

Component 6 - Health Management Information Systems

Unit 1-1 - What is Health Informatics?

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number 1U24OC000024.

Objectives

- Define information management, information technology and informatics
- Explain the basic theoretical concept that underlies informatics practice
- Define the meaning of biomedical and health informatics as a field of study
- Describe the biomedical informatics areas of applications
- Summarize the informatics drivers and trends

Component6/Unit1-1

Health IT Workforce Curriculum
Version 2.0/Spring 2011

2

Information Management

- Information Management
 - Collection and management of information
 - One or more sources
 - Distribution to one or more audiences

http://en.wikipedia.org/wiki/Information_management

Component6/Unit1-1

Health IT Workforce Curriculum
Version 2.0/Spring 2011

3

Information Technology

- Information Technology
 - Any technology
 - Assists in
 - Production
 - Manipulation
 - Storage
 - Communication
 - Dissemination

http://en.wikipedia.org/wiki/Information_technology

Informatics

- The science of information
 - Information = data with meaning
- Definition based on
 - Data
 - Information
 - Knowledge

Bernstam E., Smith J., Johnson T. What is biomedical Informatics. [Internet]. Journal of Biomedical Informatics; 2009 February [cited 2010 June 22]. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19683067>

Data, Information, Knowledge, Wisdom Hierarchy

- Data
 - Symbols, facts, measurements
- Information
 - Data processed to be useful
 - Provides the "who, what, when, where"
- Knowledge
 - Application of data and information
 - Provides the "how"
- Wisdom –
 - Evaluated understanding
 - Provides the "why"

Rowley, J. The Wisdom Hierarchy: Representations of the DRKW Hierarchy. Journal of Information Science
<http://onlinelibrary.wiley.com/doi/10.1002/asi.2007-08000>

DIKW

- DIKW is:
 - Proposed structuring of :
 - Data
 - Information
 - Knowledge
 - Wisdom
 - Information hierarchy where:
 - Each layer adds certain attributes
 - Over and above the previous one

Fundamental Theorem of Informatics



A "Fundamental Theorem" of Informatics. *Journal of the American Medical Informatics Association* 2009. Mar-Apr; 16(2): 169-170. doi: 10.1197/jamia.M3092.

Application Domains for Informatics

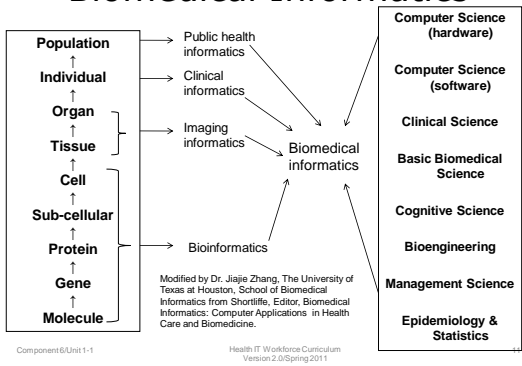
- Any area of human endeavor supportable by information technology
 - Such as
 - Entertainment
 - Law and law enforcement
 - Other fields where computer technology interfaces with people

Biomedical and Health Informatics

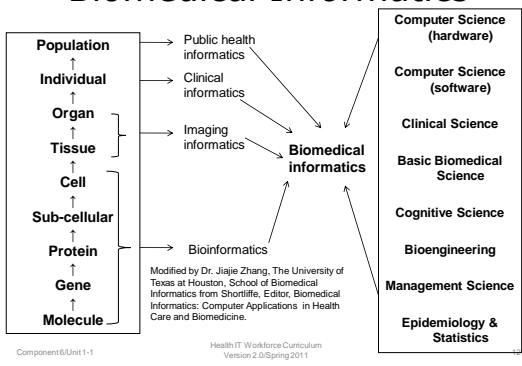
- AMIA
 - “Biomedical and health informatics has to do with all aspects of understanding and promoting the effective organization, analysis, management, and use of information in health care.”
- Shortliffe
 - “The scientific field that deals with biomedical information, data, and knowledge – their storage, retrieval, and optimal use for problem solving and decision making.”

Available from: <https://www.amia.org/informatics>
 Shortliffe, E., Biomedical informatics: Computer Applications in Health Care and Biomedicine

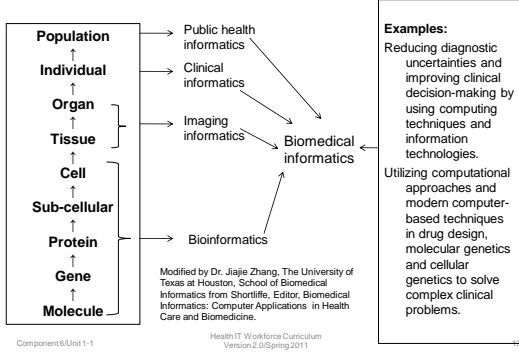
Biomedical Informatics



Biomedical Informatics

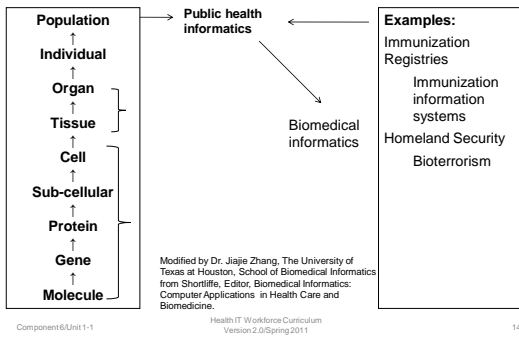


Biomedical Informatics



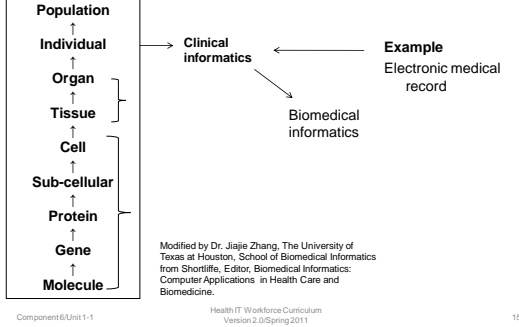
Examples:
Reducing diagnostic uncertainties and improving clinical decision-making by using computing techniques and information technologies.
Utilizing computational approaches and modern computer-based techniques in drug design, molecular genetics and cellular genetics to solve complex clinical problems.

Biomedical Informatics



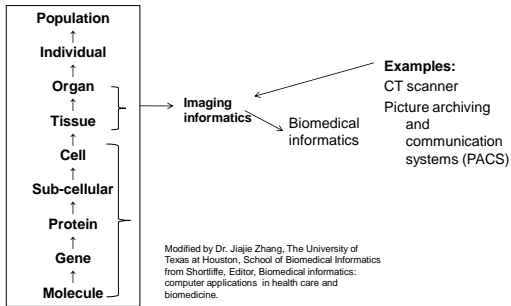
Examples:
Immunization Registries
Immunization information systems
Homeland Security
Bioterrorism

Biomedical Informatics



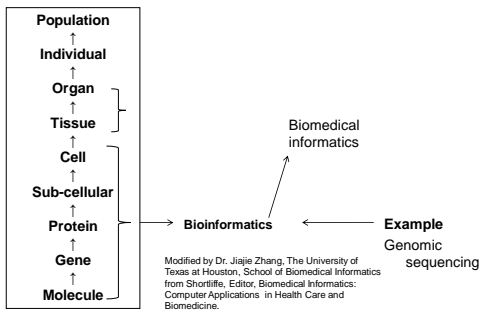
Example
Electronic medical record

Biomedical Informatics



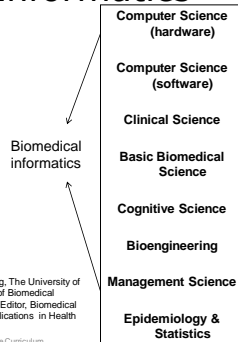
Modified by Dr. Jijie Zhang, The University of Texas at Houston, School of Biomedical Informatics from Shortliffe, Editor, Biomedical informatics: computer applications in health care and biomedicine.

Biomedical Informatics



Modified by Dr. Jijie Zhang, The University of Texas at Houston, School of Biomedical Informatics from Shortliffe, Editor, Biomedical Informatics: Computer Applications in Health Care and Biomedicine.

Biomedical Informatics



Modified by Dr. Jijie Zhang, The University of Texas at Houston, School of Biomedical Informatics from Shortliffe, Editor, Biomedical Informatics: Computer Applications in Health Care and Biomedicine.

Current Drivers

- ARRA
 - American Recovery and Reinvestment Act
 - \$19.2 billion for health IT
- HITECH
 - Health Information Technology for Economic and Clinical Health
 - Includes the health information communication and technology provisions

Current Trends in Health Informatics

- eHealth
- Electronic medical records
- Electronic health records
- Health information exchange

eHealth

- WHO's definition:
 - Use of information and communication technologies for health
- HIMSS' definition:
 - Application of the Internet/other technologies in the healthcare industry

World Health Organization. <http://www.who.int/topics/ehealth/en/>
HIMSS. http://www.himss.org/content/files/ehealth_whitepaper.pdf

Electronic Medical Record (EMR)

- Electronic record of health-related information on an individual
 - within one health care organization

Defining Key Health Information Technology Terms
http://healthit.hhs.gov/portal/server.pt/gateway/PTARGS_0_10741_848133_0_0_18/10_2_hit_terms.ms.pdf

Component6/Unit1-1

Health IT Workforce Curriculum
Version 2.0/Spring 2011

22

Electronic Health Record (EHR)

- Electronic record of health-related information on an individual
 - Across more than one health care organization

Defining Key Health Information Technology Terms
http://healthit.hhs.gov/portal/server.pt/gateway/PTARGS_0_10741_848133_0_0_18/10_2_hit_terms.ms.pdf

Component6/Unit1-1

Health IT Workforce Curriculum
Version 2.0/Spring 2011

23

Health Information Exchange (HIE)

- Electronic movement of health-related information among organizations

Defining Key Health Information Technology Terms
http://healthit.hhs.gov/portal/server.pt/gateway/PTARGS_0_10741_848133_0_0_18/10_2_hit_terms.ms.pdf

Component6/Unit1-1

Health IT Workforce Curriculum
Version 2.0/Spring 2011

24
