Health Informatics Terminologies: An Introduction

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Health Informatics Building Blocks

HIBBs is a program of the Global Health Informatics Partnership

Learning objectives

At the end of this lesson the student will able to:

• Define what health informatics is and discuss its application

• Define common health informatics terminologies

• Define the sub-domains of health informatics and identify applications for each sub-domain

What is Informatics?

- Informatics is the application of information technologies to optimize the information management function within an organization

- How does it differ from
    - > Information Technology?
    - > Information Science?
    - > Computer Science?

Information Technology

- "is the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware''

Information Science

- "is an interdisciplinary science primarily concerned with the analysis, collection, classification, manipulation, storage, retrieval and dissemination of information"

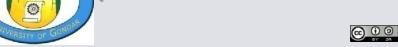 (Merriam-Webster and American Heritage Dictionary)

Computer Science

- "is the study of the theoretical foundations of information and computation and of practical techniques for their implementation and application in computer systems"

(Denning et al., 1989)

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What is Information?

- "Information is data that has been processed into a form that is meaningful to the recipient"

                                    (Davis & Olson, 1985)

- What is the DIKW hierarchy?

Data, Information, Knowledge, Wisdom (DIKW)

- Data: unorganized and unprocessed facts; static; a set of discrete facts about events
  - No meaning attached to it as a result of which it may have multiple meanings
  - Example: what does "Alex" mean?

- Information: aggregation of data that makes decision making easier
  - Meaning is attached and contextualized
  - Answers questions: what, who, when, where)

(Zins, 2007)

DIKW (continued)

- Knowledge: includes facts about real world entities and the relationship between them

- It is an understanding gained through experience
  - Answers the 'how' question

(Zins, 2007)

- Wisdom: are embodies principles, insight and moral by integrating knowledge. Knowledge Answers 'why' questions.

Information System

- Is any combination of information technology and people's activities using that technology to support operations, management, and decision making

  - In a broad sense, refers to the interaction between people, algorithmic processes, data and technology

  - In a narrow sense, refers to the specific application software that is used to store data records in a computer system and automate activities

What is Health Informatics?

- "The intersection of information science, computer science, and health care"

  (Wikipedia)

- Deals with the resources, devices, and methods required to optimize the acquisition, storage, retrieval, and use of information in health and biomedicine

- The tools include computers, clinical guidelines, formal medical terminologies, and information and communication systems

Origins of Informatics

- In 1957, the German computer scientist Karl Steinbuch coined the word Informatik by publishing a paper called Informatik: Automatische Informationsverarbeitung ("Informatics: Automatic Information Processing")

- 1962 France, Philipe Dreyfus, a French information system/software pioneer — combination of "information" and "automatic"

Informatics Today

- In Europe, today "Informatics" = Computer Science

- In U.S., today widely used in application contexts, e.g., medical informatics, chemical informatics, bioinformatics

Sub-domains of Health Informatics

- Clinical informatics
- Medical informatics
- Nursing informatics
- Public health informatics
- Bioinformatics
- Imaging informatics
- Pharmacy informatics
- Dental informatics

- Veterinary informatics
- Consumer health informatics
- eHealth
- Clinical research informatics
- Translational research informatics
- etc.

Clinical Informatics

- Use of information in health care by clinicians
- Clinical informaticians use their knowledge of patient care combined with their understanding of informatics concepts, methods, and health informatics tools to:
  - Assess information and knowledge needs of health care professionals and patients
  - Develop, implement, and refine clinical decision support systems and
  - Develop health informatics tools which promote patient care that is safe, efficient, effective, timely, patient-centered, and equitable

(Gardner RM, Overhage JM, Steen EB, et al., 2009)

Medical Informatics

- "Medical Informatics is the branch of science concerned with the use of computers and communication technology to acquire, store, analyze, communicate, and display medical information and knowledge to facilitate understanding and improve the accuracy, timeliness, and reliability of decision making"

    (Warner, Sorenson and Bouhaddou, 1997)

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Nursing Informatics

- "a combination of computer science, information science, and nursing science designed to assist in the management and processing of nursing data, information, and knowledge to support nursing practice, education, research, and administration"

(Graves & Corcoran, 1989)

Public Health Informatics

- "the systematic application of information and computer science and technology to public health practice, research and learning"

- Activities may include:
  - Collection and storage of vital statistics
  - Collection and reporting of communicable diseases
  - Disease surveillance
  - Display disease statistics and trends
  - Immunization
  - Hospital statistics (O'Carroll et al., 2002)

Bioinformatics

- Bioinformatics, is the application of statics and computer science to the field of molecular biology. It is also defined as the sum of the computational approaches to analyze, manage, and store biological data.

- Common activities in bioinformatics include:

  - Mapping and analyzing DNA and protein sequences

  - Aligning different DNA and protein sequences to compare them and

  - Creating and viewing 3-D models of protein structures

Wikipedia , MedicineNet.com

Imaging Informatics

- Also called Radiology Informatics or Medical Imaging Informatics

- It is devoted to the study of how information about and contained within medical images is retrieved, analyzed, enhanced, and exchanged throughout the medical enterprise

(Branstetter, 2007)

Pharmacy Informatics

- Is a sub-discipline of Health Informatics that deals with the integration of information technology and its applications into the pharmaceutical practice

  (University of Illinois at Chicago, 2009)

- Focuses on leveraging technology systems to ensure optimal patient safety, compliance, and health outcomes

  - Medication selection
  - Use and
  - Administration

Dental Informatics

- Is the application of computer and information science to improve dental practice, research, and program administration
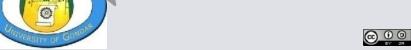
(Eisner 1992)

Veterinary Informatics

- "Is the discipline concerned with the applications of information science, engineering, and computer technology to support veterinary teaching, research, and practice"

(Association for Veterinary Informatics)

Consumer Health Informatics

- "the branch of medical informatics that analyses consumers' needs for information; studies and implements methods of making information accessible to consumers; and models and integrates consumers' preferences into medical information systems"   (Eysenbach, 2000)

  - A subspecialty of medical informatics
  - Studies from a patient/consumer perspective the use of electronic information
  - Focuses on patients as the primary users of health information

eHealth

- eHealth is also written "e-health"

- "is defined as the use of emerging interactive technologies (e.g., Internet, CD-ROMs, personal digital assistants, interactive television and voice response systems, computer kiosks, and mobile computing) to enable health improvement and health care services"

<div align="right">(Ahern et al., 2006)</div>

Electronic Medical Records (EMR)

- The 2003 IOM Patient Safety Report describes an EMR as encompassing:

  - "A longitudinal collection of electronic health information for and about persons

  - [immediate] Electronic access to person- and population-level information by authorized users

  - Provision of knowledge and decision-support systems [that enhance the quality, safety, and efficiency of patient care] and

  - Support for efficient processes for health care delivery"

(IOM, 2003)

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mHealth

- "...the provision of health-related services via mobile communications"

(Vital Wave Consulting, 2009)

- mHealth applications include:

  - the use of mobile devices in collecting community and clinical health data

  - delivery of healthcare information to practitioners, researchers, and patients

  - real-time monitoring of patient vital signs and direct provision of care (via mobile telemedicine)

Telemedicine

- "the use of electronic signals to transfer medical data from one site to another via the internet, telephones, PCs, satellites, or videoconferencing equipment in order to improve access to health care"

                                                                    (Brown, 1996)

- telemedicine can be
  - As simple as two doctors talking about a patient through the telephone or
  - As complex as a sophisticated global hospital enterprise network that supports real-time remote surgical operations

Different Types of Telemedicine

- Telesurgery: the ability for a doctor to perform surgery on a patient even though they are not physically in the same location

  (Wikipedia)

- Teleradiology: the transmission of radiological patient images, such as x-rays, CTs, and MRIs, from one location to another for the purposes of interpretation and/or consultation

- Telecare: The use of telecommunication systems to provide remote assistance in therapy to patients   (Mantas & Hasman, 2002)

Different types of telemedicine

TeleHealth

- The delivery of health-related services and information via telecommunications technologies

- Could be:

  ◦ As simple as two health professionals discussing a case over the telephone, or

  ◦ As sophisticated as using videoconferencing between providers at facilities in two countries, or as complex as robotic technology

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GHiP
Global Health Informatics Partnership

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LECTURE TRANSCRIPT

IN HEALTH INFORMATICS TERMINOLOGIES:
AN INTRODUCTION
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SLIDE 1

Welcome to the Health Informatics Building Block Informatics Terminologies an Introduction Resource. I'm Mr. Atinkut Alamirrew from   Health Informatics Department University of Gondar, Ethiopia

SLIDE 2

In this Health Informatics Building Block, we will begin with pointing out the objectives of the lesson starting with defining what health informatics is and discussing its applications. we will then look at the different type of common health Informatics terminologies. Finally we will define sub-domains of health informatics and identify applications for each sub-domain accordingly.

SLIDE 3

According to the definition of Wikipedia, Informatics is the application of information technologies to optimize the information management function within an organization. Informatics focus on the using of Information technology which are very important enabler to our organization information managements. So In our organization we may use the different growing information communication technologies (computers and its accessories, telecommunications technologies). Informatics has a sort of similarity with some of definitions associated with computer technologies. So let us see How does informatics differ from Information Technology, Information Science Computer Science . By looking the definition of the other similar terms in the next few slides.

SLIDE 4

This slide shows the definition of information technology. Information technology is the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware. This definition of Information Technology focus on the lesson of Information Technology, how and what to design, the ways of implementation of the designed technologies and the support and maintenance of computer based information system in relation to computer software and hardware.

SLIDE 5

Merriam-Webster and American Heritage Dictionary defined information science " an interdisciplinary science primarily concerned with the analysis, collection, classification, manipulation, storage, retrieval and dissemination of information"
This definition deals information science as interdisciplinary science which needs a collaboration of different disciplines. Whatever difference exit among disciplines each discipline should play its role, for managing information. Most commonly Information passes phases of, collection, analysis, classification, manipulation, storage, retrieval and dissemination of information.

SLIDE 6

The other definition to look is about computer science. Computer science is the study of the theoretical foundations of information and computation and of practical techniques for their implementation and application in computer systems.

SLIDE 7

In the previous some slides we have repeatedly heard about the term information embedded in different definitions. So let us discuss about it in the next few slides. Information is data that has been processed into a form that is meaningful to the receiver. What we can take from this definition is that data need to be processed in order to give meaningful information for helping decisions based on information. To see about information in wider way we need to see about DIKW hierarchy.

What is the DIKW hierarchy? If you unzip the abbreviation it means 'D', correspond to data,' I' correspond to information, 'k' as knowledge and 'W' as wisdom.

There are dozens definitions and meanings of those terms which you can get from many information science books and journals , for now let as take one of DIKW definition   by Zins 2007

SLIDE 8

When we start from the first term Data, data is   unorganized and unprocessed facts; static; a set of discrete facts about events. No specific meanings are attached to data. As a result data may have multiple meanings to different person at a time.
For example if I ask you what does "Alex" mean to you? You may say it is name of a person, name of county or many meanings can be given based on your previous experience to that kinds of data.

Raw data is data that has not been processed for use or a series of disconnected facts and observations. These data may be converted to information by analyzing, cross-referring, selecting, sorting, summarizing, or in some way organizing the data. Here "unprocessed" might be understood in a sense that no specific effort has been made to interpret or understand the data.

In general data represents a fact or statement of event without relation to other things. E.g. of data ,   It is raining we will use this example throughout explanation of the other components of DIKW.

Information: aggregation of data that makes decision making easier. Information provides meaning to data. In a sense that Meaning is attached and contextualized to give the intended information. In other way   **Information is recorded and organized data that can be communicated because of its contextualized meaning.** Information Answers questions such as what, who, when, where as a summary Information embodies the understanding of a relationship of some sort, possibly cause and effect. The previous data which says it is raining can give meaning if we write it as The temperature dropped 15 degrees and then it started raining.

SLIDE 9

In this slide we will try to discuss the other two components of DIKW. To begin with knowledge Knowledge: includes facts about real world entities and the relationship between them.   Knowledge is information with more context and understanding. Knowledge represents a pattern that connects and generally provides a high level of predictability as to what is described or what will happen next .

Knowledge also explained as an understanding gained through experience Answers the 'how' question.

Looking the previous examples these can be changed as ' If the humidity is very high and the temperature drops substantially the atmospheres is often unlikely to be able to hold the moisture so it rains.'

The final component of DIKW is Wisdom. Wisdom are embodies principles, insight and moral by integrating knowledge. Wisdom Answers 'why' questions.

In the above example It rains because it rains. And this encompasses an understanding of all the interactions that happen between raining, evaporation, air currents, temperature gradients, changes, and raining.

SLIDE 10

Information system is any combination of information technology and people's activities using that technology to support operations, management, and decision making. In a broad sense, refers to the interaction between people, algorithmic processes, data and technology. In a narrow sense, refers to the specific application software that is used to store data records in a computer system and automate activities

SLIDE 11

According to Wikipedia definition health informatics defined as it **t**he intersection of information science, computer science, and health care. It means the connection of information technology and health care delivery system. Health informatics   deals with the resources, devices, and methods required to optimize the acquisition, storage, retrieval, and use of information in health and biomedicine

It Explain the resources and devices for collection storage and retrieval and use of information in health and biomedical science. It is also deals on the necessary   methods required for collection storage and retrieval and use of information in health and biomedical science.

The tools include computers and related technology, clinical guidelines like procedures and formats, formal medical terminologies with their international codes of classification, and information and communication systems.

SLIDE 12

When we look at the origin of informatics, In 1957 the German computer scientist Karl Steinbuch coined the word Informatik by publishing a paper called ("Informatics: Automatic Information Processing").

The French term *i*nformatique was coined in 1962 by Philippe Dreyfus together with various translations—informatics (English), also proposed independently and simultaneously by Walter F. Bauer as informatica in Italian, Spanish, Romanian, Portuguese, Dutch , referring to the application of computers to store and process information. The term was coined as a combination of "information" and "automatic" to describe the science of automating information.

SLIDE 13

informatics today In Europe, is almost equal to Computer Science where as if you look at In U.S., today widely used in application contexts, e.g., medical informatics, chemical informatics, bioinformatics. We do have informatics in different part of the continent as such as in Asia and Africa with more or less the same concept of informatics in different form of applications.

SLIDE 14

This slide shows clearly the sub domains of health informatics in relation to its application to different disciplines or health care practices most of the domain adopt their name as a prefix of informatics meaning adding of the name of professions or health care practice to informatics. To name a few Clinical informatics for clinical areas ,Medical informatics for medical disciplines and practice, Nursing informatics for nursing, Public health informatics in public health approach ,pharmacy informatics in pharmaceutical activities and so on , we do have also application of informatics for veterinary sciences, consumer health informatics and ehealth, in the next few slides we will see the definitions of each sub domain of health informatics with their brief applications.
informatics

SLIDE 15

To start with clinical informatics it is defined as the Use of information in health care by clinicians. Clinical informaticians use their knowledge of patient care as they are clinicians   combined with their understanding of informatics concepts, methods, and health informatics tools as they are informaticians to accomplish the following tasks in clinical areas

- The first task can be to Assess information and knowledge needs of health care professionals and patients which could be valuable in the health care delivery process. the other task is also to Develop, implement, and refine clinical decision support systems which is used in support of diagnosis , treatment and prognosis of a given clinical case.
- Develop health informatics tools which promote patient care that is safe, efficient, effective, timely, patient-centered, and equitable as part of health information system

SLIDE 16

In this slides we will talk about Medical Informatics, Medical informatics is the branch of science concerned with the use of computers and communication technology to acquire, store, analyze, communicate, and display medical information and knowledge to facilitate understanding and improve the accuracy, timeliness, and reliability of decision making.

This is one of the oldest informatics application in health it is dealing on the Application of information technology and information science concept for facilitating Medical information in health care delivery system .More focus given for medical information whether it is clinical , education or research.

This definition tries to describe medical informatics roles for accuracy and timeliness medical information for effective and reliable decision making in medical service, education and research delivery.

SLIDE 17

As one of health science profession nursing profession has its own informatics definition. It says nursing informatics is a combination of computer science, information science, and nursing science designed to assist in the management and processing of nursing data, information, and knowledge to support nursing practice, education, research, and administration. The unique role of nursing in health care system tells us nurses provide an important but distinct contribution to patient care. the informatics technologies need to support nurses in their   nursing data management in nursing practice in clinical set up , nursing teaching learning process , research activities , and nursing administration issues.

SLIDE 18

The other application of health informatics is public health informatics; Public health informatics is defined as   the systematic application of information and computer science and technology to public health practice, research and learning

Activities in public health informatics are more related to public health practices these may includes :

- Collection and storage of vital statistics such as birth , death and migration which are very important in the evaluation of the effectiveness and efficiency of a given health care intervention on bringing significant changes on theses vital statistics
- Collection and reporting of communicable diseases to the concerned stake holders who are in need of the reports as soon as possible.
- Disease surveillance (an epidemiological practice by which the spread of disease is monitored in order to establish patterns of progression)
- Display disease statistics and trends in type to show the difference in time and compare the trends with the set time references.
- Immunization, coverage quality
- Hospital statistics all the necessary data which ranges from vital statics to the detail Medical history , diagnosis , intervention and outcomes.

SLIDE 19

When we bring informatics concept it biology it is called Bioinformatics, according to MedicineNet.com it is the application of statics and computer science to the field of molecular biology. It is also defined as the sum of the computational approaches to analyze, manage, and store biological data. Bioinformatics involves the analysis of biological information using computers and statistical techniques, the science of developing and utilizing computer databases and algorithms to accelerate and enhance biological research.

Some of Examples of Common bioinformatics activities may include:
- Mapping and analyzing DNA and protein sequences
- Aligning different DNA and protein sequences to compare them and
- Creating and viewing 3-D models of protein structures. And so much more activities

SLIDE 20

The other type of health informatics is imaging informatics Also called Radiology Informatics or Medical Imaging Informatics It is devoted to the study of how information about and contained within medical images is retrieved, analyzed, enhanced, and exchanged throughout the medical enterprise using information communication technologies. Radiologic or imaging has played huge roles in diagnosis of a patient cases for a long time, this kinds of information need to be properly handled as it is part of patient diagnosis.   Un less we properly mange which might potentially result improper diagnosis of a case.

SLIDE 21

Pharmacy informatics is a sub-discipline of Health Informatics that deals with the integration of information technology and its applications into the pharmaceutical practice. Focuses on leveraging technology systems to ensure optimal patient safety, compliance, and health outcomes. The activities focused on Medication selection, Use and Administration. Through the electronic communication of medication data, clinicians send prescription orders to pharmacies through secure channels. Medication orders are verified with other patient records, prepared, and dispensed with higher quality, thus avoiding undue risks and negative interactions. Pharmacy informatics is playing a vital role in the decision support systems needed to reduce errors and increase medication treatment outcomes.

SLIDE 22

As the other type of disciplines or professions dental informatics use the concept of informatics Is the application of computer and information science to improve dental practice, research, and program administration. Dental Informatics improves patient care by improving efficiency and effectiveness in different areas of a common dental practice. These areas can include administration, clinical care, charting records, and patient education. Similar to how doctors and hospitals have begun using electronic medical records (EMRs), dentists have begun developing electronic dental records (EDRs). EDRs will allow dentists to interact with 3D models of a patient's teeth.

SLIDE 23

Informatics applications can have Been also extended to veterinary sciences veterinary informatics   is the discipline concerned with the applications of information science, engineering, and computer technology to support veterinary teaching, research, and practice Many health technologies for humans are utilized in veterinary science; in fact most of them work the same way they work in a traditional health facility.

 Veterinary clinics make uses of electronic medical records and computerized billing and scheduling systems. Though technology is being explored for more efficient testing and treatments, most technology in the veterinary system is focused on billing and patient records

SLIDE 24

As we continue defining and looking the application of health informatics we can see consumer health informatics. it is defined as "the branch of medical informatics that analyses consumers' needs for information; studies and implements methods of making information accessible to consumers; and models and integrates consumers' preferences into medical information systems

Usually said to be A subspecialty of medical informatics And Studies from a patient/consumer perspective the use of electronic information Focuses on patients as the primary users of health information**,** *it means it tries to see what are the need of our customers/patients rather than deciding what they should know by our side. What kinds of health information are our customers need, how I could satisfy their need?*

SLIDE 25

The other emerging terminology of health informatics is e health, eHealth is also written "e-health"

It is defined as the use of emerging interactive technologies (e.g., Internet, CD-ROMs, personal digital assistants, interactive television and voice response systems, and mobile computing) to enable health improvement and health care services. According to Wikipedia the term ehealth encompass a range od servces or systems that are at the edge of medicine or health care and information technology to mention few , Electronic medical record (Electronic health record) , mhealth (moble health) and telemedicine are the most widely applicable for of ehealth , we will see one by one in the next few slides.

SLIDE 26

The 2003 IOM Patient Safety Report describes an EMR as encompassing:

A longitudinal collection of electronic health information for and about persons, it is a continuous long-term collection of patient data ranging from sociodemographic such as age sex, occupation address data to detail medical history, diagnosis and intervention, this will help to store important document of a patient properly and safely for a long time , this is almost doing all the paper work of medical record with electronic means.

There is also [immediate] Electronic access to person- and population-level information by authorized users, this will help to share any medical information about a given patient to anywhere at any time with minimum cost

Provision of knowledge and decision-support systems [that enhance the quality, safety, and efficiency of patient care] means it will increase the quality of data, services and increase patient satisfaction.

Support for efficient processes for health care delivery by having clear picture of what is going on with evidence based decisions by producing quality information for decisions makers

SLIDE 27

The other application of ehealth is m health , mhealth is the provision of health-related services via mobile communications

 mHealth applications include:

- the use of mobile devices in collecting community and clinical health data, so as to report to needful areas
- delivery of healthcare information to practitioners, researchers, and patients sharing *specific information among them so as to improve the health care delivery with having different expertise view .*
- real-time monitoring of patient vital signs and direct provision of care (via mobile telemedicine) , they can constantly contact especial health care clinics which are pesposelu prepared to give consultation services , contacting health care professionals at the time of danger sign or emergency cases.

SLIDE 28

the other range of ehealth reach to the range of telemedicine it is defined as the use of electronic signals to transfer medical data from one site to another via the internet, telephones, PCs, satellites, or videoconferencing equipment in order to improve access to health care. telemedicine can be

- As simple as two doctors talking about a patient through the telephone about the case of a given patient or sharing reports or
- As complex as a sophisticated global hospital enterprise network that supports real-time remote surgical operations with out the physical existence of the specialist at the same time.

SLIDE 29

Telesurgery: the ability for a doctor to perform surgery on a patient even though they are not physically in the same location.

It promises to allow the expertise of specialized surgeons to be available to patients worldwide, without the need for patients to travel beyond their local hospital.

Teleradiology: the transmission of radiological patient images, such as x-rays, CTs, and MRIs, from one location to another for the purposes of interpretation and/or consultation. The patients should not have to carry his radiologic finding image a long way to find consultant expertise in the case rather sending though ICT will help the same patient or professional time.

The use of telecommunication systems to provide remote assistance in therapy to patients

SLIDE 30

TeleHealth is   the   delivery   of   health-related   services   and   information   via telecommunications technologies

Could be:

- As simple as two health professionals discussing a case over the telephone, or
- As sophisticated as using videoconferencing between providers at facilities in two countries, or   as complex as robotic technology

SLIDE 31

These are the list of refference I have used to prepare this power point and transcription for further widening you ideas about health informatics you can further look the following reference in detail

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SLIDE 32

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SLIDE 33

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Health Informatics Building Blocks

HIBBs Detailed Specifications

1. **Identifier** *(system generated)*:

2. **Title:** Health Informatics Terminologies: an Introduction

3. **Creators/Contributors**: Atinkut Alamirrew, (MPH), Lecturer, Desalegn Tegabu (MD MPH), Assistant Professor, University of Gondar, College of Medicine and Health Sciences, Department of Health Informatics

4. **Content Creation Date**: 2011

5. **Publisher** : GHIP

6. **HIBB Repository Publication Date** *(system generated):* July 2011

7. **Financial Support for Development of HIBB provided by:** Rockefeller Foundation. HIBB developed as part of a pilot project for the Health Informatics Building Blocks Program

8. **Language of HIBB:** English

9. **Topic Area:** Introduction to Informatics

10. **Subject:**

    1. Informatics
    2. Health informatics
    3. Sub-domains of informatics
    4. Terminologies

11. Description of HIBB. This Health Informatics Building Block module begins with pointing out the objectives of the lesson, starting with defining what health informatics is and discussing its applications with different information communication terminologies. Then it briefly looks at the different types of common health Informatics terminologies. Finally it identifies the defined sub-domains of health informatics and applications for each sub-domain accordingly.

12. Learning Objectives:

1. Define what health informatics is and discuss its application

2. Define common health informatics terminologies

3. Define the sub-domains of health informatics and identify applications for each sub-domain

13. Keywords Describing HIBB: informatics, health informatics, sub-domains of informatics, informatics terminologies

14. Intended Audience(s):   undergraduate health science students and postgraduate health informatics students

15.   **Competencies/Skills that HIBB Addresses:**   Understanding of health informatics terminologies

16.   **Level of Computer/Health Informatics Knowledge Needed to Understand Content of HIBB:**
Novice

17. **Format of HIBB Components.**

Table 1: HIBB Components and Files

Component Type	File Name	Type of File	Size of File	Duration/length of component
Slide only	HI terminologies. Ppt	Microsoft PowerPoint	1653 KB	33 slides
Slides augmented with voiceover	Health Informatics Terminologies	Synchronized audio and slide	6.26 MB	28.24 minutes
Transcript	HI terminology Transcript.doc	Microsoft Word	172 KB	13 pages
Spec Sheet	Informatics terminology spec sheet	Microsoft Word	924 KB	2 pages

18. **Use of HIBB Content in Prior Training**.
   a.   Training venue(s): University of Gondar, College of Medicine and Health Sciences, Department of Health Science Computer lab (Pilot)
   b.   Type of training: Pre-service training to undergraduate and postgraduate health science students
   c.   Year most recently offered in training: 2011
   d.   Number of times offered in training: 3 times
   e.   Approximate number of individuals trained: 174
   f.   Type of individuals trained: Nursing, health officers, psychiatry, anesthesia and physiotherapy undergraduate students and health informatics Masters students
   g.   Feedback on use of content in previous training: N/A

HiBBs
Health Informatics Building Blocks

Instructions

Instructions for synchronized lectures created by Desalegn Zegeye or Atinkut Alamirrrew:

(1) On module page, select desired file. Choose save.

(2) Once folder has been saved to your computer, open the folder.

(3) Extract all files.

(4) Open the folder of extracted files.

(5) Find "Click here to view presentation" and click on it. The lecture with slides and video of the instructor should open.

(6) (6) Find and double click on Launch_presentation. The lecture with slides and audio of the instructor should open.