the location of the General hospital or distance from the house to our hospital by disease or surgery.

It is necessary to enhance the medical care system of our hospital. In particular cases of planned hospitalization (less urgent), because of patients can select a hospital.

Medical service area on our hospital is possible to show the features visually using GIS analysis.

Recent years, Hospital policies theme is Sharing of hospital function and Medical cooperation of medical institutions. Our Hospital needs information to provide advanced medical care. This GIS analysis is considered as information that can support the hospital's decision.

Abstract only

Development of International Workforce for Health Information Management (DIWHIM), Relevance and Challenges: An International Perspective

**Angelika Haendel¹, Sabu Karakka Mandapam², Hussein Ali Y AlBishi³,
Deneice Marshall⁴, Sallyanne Wissmann⁵, Wole Ajayi⁶, Yukiko Yukobori⁷,
Andrea Malenya⁸, Ghulamuddin Delawar⁹**

University of Erlangen-Nuremberg, Germany¹, University of Manipal, India², Ministry of Health, Saudi Arabia³, Community College- HIM Program, Bridgetown, Barbados⁴, Mater Health Services, Brisbane, Australia⁵, University Teaching Hospital Idi-Araba, Lagos, Nigeria⁶, Japan Hospital Association, Tokyo, Japan⁷, International Training and Education Center for Health (I-Tech), Botswana⁸, Hospital Management, Aga Khan Development Network, Afghanistan⁹

The purpose of this panel is to give an overview about the relevance and challenges of Health Information Management (HIM) education and capacity building at international level. The audience will gain an understanding about the current scenario of HIM training and workforce in different countries around the globe. Moreover, the attendees will get a greater understanding about the need for capacity building for HIM in developing countries in accordance to the vision of the World Health Organization (WHO). Discussion would also explicit on the proposed model for workforce development. HIM profession is not yet a formally recognized workforce in many nations, even though developed nations have gained significant progress in this area. A wide gap exists among nations in the availability of trained HIM professionals and the perspective towards the HIM profession. The health care organizations are dependent on enormous information generated at different sources and lack of well-trained HIM professionals to effectively handle such huge information is a major challenge in many countries. In developed countries, the technological advancements has created a larger space for HIM profession to function at multiple levels. On contrary, many countries, particularly the developing countries do not have adequate trained HIM workforce to match the emerging requirements in various domains of Health Information Management. Various surveys point towards dearth in availability of structured training programs in HIM domain and lack of initiative in many countries to develop a basic workforce for HIM. In this scenario, it is extremely important for HIM professional bodies and academia to collectively look towards HIM workforce development strategies, which are viable. The Global Health Workforce Council (GHWC) established by the American Health Information Management Association (AHIMA) is a major milestone for the HIM profession. The efforts of GHWC would lay a strong foundation for standardization of HIM education, competencies and workforce training globally. The integration of various HIM stakeholders under IFHIMA would be an appropriate body to establish HIM workforce development across the world. The new initiative of IFHIMA called Development of International Workforce for Health Information Management (DIWHIM) would be a window towards a brighter future for HIM workforce. An understanding of the current scenario of HIM education and workforce challenges

would establish the relevance of this very important initiative. This effort would offer an overarching framework to direct the development of HIM professionals globally. Let us work together for a better HIM workforce.

Abstract only

Management of Clinical Record for Vulnerable Patients

Silvia Basso¹, Pietro Luigi Deriu¹, Luigi Orlando Molendini¹

AIDOS¹

Introduction and Objectives Caring for vulnerable patients can be challenging. AIDOS, Associazione Italiana Documentazione Sanitaria, defined a position paper in order to define vulnerable patients, to give recommendation about informed consent and continuity of care. **Methods** AIDOS presented the position paper on vulnerable patient at their last National Meeting in Milan. The position paper has the objective to find valid, comprehensible and prompt answers on the management of vulnerable patients. AIDOS focused their attention on six statements which were voted and approved by the audience. **Results** The first statement deals with the responsibilities of the hospital leadership. There is the need to identify vulnerable patients, to develop specific healthcare procedures, to train all the staff and to implement guidelines. The second statement focuses on the identification and initial assessment of vulnerable patients. Based on this assessment, hospitals need to change their evaluation process and the documentation used, e.g. children, patients on artificial life support, patients with serious disabilities.... The third statement addresses informed consent. Informed consent is one of the most critical point. Vulnerable patients need to receive clear and easily comprehensible information and forms. They need time to understand all the information received before giving their consent. The caregiver or the guardian/trustee holds a critical role, requiring also the patient's involvement. The fourth statement concerns care to vulnerable patients. In this case it is important to identify the patient's trustee with whom all clinical choices have to be shared. Hospitals need to define a set of indicators in order to monitor the implementation of dedicated procedures to vulnerable patients. It is possible to involve volunteers in patient's care. The fifth statement deals with hospital discharge. It must be organized since the patient's admission to the ward. Hospitals have to guarantee continuity of care through a discharge letter both in case of protected discharge or home discharge. The sixth statement stresses the importance of follow up. For vulnerable patients, hospitals need to organize close follow up, especially in the period immediately following discharge. Follow up must be indicated in the discharge letter and it must be organized by the hospital. **Conclusions** The position paper aims to stimulate discussion on the management of vulnerable patients, on how to prepare a more and more detailed and comprehensible clinical documentation thus enabling more and more tailored care for patients with any kind of vulnerability.

Abstract only

Evaluation of Demand for Expanding Data Elements of Cancer Registry

Yoo-kyung Boo¹, Hyun-sook Lim², Young-Joo Won³

Eulji University, Republic of Korea¹, Hanyang Women's University, Republic of Korea², National Cancer Center, Republic of Korea³

Cancer registration is an information system designed to collect data from patients who are diagnosed of cancer for the purpose of its management and analysis, which is to collect demographic informs, diagnosis, histological treatment and its result. Most cancer registries have tried to maintain perfect, timely, and accurate data, however, they have been notified that there is a lack of important variables for research. Therefore, the demand of expanding data elements of cancer registration will be identified in this paper to suggest alternative measure to extend the usage of cancer registration system in public health and cancer researches. Prior to the research, candidates of data elements have been chosen from cancer registration system domestically and internationally. Then, in order to identify the demand of data and its priority, surveys were conducted on people who are in charge of cancer registration; cancer researches and case analysis of cancer registration through PUBMED. As a result, highly demanded data elements from personal identification information were shown to be date of birth, country of birth, and race. For the data elements for cancer diagnosis, candidates required details such as date of treatment, usage of medicine, and details on radiation therapy. To distinguish the stages of cancer, they needed TNM stage, collaborative stage, and comorbidity. For follow up data vital status, duration of life, recurrence type, and cancer status are suggested. Most of highly demanded data elements were confirmed to be available to acquire from health information system of medical institutes which run cancer registration system. The results show that the consensus of collecting data, understanding, and education on data processing will enhance data collection. Despite of the education on data processing, the proper supports such as human resources and equipment are required to make accurate and trustworthy cancer registration in case of expanding elements. Cancer researchers suggested that only limited amount of researches has been done under the current registration, thus, the application of cancer registration could be insufficient. Also, It is recommended to consider legal and institutional measure to enable multi and interdisciplinary research through cancer registration, for example, By making the cancer registration data opened, all the data from other data systems could be linked creating more benefits.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Use of Android Smart Phone to Ensure Continuum of Care at Household Level in Low Resource Setting as Countries Struggle to Achieve Universal Health Care

Eddie Sefuluya Mukooyo

Ministry of Health, Uganda

Use of Android Smart Phone to Ensure Continuum of Care at Household level in low resource setting as countries struggle to achieve Universal Health Care

Background and Context The burden of disease in Uganda both mortality and morbidity is caused by 10 diseases that are preventable. The trained health workers both doctors, nurses and other allied health professions are in inadequate supply. As a result the country has adopted the use of community health workers or community change agents to reach the households many of whom in underserved areas. Hence the adoption of technological solutions to improve access and uptake of the health delivery services. Technology driven solutions are therefore expected to provide a platform for performance improvement in mitigating the burden of disease as per Uganda Demographic Health Survey 2011: Infant Mortality Rate [54 deaths/1000 live births]; Under five mortality rate [90 deaths/1000 live births]; Maternal mortality ratio [438 deaths/ 100,000 live births]; % Coverage of measles vaccine among children 12-24 years of age [76 %]; and % DTP coverage among children one year of age [72 %]. The focus of the CHMS is on to the Individual within the household. Thereby enabling delivery of public health and clinical health to the Individual within the context of the Household. Thus it enables you to know: the Household; the Household Members; the Village Health Team members; the Health of the Household and maternal services required. The current key CHMS functionalities include: registration of VHT members, registration of household members; provides the households Primary Health Care indicators; enables Mother and child services; enables Reporting services; enables better functionalities of the VHTs and enables access to information depending on level of access rights. The Primary Health Care (PHC) Indicators are preset in the menu: protected water source; safe drinking Water; drying rack for dishes; latrine; hand-washing area with soap near latrine; kitchen and rubbish pit. It equally enables registration of pregnant mothers and setting them on their appropriate timeline so that they can be reminded for their antenatal visits; registration of outcomes of pregnancies whether positive or negative and registration of previous pregnancies.

Conclusion Using an Android Smart Phone technological solution can improve access and uptake of the health delivery services at household level. Hence ensuring continuum of care and achieving sustainable universal health care.

Abstract only

Association Between Recommended Antibiotic Using and SSI Rate

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When Penicillin-the first antibiotics was introduced into society in the 1940's, it was hailed as a medical miracle. For years it appeared that antibiotics would banish all infectious diseases forever. Yet now - the medical miracle has come up against some severe problems. People in the health industry are warning that unnecessary overuse of antibiotics is causing the spread of diseases that are more difficult and sometimes impossible to treat. The objective of this research was to exam the association between recommended antibiotic using and SSI (surgical site infection) rate then judge if we have appropriate administration of recommended antibiotic and recommended duration regarding published guideline in surgical procedures The data was limited to 139 patients who underwent surgery procedures from January.2015 to December.2015. 75 of these patients (54%) were receiving extended-duration antibiotics. Out of these patients 5 of them developed SSI after surgery. All of these 5 patients have high risk factors by definition of high risk in relation to SSI. Therefore, we allowed the extended-duration of antibiotics to be given . By doing this we are noticed that there is no significant difference in infection rates between the group receiving recommended duration and extended-duration. Antibiotics should be limited to the shortest duration which is possible to prevent SSI .The duration should be restricted to recommended dosage. These results provide some insight into economic performance which not only affects our hospital but also for our patients. We have recognized there are limited data concerning antibiotics at our hospital at this time. We need to continue to analyze the data before we are able to give a more accurate calculation of how many patients have high risk factors in all. This feedback from the results are given to doctors and healthcare worker whom should consider appropriate antibiotic prescriptions and endeavor reducing the risk of exposure opportunity to bacteria.

Abstract only

Information Governance - A New Paradigm for Health Information Managers

Angela Christine Randall

National Maternity Hospital - Ireland

Information is constantly being collected, stored and used on many mediums and it is the responsibility of the Health Information Manager to manage and regulate all that pertains to this task. This paper considers what is required in the process of information governance and how governance and security of information is maintained. What is the expectation of an organisation and the individual in relation to management and security of the information? Does privacy and Freedom of Information legislation go far enough? What of the organisational information governance programmes and com-

mitment. Is staff awareness of security, privacy and confidentiality a risk of the organisation, and how do we measure it? Does the electronic environment impact information governance programmes and how do organisations monitor staff commitment? What are the guidelines for an organisation to follow in the quest to preserve both patient information and information related to the organisation? What are the obstacles to overcome? How does the information governance reference model assist the organisation and Health Information Managers maintain confidentiality and security of information in the digital age, and how do we monitor the cloud for security and access?



Poster Sessions

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

A Study to Assess the Implementation of Electronic Health Records in Mauritius- A Case Study at SSRN Hospital

Abdool Sahboob Kureemun

Health Records Department-SSRN Hospital-Mauritius

A Study to assess the implementation of Electronic Health Records (EHR) in Mauritius-A case study at Sir Seewoosagur Ramgoolam National Hospital(SSRNH) Dr A.S.KUREEMUN, Senior Health Records Officer, SSRN Hospital, Mauritius After several decades of development, Electronic Health Records (EHRs) are now exerting a more significant impact on healthcare practices than ever before. Although most of the reasons for implementing EHRs focus on improving medical care as a whole, one must consider the effects increased EHR use may have at the level of the patient-physician encounter. The purpose of this study is to assess the efficiency and effectiveness of the actual health records services at the SSRN Hospital in Mauritius and determine to what extent EHR can help to improve the health records services.. The theoretical part introduces EHR & EMR. Theories about the importance of EHR, the benefits of EHR, problems associated with EHR, and the future of EHR are also discussed in the theory part. The stratified Sampling method was used. The study involved health personnel from different occupational classes (Medical, Para-Medical, Nursing and Health Administration-Management). The data collection method chosen was a self-administered questionnaire which was framed based on the objectives of the study. There are 2,300 employees including different grades. A sample of 93 employees were chosen from the departments selected to participate in the survey. The results from the survey conducted show that the majority of the respondents agree that with EHR there will be less waiting time & service quality will be improved. It has also been found that most of the respondents agree that Staffs will regularly use EHR technology once implemented to retrieve patient information and to document patient care. Furthermore, according to respondents for the new system to be successful, extensive training of staff, good working environment and support from top management is very important. The use of Information and Communication Technology (ICT) in healthcare delivery is a novelty in Mauritius The potential for innovation within this new technology represents a great opportunity for the future of medicine. However, to implement EMRs, caution must be exercised to ensure that implementation does not have adverse effects on the personal nature of the patient-physician relationship. Hence, the importance of EHR is enormous and successful implementation will decisively influence the adoption of ICT in the health sector References: A.Shaun Kuoni (2012). Electronic Medical Records, Healthcare and the Patient. B,World Health Organization Report, (2006).

Title Presentation: Information Sharing by the Visualization of the Number of Inpatients Bring the Shortening of the Average Hospitalization Days and the Better Management of the Hospital
Visualization and Sharing of Information Aimed at Shortening of Average Hospitalization and Sound Hospital Management

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ABSTRACT

Japan's Government aims to promote shortening of average hospitalization and efficient hospital management by rationalizing medical expenses and building local healthcare delivery system. Fujieda municipal general hospital, an acute care and public hospital set up "the Hospital Bed Controlling Board" in November 2009 to meet such national demand. To provide appropriate healthcare resources, make PDCA function, which facilitates proper profits for medical care, and manage beds efficiently, we offer various information which is visualized in a plain way by using initial screens of electronic medical charts. Besides we share information and explain the current state of bed control every day at meetings that all nurse managers gather. It also contributes to appropriate bed adjustment simultaneously. The provided information is not simple numerical enumeration but is visualized as the aim graphs which are calculated from providable medical resources. We then evaluate levels of the achievement twice a day and emphasize them timely by changing the background colors of the monitors to express the state of bed control, which can promote information sharing among the whole staff. By visualizing numeral targets, a series of processes of action following thorough consideration permeated our hospital. As a result, the ordinary profit and loss became in the black for 2 consecutive years and the average hospitalization was shortened. The visualized and shared information enabled us draw a road map of the strategy and every staff to manage their own duties. This led to efficient bed and hospital management and achieved business administration which made short-, middle- and long-term activities coherent.

KEYWORDS: shortening of average hospitalization, efficient hospital management, the Hospital Bed Controlling Board, numeral targets, visualized and shared information

1. PURPOSE AND THE BACKGROUND

Fujieda municipal general hospital is located in Shida-Haibara medical care zone of the central part area of Shizuoka Prefecture. This hospital, which is composed of 35 medical departments with 564 beds for general patients, was designated as Regional Medical Care Support Hospital in September 14, 2010 and has played a pivotal role in acute medical care provision. The hospital is located in Fujieda City with approximately 150,000 population, which is a satellite city of Shizuoka City, an ordinance-designated city and is a prosperous agricultural area which yields tea and tangerines etc. The percentage of 65 years and over against the total population is higher than the national average¹. This aging of the population is influencing extension of hospitalization. The average hospitalization of Japan is longer than that of Western countries according to the statistics by OECD (figure 1)². This affects the national medical expenses, which increase by nearly 1 trillion yen every year³. While the Ministry of Health, Labor and Welfare promotes shortening of average length of stay to curb the increased medical costs⁴ the Ministry of Internal Affairs and Communications demands that the public hospitals should develop the reform plan to secure the local healthcare delivery system⁵. Therefore, the government tries to establish a system of appropriate distribution of the medical expenses and necessary medical functions and our hospital aims at the sustainable hospital management by improving management efficiency. We reformed “the Hospital Bed Controlling Board” in our hospital in April, 2012 for this purpose. This Board has provided various information to control the beds more efficiently and smoothly and built up a system to provide the medical staff with the information swiftly and enable prompt information sharing. We report on the information provision and results obtained from the information sharing.

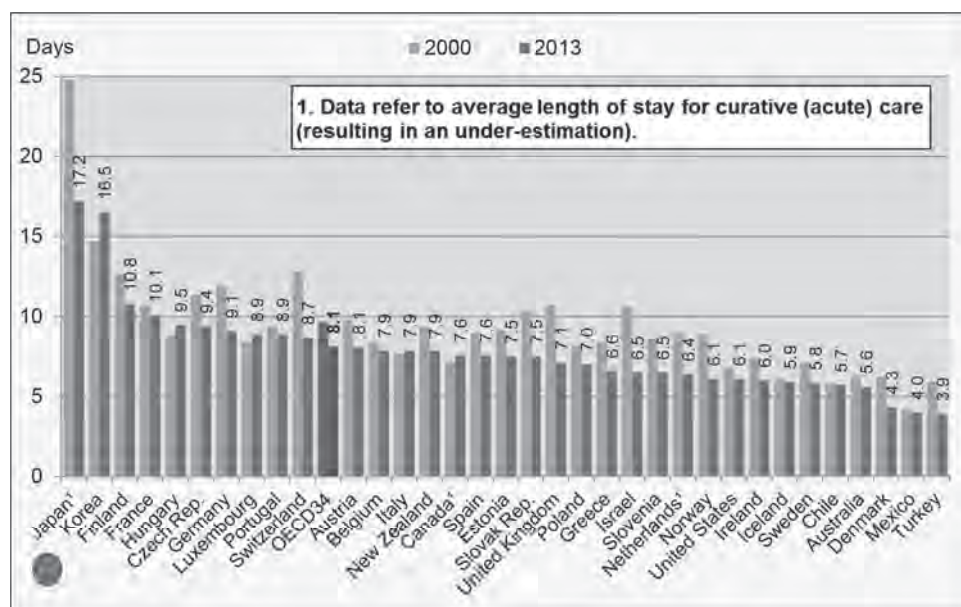


Figure 1 Average length of stay in hospital, 2000 and 2013 (or nearest year), Health at a Glance 2015 OECD Indicators, pp108-109

2. METHODS

The percentage of which man perceives external information through the five sensory organs is said

to be visual 83.0%, auditory 11.0%, scent 3.5%, tactile 1.5 % and gustatory 1.0%⁶⁾. From this research, we believed that information from sight with such extensive influence was useful to a series of process of action following due consideration in clinical practice and decided to adopt a method of appealing visually.

2.1 Trend of the Number of Inpatients in the Hospital

2.1.1 The Number of Inpatients of Each Day of the Week and New Inpatients

Regarding the number of inpatients, we researched the trend per day of the week from change of the number of inpatients for a week of the latest year. In addition, we conducted the same research on the number of new inpatients as well.

2.1.2 Seasonal Variation of the Number of Inpatients and New Inpatients

Regarding the number of inpatients of each fiscal year, we researched the seasonal and monthly trend by calculating difference between the monthly actual number and the average number. The difference was set as “a seasonal coefficient”. We also conducted the same research on the number of new inpatients.

2.2 Setting of Numerical Targets

The numerical targets were calculated based on the present situation of the hospital to obtain the proper profits for medical care through medical resources which the hospital can provide for sound management.

2.2.1 Calculation Method of Monthly Targets of the Number of New Inpatients

- The whole hospital:
 - Target number of new inpatients \times seasonal coefficient = monthly target of the whole hospital

Or we set the actual targets based on the sum of each medical department mentioned next.
- Each medical department:
 - Average number of new inpatients of each department per day of the week of the latest 52 weeks \times monthly total days of each day of the week = monthly number of inpatients of each department per day of the week
 - The monthly aggregate number of each department per day of the week \times seasonal coefficient = monthly target of each department

Adjustments are made if there is increase or decrease of doctors in each department.

2.2.2 Method of Setting the Target Number of Inpatients per Day of the Week

- Target number of inpatients \div average number of inpatients of the latest 52 weeks except consecutive holidays more than three days = correction coefficient
- Average number of inpatients per day of the week of the latest 52 weeks \times correction coefficient = target number of inpatients per day of the week

2.2.3 Bed Occupancy Rate

- All inpatients ÷ occupied beds × 100 = bed occupancy rate(%)

2.2.4 Disease Severity, Medical, Nursing Necessity (%)

This is stipulated by the Facility Criteria for 7 to 1 Basic Charges for General Ward Hospitalization which the Ministry of Health, Labor and Welfare established⁷.

2.3 Visualization of the Targets

The information was displayed on the initial screens of electronic medical records. The provided information was not simple numerical enumeration but was visualized as the aim graphs which were calculated from the medical resources the hospital could provide. The attainment degree which we evaluated twice a day was emphasized timely by changing the background colors of the screens, which promoted the information sharing among the whole staff. By changing the colors of the actual values and using the larger fonts which stirred, we also emphasized the updated information more clearly and expressed the degree of stability/instability of the current bed control.

- The target number of new inpatients (management index):
- Regarding the number of new inpatients, the degree of stability was represented by red color if the daily total number did not reach the standard.
- The number of all inpatients (bed control index including empty beds):
- Regarding achievement of the targets per day of the week of all inpatients, instability (less than -5%) was represented by red, warning (-5% and more to less than 0%) by yellow and stability (0% and more) by blue, which were reflected on the background colors of the initial screens of the electronic medical records.
- Bed occupancy rate (the efficient bed control management index):
If bed occupancy rate of the whole hospital and each ward was more than 85%, we changed colors of the values of the achievement tables on which were reported every Wednesday at the liaison meetings that the nursing directors and the chief nurses of all the wards attended. We shared the information on the total bed occupancy rate and the bias of each ward and examined short-term measures to control the beds more effectively.
- Disease severity, medical, nursing necessity (the Facility Criteria):
If the ratio of disease severity, medical, nursing necessity which was stipulated based on the Facility Criteria⁷ was less than 25% in the aggregate, we changed the color of the values to red and make them blink to emphasize the degree of risk.

Additionally, we established regulations for bed control, adopted a central management system and held daily liaison meetings that all the chief nurses attended to share the information among all the wards. Besides, our hospital tends to be short of the beds in the winter months after October due to increase of inpatients suffering from infectious diseases such as influenza or senile pneumonia. We drew up inpatient management tables whose flowcharts facilitated the bed control in case the hospital should be unable to accept new inpatients for acute care beyond the hospital's capacity.

3. RESULTS

Figure 2 shows monthly transition of the number of new inpatients and difference between the transition and the targets since 2013. We adjusted the targets according to fluctuation of the number of the doctors and set them slightly higher than the actual transition. The difference decreased gradually and we accomplished the targets within $\pm 3\%$ on average for 33 months from April, 2013 to December, 2015. As a result, new inpatients increased and the ordinary profit and loss became in the black for 2 consecutive years since 2013. Figure 3 shows monthly transition of the average length of hospital stay since 2013. Compared to the average of 2013, it shortened by 0.5day on average in 2014 and 2015. Additionally, thanks to the flowcharts which we drew up in case of no vacancy, we were able to control beds swiftly by grasping the inpatient numerically. The bed control was also optimized at the daily liaison meetings mentioned above. At a result, fluctuations of the monthly average number of inpatients per day, which had been great for two years since 2013, reduced to roughly a half in 2015. Efficiency of the bed management has improved. Centralization of all information on the bed control has made it possible to disseminate the information and share it more appropriately. Coherent business administration has been achieved by the adjustment at the daily liaison meetings for efficient bed management as a short-term measure, by setting up the numerical targets of new inpatient and promoting understanding of the current situation such as the inpatient number in the whole hospital as a medium-term measure, and tackling them continuously as a long-term measure while making PDCA function.

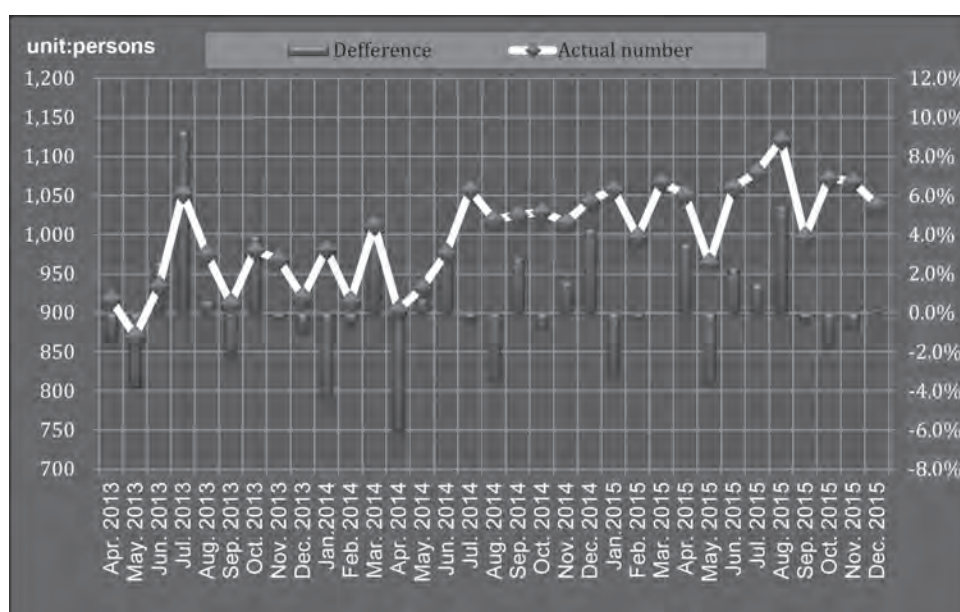


Figure 2: Monthly transition of the number of new inpatients and difference between the transition and the targets

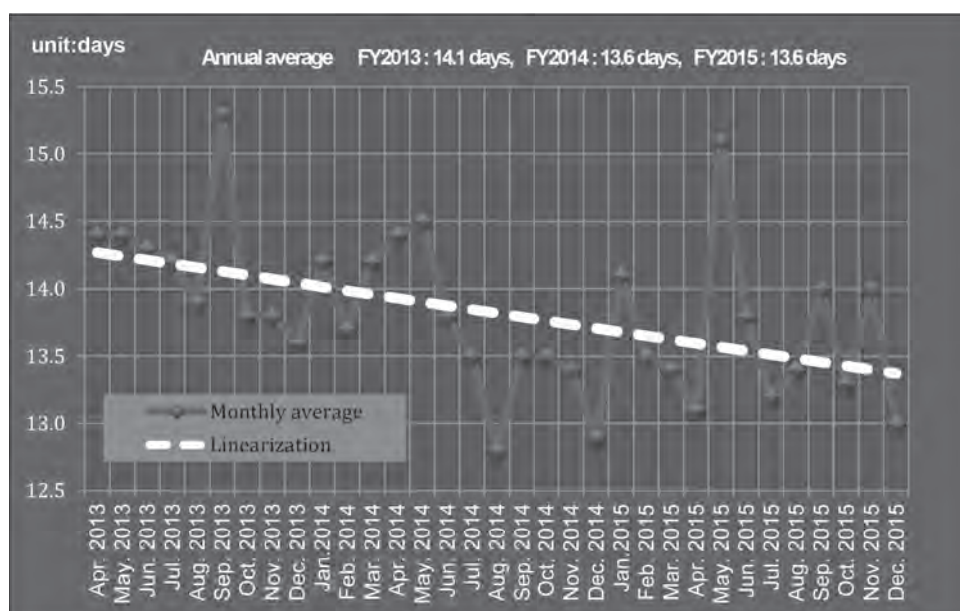


Figure 3: Monthly transition of the average length of stay

Note: FY2015 average is until December.

4. CONSIDERATION

Locke and Latham (1990, pp.29, 108) states that “goals that are specific and difficult lead to a higher level of performance than vague, nonquantitative goals such as do your best, work at moderate pace, or no assigned goals” and “specific hard goals lead individuals to expend more effort”⁸⁾. Although simple goals can be achieved and some satisfaction may be attained, it is important to set up goals which are neither too easy nor too hard to boost productivity. “The Hospital Bed Controlling Board” set up the targets by applying this principle, which created the desired result. However, the healthcare staff in clinical practice are always engaged in care and education for patients and have few opportunities to consider thoroughly at the desks unlike clerical workers. In this situation we made every effort to make the staff share the updates such as the patient number by utilizing the electronic medical charts and emphasizing the information. It is extremely effective to establish targets, visualize and share the information, which increased productivity of the hospital. The highly efficient bed control and hospital management were accomplished by improving the accuracy of the visualized values and changing methods of the visualization. A series of process that all the staff share the visualized information, consider thoroughly and then act permeated the whole hospital. In addition, the visualized and shared information enabled us to draw a map of the strategy and every staff to manage their own duties. This led to the efficient bed control and sound hospital management and achieved the business administration which made short-, medium- and long-term activities coherent. It is essential to set up targets and visualize them at all times whether it is hospital management or corporate management. Besides, it is one of the most important strategies to set the targets higher continuously and gradually in line with reality.

5. CONCLUSION

At the same time when this Board researched trend of the number of inpatients, we conducted research of correlation between the number of new inpatients and other indicators such as hospital's profits. From the correlation charts, it was clearly proved that increase of new inpatients has a direct relation with shortening of average length of hospital stay, stabilization of bed occupancy rate and increase in the hospital's profits, which the Hospital Bed Controlling Board have focused on. Since wide-ranging targets for the medical workers made it difficult to attain them due to increased complexity, the main target was limited to the number of new patients. We sought sound management of the hospital by analyzing the performance and the related results. Moreover, Fujieda municipal general hospital is an acute care provider and must function as a core hospital for patients requiring acute medical care and complete checkups. Therefore, it is essential that the acute hospital accepts new inpatients and set up a system of early discharge. It is also required to cooperate with other hospitals to receive new patients following the early discharge at the same time. The Hospital Bed Controlling Board plays a critical role in building up these systems and will have a great effect on the whole hospital management. Hereafter we are going to strengthen the hospital management system and take another step toward improving quality of medical care by utilizing this principle.

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Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Effect of Relaxation Techniques in Reducing Stress Level among Mothers of Children with Autism Spectrum Disorder

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Background: To date, the evidence on the effects of relaxation training on the stress level of mothers of children with Autism Spectrum Disorder (ASD) is scarce. The number of children with ASD in the country is significantly increasing. Objective: The aim of this study is to investigate the effect of 4-week structured relaxation techniques particularly deep breathing, progressive muscle relaxation, and mindful eating exercise in stress level reduction. Methods: A quasi-experimental design was used utilizing 25 mothers (10 in the experimental group; 15 in the control). Subjects were chosen via purposive sampling and were gathered in different SPED centers in Baguio City, La Trinidad, Pangasinan, La Union, Nueva Ecija and Ilocos Sur. Stress levels were measured using Parenting Stress Index- Short Form (PSI-SF). Statistical tests used were T-Test and Related T-test. Results: The post-intervention mean score of mothers in the experimental group was significantly lower compared to the pre-intervention mean score. The overall weighted mean score after 4 weeks of relaxation training show effectiveness in lowering stress level of mothers. Likewise, there is significant difference in the stress level reduction of mothers in the control and the experimental group. Discussion: The 4-week structured relaxation techniques such as DBE, PMR, and mindful eating show evidence of effectiveness in reducing stress level of mothers of children with autism spectrum disorder. These techniques are cost effective, easy to perform, and non-pharmacological interventions to manage stress level. Recommendations: The researchers recommend that mothers to incorporate these relaxation techniques in their daily activities to decrease their stress level; and for future research studies to test the effectiveness of the relaxation techniques to family caregivers of children with other neuro-developmental disorders and other psychiatric disorders. Keywords: Relaxation Techniques, Mindful Eating, Progressive Muscle Relaxation, Breathing Exercise, Autism Spectrum Disorder

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Reduction in Mortalities and Improvement of Under Five Clients Care

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Ga South Municipal Hospital is the only government hospital in the Ga South Municipality of the Greater Accra Region of Ghana, serving a population of 532,222. The facility is one of the 18 facilities within the Project Fives Alive Collaborative in Greater Accra that has employed the Q.I methodology to attain the MDG 4 targets for Ghana. The improvement work involved staff caring for Under five year clients in the hospital, led by the health information officer and supported by the Hospital Management team. An under five year clients visiting the facility would spend an 205 minutes before accessing care in the Ga South facility serving as a disincentive for care givers to seek early care in that facility and encouraging self-medication. Decision to seek care for an Under five year clients took about 7 days before this improvement collaborative with the PFA! In 2013, Anaemia accounted for 79% of Under five clients referrals, placing it as the top cause of unnecessary referrals from Ga South Hospital to other district or regional hospitals, further increasing the patient load in those referral facilities. At the same time, malaria was the top cause of OPD attendance for Under-fives. Secondly, Delays in seeking care and certain cultural practices by pregnant women resulted in poor obstetric outcomes such as still births. The facility recorded a continuous increase in still birth rate from 2010 to 2013. All these issues outlined above contributed in the continuous increasing mortality rates in the facility. This became a high concern for the Quality Improvement team. Application of some brilliant initiatives solved the waiting time and reduced delay in care seeking behaviours and at the end, reduced mortalities. Change ideas were employed and these conundrums and root causes were remedied. Now, still birth rates have reduced drastically after the adoption on new ways of managing clients and continuous maintenance of ideas processes to work. Under five clients waiting time and mortalities have also reduced. Delay in seeking care has tremendously improved as well.

Abstract only

Improving the Quality of Medical Record and Monitoring Groups of Disease Severity through Selecting Principal Diagnosis Based on Clinical Evidence

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Objectives: To exact research data outputs and to prevent cuts in the insurance review, correct principal diagnosis must be selected. Make a note discharge summary is clinician responsibility. But medical record administrator should be verified principal diagnostic information before disease coding.

First of all, to give a choice various diagnosis by clinicians, at three hospitals affiliated with Seoul National University Hospital were implemented on EMR diagnostic term standardization work. Also, to enter the Senior General Hospital and to accept New diagnostic related group system, we should be improved up to 100% for principal diagnostic rate of concordance of discharge summary.

Methods :We compared that during 6 months before (between January 2015 and June 2015), and 6 months after (between July 2015 and December 2015) activities with two standards. *(In Korea, Health Insurance Review & Assessment Service organization suggests 3 groups of inpatients by their disease severity. Inpatients of A group are most severe. Then inpatients of B group are moderate severe And Inpatients of C group have mild disease. From now on, write in A B C.)*

1) According to criteria for Senior General Hospital, A,B,C distribution status. 2) Principal diagnosis entry accuracy (%) = Number of discharge summary entered accurate principal diagnosis / Number of patients discharged × 100Activities

- Educating clinicians about guidelines for select principal diagnosis by ABC diagnostic group. (visited all 14 medical departments in Boramae Medical Center): Monitoring entire medical record of discharged patients then doing some feedback and giving a choice to correct the principal diagnosis by clinicians.
- Sending the E-mail to all clinicians about ABC diagnostic group distribution status by principal diagnosis.
- Confirming the entire principal diagnosis of discharge summary then doing some feedback to clinicians. : If there were discrepancy of principal diagnosis with biopsy result, we left the messages about the incomplete medical records in EMR. - Readjustment for principal diagnosis guideline.

Results: As a result of these various activities, the rate of principal diagnosis entry accuracy increased from 94.5% to 98.7%. The rate of Senior General Hospital distribution status of A,B,C, made a progress from 20% to 22%, 62% to 63%, 19% to 15% respectively.

Conclusion: Consequently we could increase the rates of principal diagnosis entry accuracy and A diagnostic group. On the other side, we could decrease the rates of C diagnostic group.

Abstract only

This paper was not presented at the meeting because the author was not able to attend.

Institutional Challenges to Health Information Management Practice in the Developing Countries. The Way Out

Gabriel Ade Joseph¹, Taiwo O Olugbenle², Emmanuel O Basusi³

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Institutional Challenges to Health Information Management Practice in the Developing Countries. The Way Out Objective - The aim of this study is primarily to identify the challenges of generating and managing clinical and bio data of to support efficient health care delivery in the developing countries, and identify values attached to research data and identify methods of preserving and managing quality data for evidence-based research programs in the developing. Method - The study applied a random sampling method to select 50 hospitals within Nigeria major urban areas. Hospitals were categorized into Teaching, Specialist, General and Private respectively Questionnaires were administered online through goggle survey while visitations were made to few of the hospitals. Results - The study on data management in the 50 hospitals reveals a fall in the standard of health data management. 10percents of the 50 hospitals have data preserved from inception, using modern technology 70percents destroy data after 10years of preservation and 20percents destroy data after 5years. 16percents have Health Information Managers and 30percents have Health Records Clerks. More than 86percent still practiced manual health records keeping. 4percents make use of computer with enabling software. Of this figure, 4percents are government hospitals and 10percents are Private hospitals. More than 86percent still practiced manual health records keeping. 4percents make use of computer with enabling software. Of this figure, 4percents are government hospitals and 10percents are Private hospitals. Conclusion - Data, undoubtedly, is the driving force of healthcare industry decision-making. This is evident by the initiatives to capture outcomes and relevant data. From the findings above, 10percent of hospitals surveyed could afford to keep accurate data and 14percent using appropriate technology, This is simply logical to conclude that, unlike developed countries, data from developing countries are not readily available, accessible, and would probably not meet futuristic needs, except urgent steps are taken to address its quality, currency and preservation. Today, technology is rapidly changing how clinical data or healthcare information is managed. A qualitative data is no doubt sine-qua-non managing HIV programs very effectively and efficiently. The developing countries need to do more on institutional empowerment through technology application to health information management to be able to meet present challenges and to remain relevant and competitive. Institution can also leverage on one another to achieve this goal by acquiring common technology that can serve the interest of many organizations such as cloud technology.

Abstract only**Lifelong Learning of the HIM Professional****Theresa L Jones¹, Monica G. Howe²***Resurrection University, USA¹, Beacon South Management, USA²*

The most valuable resource available to man is the human resource. Without proper education and training of human resources it is likely impossible for any business to grow or sustain. As a result, we have an obligation to ensure that a structure is in place to facilitate education and training of the HIM professional at all levels. For the purpose of this paper we will define the entry level professional as one with 5 years of work experience or less and the seasoned professional with greater than five year. Our present structure evidences readiness for the entry level HIM professional. Recent graduates receive education and training that is current, relevant and timely. It is worthy to note that the system also reflects availability of information and training for the seasoned professional. However, a gap may exist that can only be determined with the input of key HIM professionals in the workforce. Their response will provide an answer to the following compelling question: What structures are in place in hospitals, that fosters the education and training needs of the seasoned HIM professional? This paper will reflect the role of hospitals in addressing the current state of educational needs for the entry level and seasoned HIM professional. Concentration will be in the area of job competency and readiness for the current workforce. The focus of this paper will be on three types of hospitals in the state of Illinois (private-owned, government and community based hospitals). A survey will be provided to individuals in HIM management to discover and examine the methodology utilized in the delivery of HIM content essential to professional growth and development.

Sudoku of a Health Information Manager**Elizabeth Chiu***University Health Network, Toronto Canada***ABSTRACT**

In the world of changing information technology, leadership style is continuously evolving. Management principles provide modelling in theories, applications are the building blocks. Fitting the right theories combination with practice will fit into well-posed puzzle on unique solutions.

Vision	Culture	Creativity
Change Management	Education	Time Management
Feedback	Communication	Relationship

Like Sudoku, each column, each row and each of the nine 3x3 sub-grids that compose the grid are filled with combinatorial logic-based grid matrix of essential leadership skills.

Nine leadership skills

1. Vision

Vision and mission need to be aligned with priorities to organization's directions such as global impact on patient care, patient safety, research, education and integration. Information technology infrastructure requires financial investment to support organizational data needs. Integration such as clinical partnerships and sharing accessibility on mutual benefits create win win relationships.

Vision is the ability to decide and strategize optimal outcomes. This is proactive design of implementation of tactics and contingency planning to achieve goals of the organization. Challenge is the understanding of organizational needs and priorities in order to allocate resources and funding for the same goals.

2. Relationship

Networking and building relationship are essential in knowing who to ask and get the job done. Identify stakeholders and opportunities to achieve mutual gains and benefits. This is one of the most important skills and the key to success. People are the power and the force to complete any task. Agreement and commitment to the vision are the driving force.

Team building efforts and networking can take forms of social activities like festive celebrations, seasonal events, fundraising activities, or professional tributes. Any events requiring team work will promote synergy. It is believed that one who plays together works together.

3. Culture

Multi-generation, gender, ethnic diversity and multi profession all contribute to barriers and boundaries in team dynamics. Acceptance and understanding these differences is the key to team work and staff motivation.

Traditionalists (born 1928-1945)

Baby Boomers (born 1946 – 1964)

Generation X (born 1965-1980)

Millennials (born 1981-2000)¹

Traditionalists work at the same company for their entire life – duty to work. Baby boomers are workaholics, knowledgeable, and dedicated – good things come to those who work. Generation Xs are independent, creative, entrepreneurial and pragmatic – work to live. Millennials are tech-savvy, fast paced and collaborative – dream followers.¹

Bridging the gap of multi generations when recognizing and understanding the differences, capitalize on the benefits are the key steps in building the relationships.¹

4. Change Management

Constraints, external factors, and unavoidable changes such as budget, electronic medical record, automation, restructuring are all challenges we face. Impact of changes is evaluated. Backup system and reinforcements need to be built such as backup data source availability during system downtimes.

Changes are multi-faceted and require supports internally and externally. Infrastructure re-organization is common when changes occur in leadership. Transparency is crucial and changes need to be communicated.

5. Education

Information technology changes rapidly. Advanced health information technology adoption changes are delayed due to budget restraints, policy, and privacy. Education and training needs to be continued to stay informed.

Concepts such as train the trainer can be implemented. Education opportunity offered to above average performers is both motivational and provides recognition.

6. Time Management

Priorities in scheduling are important in planning. Keeping life, work, wellness balance is important to healthy work lifestyle.

Ideas such as implementing five minutes stretch breaks to staff inspires long term wellness benefits and staff appreciation. Offering on-site massages can work wonders.

7. Feedback

Listening is important to learn to change and adapt. 'Feedforward' or seeking suggestions for how one can be more successful in the future with boss or colleagues can be helpful to succeed.

Open door policy is a great way to listen. Better time management would be scheduling availability for open door visits. Another idea of better use of time is to walk around the department on nonscheduled time and spend a few minutes with each staff member to build rapport, observe and listen. Management by walking about is a fantastic tool for any manager with basic social skills and a limited time. Setting time to walk about making time available and to those outside of direct line who needs collaboration will capture ideas or actions. People list and issues to visit will spark ideas and solutions along the way².

8. Communication

Asking questions and facilitating discussions are important leadership skills as well as listening avidly. Communication styles and tones are adaptive skills to the multi-generations. Communication is also body language. Different generations have unique terminology. Multi-tasking, flexible, talented, and versatile: these words share the similar meaning but used by different generations.

Communications can take various formats: huddles, rounds, standup updates, message boards, messaging, emails, skype, huddle boards, message boards, change point, blogs, social media, text messages, whatsapp, wechats, linkedin and many more are great connection tools.

9. Creativity

Being creative and innovative is all about seeking better, newer and more productive ways of doing

things, a mindset which comes from experience and from being inquisitive, open-minded and taking the initiative.

Creativity is brainstorming. Listening is the key. Imagination and taking risk such as thinking outside the box are all great. Feasibility metrics need to be measured to evaluate effectiveness.

Innovation requires that a culture is created to encourage people to generate new ideas. These new ideas include better ways of getting things done, new approaches to improve work quality, to increase productivity, new methods and processes for operations.³

Application

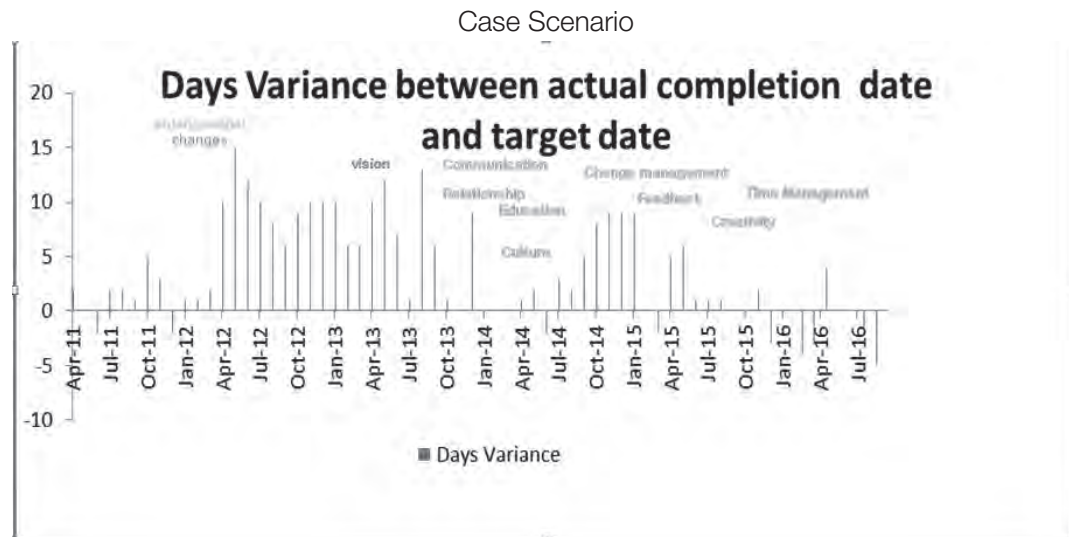
Sudoku is a puzzle involving logic – no mathematical or guessing is required! The basic idea of completing puzzle is to find cells (the leadership skill) where only one value is a valid placement (skill that is most appropriate). It is important to maintain a list of 'possible values' for each cell. Similarly, it is important to envision a number of tactics and leadership skills for each situation. Like Sudoku, systematically analyse each blank cell. Start with the assumption that it can be any leadership skills (any digit between 1 and 9) and then remove all values which have already been assigned to other cells in its respective row, column and 3x3 box. This leaves each situation with a list of leadership skills. Repeat the following logical steps until the situational crisis is solved. Only move to more difficult steps or skills when simpler steps neither reveal new leadership skill nor exclude used leadership skill.

Example

The implementation of new abstracting system created a backlog of two months. Migration to a new vendor, training of new coding standards, and mixed staffing of multi-generations (culture), with budget cuts (change management) were overwhelming. Our team brainstormed (creativity), staged the adaptation steps (time management) with training levels (education) and brought in temporary data entry support in abstracting only. Meetings were held weekly on progress (feedback). Management provided goal updates, strategy, targets (vision) and changes (communication). Routine meetings were set up with technology supports, vendor, decision support, CIHI trainers (relationship). All nine leadership skills were applied at different stages. Finally, the team transformed throughout the years with less number of staffing, turnaround time was reduced to 18 business days or less. Coding of the month was completed in the same actual coding month: Coding August was completed in September. Coding of September started in the month of September. The following implementations contributed to the shorter turnaround time.

- Vision statements posted and discussed: respect and civility training
- Huddles every two weeks; more frequent with organizational changes
- Engagement of coding team to clinical staff meetings
- Social events organized by team members
- Developed auto coding of specific day surgeries and removed outsource contractors
- Stretches, massages, and workouts onsite at work
- Recruitment of students to help with abstracting

- Invite coding members to attend executive meetings and clinical business rounds
- Specialization of coding by program specialty
- Team engagement in accreditation, projects, and system developments.
- Flexible hours of work
- Education sessions every month with clinical speakers.



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Abstract only

Processing the Hospital Death Rate in the Pandan Arang Boyolali Regional General Hospital

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Background:

The implementation of hospital statistics was carried out in order to find out information concerning the quality of service. It can also be used as one of the parameters for hospital management when evaluating decision making. The hope for hospitals is that patients leaving have been cured. The calculation of hospital death rates can be used as statistical information about the quality of medical

service towards patients. The purpose of this research is to know the importance of hospital death rates in order to evaluate the quality of medical services in the Pandan Arang Boyolali Regional General Hospital.

Methods:

This research uses qualitative methods. The data obtained came from observations and interviews with medical records officers in the Pandan Arang Boyolali Regional General Hospital.

Results:

The results of this research show that the implementation of the calculation of the death rate has not been implemented to its full potential. According to Horton, there are seven ways to calculate hospital death rates but only two types of calculations are used in the Pandan Arang Boyolali Regional General Hospital. This situation is a result of the reporting officer not processing internal death rate, so the information on mortality is not accurate. This prevents the hospital management from improving decision making towards the betterment of the quality of medical services.

Conclusion:

The implementation of processing hospital death rates needs to be evaluated, because it has not been implemented to its full potential. Reporting officer training needs to be conducted in share the latest issues concerning the reports which must be in the hospital.

Key Words: Hospital Death Rate, Hospital

Abstract only

The Procedure for Compiling Hospitalization Morbidity Data in PKU Muhammadiyah Bantul Hospital

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Background: Compiling morbidity data necessary for hospital decision making when an extraordinary event happens. Morbidity data is also used to prepare treatment from and supply of medicines when needed with the coordination of the Health Department. PKU Muhammadiyah Bantul Hospital is a type C private hospital. Hospital Information Systems (HIS) is a process of collecting, processing, and presenting of data for hospitals all over Indonesia. The procedure for reporting hospitalization morbidity has been set in the guidelines for hospital information systems in 2011.

Methods: This research was conducted using the descriptive method through the study, observation, and interview of officials in the medical records department at PKU Muhammadiyah Bantul Hospital.

Results: The implementation of Health Information System (HIS) in managing hospitalization morbidity data in PKU Muhammadiyah Bantul Hospital has already been implemented electronically through computers. The collection of data obtained from the diagnosis has been written in the medical record file. The codefication process is already using ICD-10 electronic-based software that integrates

with the hospital system information management program (SIMRS). Data processing is implemented in a such a way to copy and paste the data concerning diagnosis of the disease that is stored in the SIMRS into Microsoft Excel. When the records officer decides to input information into a table in Microsoft Excel, it must be manually, because the table format used for Microsoft Excel is different than SIMRS. During the last stage, which is the presentation stage, the data is presented using a tabular format. Inpatient morbidity data has a specification which is inpatient morbidity due to an accident. However, PKU Muhammadiyah Bantul Hospital only presents data in the form of hospitalization morbidity.

Conclusion: Presentation of inpatient morbidity data in these hospitals should include coding diagnoses due to accidents. Observations and interviews which were conducted in PKU Muhammadiyah Bantul Hospital show that hospitalization morbidity cannot be used in place of the accidents code, because the code is not used as an additional code to explain the external cause of morbidity. Therefore, the inclusion of a code of morbidity due to accidents is needed to complete the inpatient morbidity data.

Key Words: Hospital, Inpatient Morbidity Data

Abstract only

Comparative Analysis of the Inpatient and Outpatient Summary Form Design in the Tidar Magelang Regional General Hospital and the Hardjolukito Yogyakarta Central Air Force Hospital

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Background: Design for the inpatient and outpatient summary form in the Regional General Hospital (RSUD) Tidar Magelang and Central Air Force Hospital (RSPAU) dr. S Hardjolukito Yogyakarta has some differences which include the physical aspect, the aspect of anatomy, as well as the content aspects.

Method: The research conducted in the Regional General Hospital (RSUD) Tidar Magelang and Central Air Force Hospital (RSPAU) dr. S Hardjolukito Yogyakarta was done by means of interviews and observation.

Result and discussion: There is not much difference on the inpatient and outpatient summary form between the Regional General Hospital (RSUD) Tidar Magelang and the Central Air Force Hospital (RSPAU) dr. S Hardjolukito Yogyakarta with regards to the physical aspect (ie. margins, paper thickness, weight). The differences come about when speakings of the anatomy aspect as well as the content aspect.

Conclusions: In patient and outpatient summary forms were used in the Regional General Hospital (RSUD) Tidar Magelang and the Central Air Force Hospital (RSPAU) dr. S Hardjolukito Yogyakarta. The differences in design and can be seen from the physical aspects, anatomical aspects and the content

aspects.

Keyword: inpatient and outpatient summary form, physical aspects, aspects of anatomy, content aspects.

Abstract only

The National Health Insurance Process of Verification and Claims for Outpatients Using the INA CBGs System in the Sleman Regional Public Hospital

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Indonesia is currently running a universal health care program known as National Health Insurance (JKN). The JKN program is organized by Healthcare and Social Security Agency that uses a system from Indonesia's Case Base Groups (INA CBGs). The system has been running well but not optimally. Because of that, the Healthcare and Social Security Agency want to improve the system of INA CBGs for the better. This study aims to determine the JKN's process of verification and claims for outpatients with the INA CBGs system in Sleman Regional Public Hospital. This study uses descriptive research with qualitative approach. The data collection is done through observation and interviews. The results of this study indicate that the JKN's process of verification and claims with INA CBGs systems in Sleman Regional Public Hospital is done in two ways, namely, internal and external processes. In the verifications process there is a problem known as a grouper error. This impacts the database in a way that it cannot be checked while the network is offline. Another problem is the differences in cost that arise which are not in accordance with the tariff that is set by the hospital. The problems which occur in the process are an imperfect result of the INA CBGs system and lack of maximal clinical pathways in Sleman Regional Public Hospital.

Key Words: INA CBGs, Verification, JKN's Claims

Abstract only

Analysis of Understanding and Availability for the Medical Record Administrator on Korea Cancer Registration Manual

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Background: Hospital-based cancer registration not only plays a fundamental and major role in producing cancer statistics, but also provides critical information on deciding national cancer policy in South Korea. This research aimed to examine (a) whether the medical record administrators, who are in charge of cancer registrations in hospitals, properly understand and apply the cancer registration

manual, (b) what are the weaknesses in their cancer registrations, and (c) whether there are any factors of influencing the accuracy of cancer registration. Methods: The medical record administrators dealing with cancer registration in 81 national cancer registration member hospitals participated in the survey by mail. The survey consists of 17 quiz items about the major cancer registration rules. Concerning each quiz item, the rate of correct answers and wrong answers was analyzed respectively, followed by the analyses of reasons. Concerning the rate of correct answers to the whole quiz, it was analyzed whether the rate of correct answers related with the relevant factors (hospital location, number of hospital bed, experience of cancer registration and experience of consulting cancer registration). The cancer registry manual followed the Korean Central Cancer Registration Manual according to the IARC standards. Results: 37 out of 81 participants (45.7%) made approximately 90% of correct answers. The rate of correct answers about general rule was under 90% in object of cancer registration and cancer treatment, and below 50% in definition of multiple primary. The rate of correct answers to 10 items about detailed guideline was all over 90% in histologic type, but a little exceeded 50% about the revised rules on colorectal system. Meanwhile, the rate of correct answers was revealed as 70-90% in the items about initial treatment, date of diagnosis and method of final diagnosis, as well as the four items to check the validity of registered data. Regarding the features of participating hospitals and respondents, experiences in answering the cancer registration questions were found to contribute to the high rate of correct answers. Conclusion: To improve the accuracy of hospital-based cancer registration data, the efforts are to be made as follows: 1) active education and promotion about revised or added rules and items, 2) specifying guidelines in manuals about the rules with high question frequency or error rate, and adding extensive examples, and 3) diversifying the education for medical record administrators dealing with cancer registration.

Abstract only

The Patient Naming System in PKU Muhammadiyah Hospital and the Soeradji Tirtonegoro Central General Hospital

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Background: A patient naming system is a way to provide an identity for a patient as well as distinguish between other patients. This make it easier to facilitate the provision of services for the medical records of patients who come for treatment at the hospital. A naming system for patients should be consistent. Besides age, address, and a patient's medical record number, the name is an identity that distinguishes one patient from another.

Methods: The initial data was collected using observation. The data was collected from the interview of medical records clerk. This research was conducted on January 18, 2016 until January 30, 2016 at RS PKU Muhammadiyah Yogyakarta and RSUP Dr. Soeradji Tirtonegoro Klaten.

Results: If the patient is a baby, his or her name is marked (By) with an age limit of 30 days. If the patient is a child, his or her name is marked (An) with an age limit below 15 years. If the patient is old-

er and married, the name is given a (Ny) for female patients and a (Bp) for male patients. However, if a male patient is not married, then his name marked as (Bp). For female patients who are not married (NN) is used.

Conclusion: The identity of patient is placed before the patient's name and written in capital letters in accordance with the guidelines. According to observations made, there are still many hospitals which have not included the naming of the identity of the patient, so writing the name of the patient must be considered.

Keywords: patient naming system, hospital, patient.

Abstract only

Comparison of The Curriculum on Health Information Manager Between Japan and The United States

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Health information managers play important roles and the importance of them is increasing every year. Considering their future roles in Japan, understanding the situation in the United States is important, because they have long history of health information management. It is also important to understand curriculums for obtaining the certification, because these curriculums can decide roles of health information managers. However, there has been no research that compares the curriculum of being a health information manager and its roles between Japan and the United States. The purposes of this paper are to compare roles and curriculums of health information managers in Japan and the United States, and to discuss how we can improve the Japanese system for better management of health information. Based on the extensive literature review, this paper compares the standard curriculums on health information manager set by the Japan Hospital Association and those of Registered Health Information Administrator (RHIA) set by the American Health Information Management Association (AHIMA). Then, this paper analyzes how differences between these curriculums affect roles of health information managers in Japan and the United States. As a result of the research, I found out that the American curriculum for health information administrator covers much broader subjects than those of Japan. In particular, American courses focus more on classes of management such as human resource management and leadership. This paper will further examine how these differences affect the roles of health information managers in Japan and the United States, by undertaking more literature review and interviews, and taking comments into consideration, including those raised at the 18th IFHIMA International Congress Tokyo 2016.

Abstract only

Internet System For Communicating Medical Documentation

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Clalit Health Services¹

Background Medical organizations are required to provide medical documents to different agents: courts, lawyers, investigative companies, patients and more. Many restricting procedures and arrangements exist that require considerable knowledge of information security policies. Until 2014 Clalit Health Services (CHS) used both computerized and manual tools in their 14 hospitals but they did not enable tracking and data collection. A study revealed discrepancies between institutions involving implementation of procedures and billing. These findings drove CHS management to implement the TAR (Medical Documentation) computer program for the management of medical documents. The program serves as an efficient platform for the management of medical information and provision of documents. The program enables registration of applications and required payments, interfaces to the hospital and community clinic visits and hospitalization patient management system community and the pricing interface. The management of requests, alerts: date of death, psychiatric or protected hospitalizations, reminders, interface to billing follow up reports and tracking reports, all within the various requirements for the provision of information. Aims and Goals Computerization of the provision of medical documents Uniformity of work processes Uniformity in billing in accordance with up to date Ministry of Health price list Savings in overheads A rise in revenues Improvement in customer services Process and results In the middle of 2014 the program was gradually introduced in all 14 CHS hospitals. The implementation included professional staff training and technical assistance from the Computer Wing of Central Management. The result of the introduction program increased applications and revenues by 218% . Conclusions The organizations investment in the development and implementation of the program significantly contributed to a reduction in the time taken to deal with applications and increased efficiency, accuracy and uniformity in service and billing. The program also saved paperwork due to document scanning and saving as files in the system, enabled the creation of client list, a uniform price list, the standardization of letters and information delivery. The contribution and implications for the future In the future further improvements in the program are planned: medical risk management, national insurance, SAP - These developments are expected to further shorten customer waiting times. This project has added value with regards to client access their own personal medical record as well as strengthening CHS position as the leading health care provider both in technological innovation and service.

Abstract only

The Medical Record System in the Panembahan Senopati Bantul Regional Hospital and the Wates Regional General Hospital

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Medical records are a recording or note about who, what, why, when, and how services are provided to patient for maintenance. They contain sufficient information, confirm the diagnosis and treatment of patients, and record the results. One system of medical records in Indonesian is encoding and reporting. This paper explains the way medical records are obtained in two hospitals, namely, the Panembahan Senopati Bantul Regional Hospital and the Wates Regional General Hospital. Why does this need to be discussed? If the process for obtaining medical records is efficient, the report can be submitted to the health department in time to make a policy. The method used in this paper is observation.

The medical records system in Panembahan Senopati Bantul General District Hospital and the Wates Regional General Hospital has been running in accordance with the procedure. However, both hospitals have a different system for data analysis. If the medical records are incomplete, such as, no doctor's signature or no nursing medical records, both hospitals have different ways to complete the medical records. The encoding and reporting system is similar and is computerized. However, both hospitals use a manual coding system for minimizing coding errors in the diagnosis, and both hospitals have different approaches to using ICD-10.

Key Words: medical records system, encoding system, reporting system

Title of Presentation: Face-to-Face Interaction Connect to Vitality in Sharing and Collaboration

**Sharing And Cooperation With A View Face To Face
– Connect To Vitality Through Exchange**

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ABSTRACT

Japan Health Information manager association (JHIMA) is a group that has «area meetings» and is a regional network that addresses problems in medical care, information management, business of the support, and day-to-day of making communication, as well as providing information about the practice. It is a forum for information exchange. It is intended to provide insight into the field. Among medical information management officer certified persons in Japan, who are working in hospitals, educa-

tion institutions and administrations, many eventually become members of the Japan Society of Health Information Management (JHIM) and JHIMA; They are as active core members it is no doubt that they support the entire Health Information Manager (HIM) system. HIM which is involved in this field and recognizes the same goal of accuracy improvement of the medical treatment management holds meetings in JHIMA areas in order to discuss present issues and conduct diligent studies leading to actions. Various problems regarding medical information management is not intended to be solved by individuals. We, during the period from 2011 to 2016 find resolutions to problems such that cannot be fully digested by the individual, all 20 times the area meeting was a discussion being held in Kanagawa Prefecture. The themes of the meetings are to interweave the themes so it is easy to take part in original themes with continuous natures. The result was reaching 297 participants and many repeat participants. We believe that holding area meeting consistently is of great importance. We sent to the whole country a common recognition obtained at the meeting, but we believe that there may be significance in that it will lead to standardization from the issues raised, it has not yet played enough of that role. We will continue to work as future issues that play a role as a bridge to the whole country from the region.

1. BACKGROUND

1.1 Current situation of Japan's HIM

Japan's HIM to take the communication education that the Japan Hospital Association (JHA) has carried out, or can learn the prescribed curriculum in colleges and universities that JHA has been certified to do; to get the qualification by passing the certification exam is possible. The total authorized number of people from the established education system is 31,625 people (As of March 2016). Japan has a number of «hospitals» as defined in the health care system as a review of 8,480 (2015 of October). However, not all certified people are able to work at the hospitals, who also worked at the hospital on a job of medical care information management is further narrowed down. HIM certified hospital workers, also in the field of school education, there are various others, such as government officials.

1.2 Japan Society of Health Information Management

In Japan, there is a scientific organization called the Japan Society of Health Information Management (JHIM). HIM members that subscribe to JHIM is 17.1 % of the total of HIM certified, about 5,418 people. When viewed by occupation, physicians make up 493 people, it is including nurses, at 1,923 people. JHIM members, shows the direction of the way of HIM education and information management, is considered an active core of members in Japan's medical care information management and it consists of other occupations as well.

1.3 Japan Health Information Manager Association

The Japan Health Information Manager Association (JHIMA) is a professional organization that carries out activities as a professional organization that contributes to medical care. HIM members that subscribe to JHIMA is 8.6 % of the total HIM certified persons at 2,726 people. 345 doctors are mem-

bers, it includes nurses at 231 people. Like JHIM, JHIMA members consist of multi-disciplines and provides skills improvement necessary for actual medical information management operations. It also measures job performance. It is essentially in charge of the information management.

HIM business in Japan is defined as: the JHIM.

- (1) Clinical information a systematic and unified management to business
- (2) Securely manage to work with medical information
- (3) Inspect the medical information
- (4) To make effective use of medical information
- (5) Providing medical care information

Its five operations include the basic role of operating Japan's HIM and providing basic data which supports medical treatment in Japan for hospital operations as well as information geared to improve the quality of medical treatment. JHIMA provides support to HIM from an operational point of view in order to accomplish such roles. The study meetings held by JHIMA separate the organization into seven projects according to areas, therefore the study meetings held for the members in those areas are called "area meetings". This meeting is an object of the present invention to provide problems in the medical care information management business of the regional network, support day-to-day making communication, providing information about the practice, and also a forum for information exchange.

The rules governing holding area meetings approved by JHIMA are as follows:

- (1)Number of participants: 10-30.
- (2)Participation qualifications: Members only. Persons accompanying sponsors shall not participate in meetings.
- (3)Participation fee: participation is Free of charge.
- (4)Contents:
 - ①Discussing issues and problems related to daily medical treatment information management and considering improvement methods.
 - ②Measuring improving skills of medical treatment information management and exchanging information needed for medical treatment information management techniques.
 - ③Conducting inspection of other facilities and considering improving operations flow where I work.
 - ④Establishing medical treatment information management technical know-how and considering its improvement. (not in the form of lectures or presentations)
- (5)Length of meetings: Meetings are approximately three hours.
- (6)Locations: facilities which are free of charge. Locations are limited to facilities where members work or to medical treatment information management and vocational schools. *The association does not cover overhead expenses.

(7) Sponsor: members.

(8) Establishing policies in accordance with annual plans and providing it to education boards.

The participation fee of the meeting is free of charge. Therefore we ask them to provide to the venue is also for hospital caretakers or other members at no charge. If you want to hold an area meeting, members belonging to each region submitted an application for JHIMA as a caretaker. Annually, on average 62 meetings are held at the regional level nationwide (Based on data from 2011.4 to 2016.3). Area meetings, which are held in the Kanto-Koshinetsu region block in the same period is 164 times, in Kanagawa Prefecture, it was held 20 times. Area meetings, are used as the most familiar study sessions for JHIMA members. This time, we will report the activities in Kanagawa Prefecture.

2. METHOD

We follow the guidelines of areas meetings and we will hold an areas meeting as a caretaker, associated with this and the basic business, to take up a wide business of interests based on the trend of the times, to continue setting the then raise the rules with the goal of increasing the number of participants.

(1) Held frequently with the target of six times in one year.

(2) The theme is people to participate for the first time with the ongoing theme is set to alternately participate easily.

(3) Participants are usually up to about 20 people.

(4) Meeting with a basic group discussion, and making a group presentation.

(5) The organizer will provide feedback for review and information sharing.

(6) Reported in the Society regarding the activity.

3. RESULT

The number of participants was a total of 297 persons. The average number of participants 14.6 people. The main theme for each of the participants is on average thing for the basic business at 17.6 people. It can be said that the HIM has a strong interest for business to be addressed originally. As a continuous theme to consider, they took up the DPC^{*1}; it has been held 8 times with this theme surprisingly based on popularity. The number of participants per one time is not too much growth with 13.0 people. Other skills as a theme, presentation; the number of participants was 17.3 people. Many participants next to the basic business, indicating the height of the aspirations of the participants. Number participation per capita, the highest participation of only one time is 56.4% to encourage repeat participants performing factor analysis, there is a need for improvement. 2 to 5 times participants is at 37.6%. In addition, one of about 40% of the participants at the meeting also said to have been occupied by those who are participating in the past. By region there was participation from all regions in Kanto, but were no participants from Koushinetsu. Participants from Kanagawa is the most high at 45 %, this has helped the exchange of the region, which is one of the purposes of the area meeting. Of the total of 20 times in the areas meeting, the second time in addition to that you have held an areas

meeting jointly with Tokyo that is an adjacent area. The ease of movement of the urban participants from Tokyo has led to the result to that of 30% .

This time, though not having conducted a questionnaire survey of participants, impressions of that it was good to participate have been obtained. In addition, in the Kanagawa area meeting, through a discussion of the whole after the group discussion, strives to put together some kind of result and as always, are the voices of the evaluations also obtained for this point. For DPC covered in JHIMA contents summarized in the Kanagawa area meeting, it was possible to obtain also the honor that it is incorporated in the opinion, which was submitted by JHIMA to the government.

Theme	The number of holding	The number of participants	Average
1.DPC	8	104	13.0
2. Basic Business	5	88	17.6
3. Operating Consultation	4	53	13.3
4. Others	3	52	17.3
Total	20	297	14.6

Table 1.The holding frequency classified by theme, and the number of participants

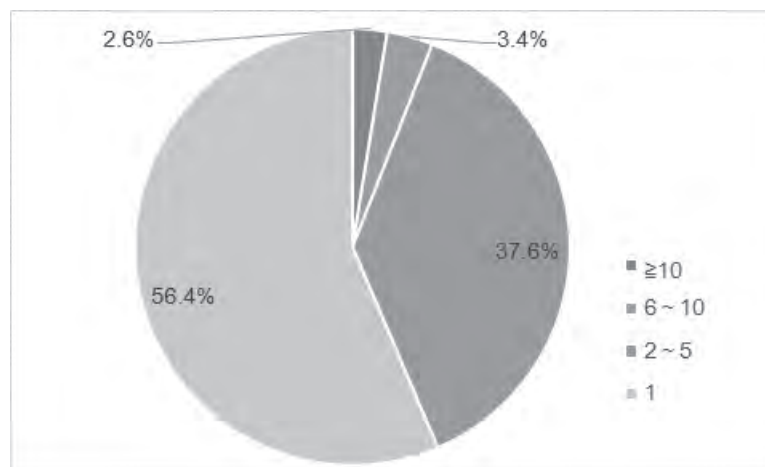


Figure 1. The number of participating per person

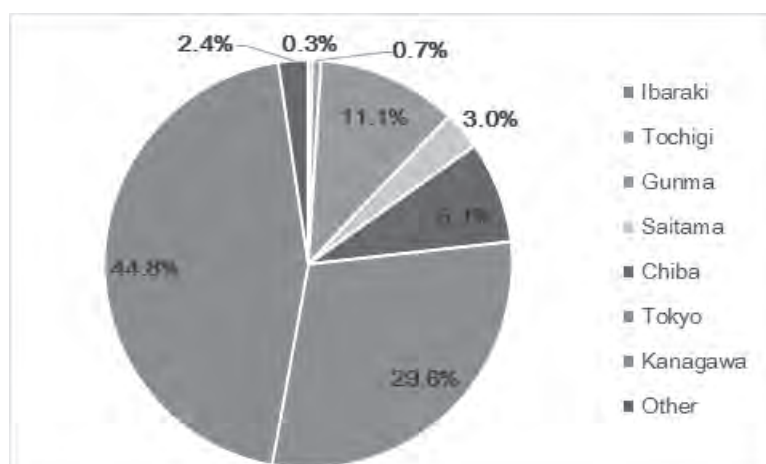


Figure 2. The percentage of the number of participants by region

* 1 DPC : Diagnosis Procedure Combination is a bundled payment of medical fees in Japan of acute care hospitals, it has been developed as a Japanese version of DRG. International Classification of Diseases 10th severity major diagnostic groups classification based on (ICD-10), age, presence or absence of surgical-treatment, taking into account factors such as complications, the categorization is determined.

4. CONSIDERATION

The scale of the medical institutions that participate as a member, is a variety also standing in the hospital of the participants, everyone does not necessarily have to obtain the understanding of all sufficient personnel and the surrounding. If you are corresponding to businesses, especially in person, and have the trouble that no one is close for consultation, it seems to be the tendency to use the area meeting in order to solve this problem. When viewed from the ten participants to the themes related to basic business, is a problem that individuals are facing. In terms of going to manage medical information, it seemed to have a lot in common parts in basically anywhere in the medical institution . In addition, it is considered to be an important theme to be addressed to continue to be considered from the fact that the application is established on top of basic business. Among the area meeting participants, who participate in repeat meetings; in addition to being tied to solve the problem by participating in the meeting, as a place of fresh information collection, actively use the meeting for their own network. It seems to be expanding.

5. CONCLUSION

Although the passive experience in the lecture format it is necessary in order to increase their own knowledge, active experience of all participants overlaying the discussion in the same position it is realistic, to create opportunities for problem solving , give vitality to the organizers both and participants. A support system by area meetings, the sharing of promotion and knowledge of communication of HIM; raise awareness, which is also useful for networking development. On the other hand, it cannot be said enough that the spread of the inter-regional activities, is a continuing challenge of the activities that were also considered in calling for an event to be held from the regional areas to the country as a whole.

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Abstract only

Review the Completeness of Writing Diagnoses in Medical Records Associated with Insurance Claims Process in Harapan Kita Women and Children, Hospital Jakarta Indonesia

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Review the completeness of writing diagnoses in medical records associated with insurance claims process in Harapan Kita Women and Children, Hospital Jakarta Indonesia. Elise Garmelia and Suprobowati Health Information Department, Women and Children Harapan Kita, Jakarta Background Harapan Kita -Women and children hospital in Jakarta is a specialized hospital with 328 beds capacity. Harapan Kita Hospital, a hospital that serves patients with government insurance. Insurance claim process using the diagnosis in the code appropriately. Completeness writing code diagnosis can lead to errors. This review is done by looking at the eight indicators who make an error coding or to be caused of the error codes by coder. Method Coder collecting post-inpatient medical records, do the sorting out of a total of 1,045 patients hospitalized patient's home in February 2016. Do quantitative and qualitative analysis of a number of 631 medical records. In this Review samples taken is a case of Obstetrics and Gynecology number of 153 medical records. he analysis was performed with 8 indicators and processed through SPSS. Result The total discharge patient 1.045 and the total patient ob-

stetry and Gynecology 153 (14,64 %). The analysis was performed with 8 indicators processed are as follow: Diagnosis or measures are not written are 94 % (on Discharge summary) Diagnosis or measures are not specific are 7,6 % Diagnosis or action incomplete are 16 % Doctors illegible handwriting are 34 % Non standard abbreviations are 0 The procedure is not performed in the coding are 3 % The procedure is done not in the coding 12 % wrong Coding 5,3 % Conclusion Diagnosis should be written on a resume and summary List for in patients. Coder will see on that both the form of Medical Record. The Coder are conduct the code and entry on a computer for the purposes of indexing and insurance claims. Problems writing of the doctor be the cause of the error code and also they did not see the report of diagnostic investigations related to the determination of diagnosis. Need a common perception that the writing of diagnosis coding accuracy can be optimized.



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