

Objectives Evaluation:

What is Informatics?

As a result of participating in this activity, learners will be able to:

1. Have a basic understanding of the components of medical informatics
2. Be able to characterize these components as technologies, concepts and skills

Biomedical Informatics Methods

As a result of participating in this activity, learners will be able to:

1. Understand and reason about several methodologies in common use in biomedical informatics, both from the clinical as well as the biomedical literature perspective.
2. Identify in their practice domain where these technologies are manifest, and be able to pinpoint how their practice might be improved through a more thoughtful application of these technologies.
3. Integrate their understanding of these technologies in the remaining lecture of the course.

Principles of Controlled Biomedical Terminology

As a result of participating in this activity, learners will be able to:

1. Understand motivations and issues related to high-quality controlled terminologies
2. Understand the "desiderata" for controlled biomedical terminologies
3. Gain familiarity with currently available standard terminologies
4. Appreciate the complexities and advantages of reuse of clinical data coded with controlled terminologies

Clinical Informatics

As a result of participating in this activity, learners will be able to:

1. Determine where the clinical information systems that they use or see in their work practice fit on the spectrum of HIMSS capability.
2. Consider and analyze the merits of standard EHR modules, especially in the context of HITECH's "meaningful use" standards.
3. Anticipate ways that clinical decision support enhance the utility of the EHR in clinical practice.
4. Gain sufficient expertise in clinical informatics basic theory to engage in a material way with the course's workshop project.

Decision Support

As a result of participating in this activity, learners will be able to:

1. explain uses and benefits of Clinical Decision Support (CDS) and Clinical Knowledge Management (CKM)
2. describe the main components of a CDS system
3. describe the different modalities of CDS
4. describe CKM processes and associated tools
5. outline important challenges and opportunities related to CDS and CKM

CPOE

As a result of participating in this activity, learners will be able to:

1. To provide an overview of the motivation behind care provider order entry (CPOE) in both inpatient and ambulatory settings
2. To introduce the functionality provided in typical CPOE systems
3. To address some challenges to idealized CPOE and how these challenges are being addressed with current research and potentially mitigated with future developments

Meaningful Use

At the completion of the session, participants will:

1. Define the concept of "meaningful use" and explain how it aligns with improvement in the quality, safety, and efficiency of health care.
2. Explain why adoption, certification, and health information exchange are key components of the national health IT agenda--and describe the programs in place to achieve these goals.
3. Describe the challenges to achieving nationwide health information exchange, and how these challenges are being addressed.

Clinical Research

At the completion of the session, participants will:

1. Understand the regulatory context for research data management approaches
2. Be aware of specialized information technologies that are useful for clinical research
3. Understand basic principles of information security as applied to research data
4. Have access to curriculum materials for teaching this topic to healthcare professionals
5. Be aware of the overall informatics context of assistance by the research community

Public and Population Health Informatics

As a result of participating in this activity, learners will be able to:

1. Describe the mission of public health and opportunities for improvement using informatics
2. Describe the features and value proposition for immunization information systems
3. Describe current efforts to improve the exchange of information between public health and clinical systems.
4. Explain the value of providing population-based information to improve clinical decision making

Disaster Informatics

As a result of participating in this activity, learners will be able to:

1. Understand the NLM's Disaster Information Management Research Center (DIMRC) activities and disaster research programs
2. Be able to access, operate and understand DIMRC tools via hands on lab time.

PubMed

As a result of participating in this activity, learners will be able to:

1. Understand how to effectively search PubMed, NCBI's free web interface for citation data.
2. Gain exposure to NCBI's homepage, PubMed Central, Bookshelf, and My NCBI. Students will be provided with hands on lab time.

Genetics/Genomics and Informatics

As a result of participating in this activity, learners will be able to:

1. Have a basic understanding of the issues involved in genetics and genomics data
2. Have a basic understanding of the roles of Bioinformatics in the field of Biomedical Informatics
3. Relate genomics issues to the Informatics issues of providing healthcare via EMR's
4. Consider the relationships of consumer health informatics issues and genomics issues

Evaluation

As a result of participating in this activity, learners will be able to:

1. Appreciate the need for evaluation
2. Recognize why evaluation in medical informatics can be difficult
3. Understand how evaluation research questions can guide selection of methods
4. Describe the relationship between quantitative and qualitative approaches
5. Outline methods for evaluation of the sociotechnical issues related to informatics interventions
6. Review a case to determine what non-technological issues could have been addressed initially.

Ethical Issues

As a result of participating in this activity, learners will be able to:

1. Discuss several examples of past ethical lapses in clinical research ethics that led to significant participant harm.
2. Describe several practical limitations on clinical research and practice imposed by the HIPAA and HITECH acts.
3. Apply basic principles of the responsible conduct of research to a case study.

Telemedicine

At the completion of the session, the participant will:

1. Understand telemedicine as an information process
2. Understand the technical, regulatory and societal impediments to the utilization of telemedicine
3. Be familiar with advanced networking concepts and the relevance of advanced networks to healthcare delivery
4. Be familiar with NLM and other programs that demonstrate the relevance of advanced networking technology to telemedicine and healthcare delivery
5. Gain an appreciation of future telehealth directions and the challenges and opportunities they represent

Information Retrieval and Summarization

As a result of participating in this activity, learners will be able to:

1. Appreciate the need for an advanced biomedical information management application such as Semantic MEDLINE
2. Have a basic understanding of the components of Semantic MEDLINE
 - a. Information retrieval
 - b. Automatic summarization
 - c. Language processing
 - d. Knowledge visualization
3. Understand (through real scenarios) how Semantic MEDLINE supports enhanced access to the biomedical literature and literature-based discovery

Consumer Health Informatics

As a result of participating in this activity, learners will be able to:

1. have an understanding of topics in consumer health informatics
2. have an appreciation for current issues in health information access and utilization
3. have gained insight into the problems of health literacy
4. have an appreciation for the impact of consumer health informatics applications

Web 2.0 and Social Networking

As a result of participating in this activity, learners will be able to:

1. Understand the defining concepts of Web 2.0 and social networks
2. Describe how the National Library of Medicine utilizes social networks in support of improving the public health
3. Describe how public health agencies utilize social networks for information acquisition and dissemination during public health crises
4. Describe how the NLM/FDA Pillbox patient-safety initiative utilized social networks and participant-driven events for community engagement and project development

Internet Futures

At the completion of the session, participants will:

1. Have been introduced to major elements of the Internet infrastructure and its protocols
2. Understand trends in broadband communications and Web usage
3. Have an overview of recent developments in digital spread spectrum wireless communication
4. Discuss emerging technologies in displays, power, networking, computing, and distributed intelligence

Research Issues

As a result of participating in this activity, learners will be able to:

1. Understand the basic principles that underlie the design, implementation, and maintenance of a successful digital library.
2. Have an understanding of digital library research issues.
3. Have pointers to useful resources in digital library research.