

Objectives Evaluation:

What is Biomedical 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

Database and Terminology Principles

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

1. Understand the historical evolution of computerized data handling methods
2. Understand the process of entity-relationship database design, including principles of normalized relational models
3. Be able to model simple normalized relational databases
4. Understand motivations and issues related to high-quality controlled terminologies
5. Understand the "desiderata" for controlled biomedical terminologies
6. Appreciate the complexities and advantages of reuse of clinical data coded with controlled terminologies

Unintended Consequences of Human Computer Interaction

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

1. Describe the various axes used to classify Unintended Consequences
2. Explain the relationship between Human Computer Interaction and Unintended Consequences (with examples)
3. Apply basic Heuristics to a user interface evaluation
4. Describe the primary limitations and biases in Human Computer Interaction evaluation.

ViSTA

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

1. Demonstrate basic competency in general HIT system use
2. Identify characteristics of an effective HIT system
3. Identify usability constraints & explain the impact of HIT usability on user satisfaction, adoption, and workarounds in error rates or unintended consequences.
4. Explain the concept of facilitated error in HIT.
5. Suggest HIT-enabled solutions/strategies to enhance patient involvement in health and healthcare

Standard Terminologies

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

1. Gain familiarity with currently available standard terminologies
2. Gain experience with coding clinical cases with available standard terminologies

Clinical 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 CKMs

Computerized Provider Order Entry

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

Infobuttons

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

1. Characterize clinician information needs
2. Understand how information resources can be integrated into clinical information systems
3. Gain familiarity with the [HL7](#) infobutton standard
4. Gain experience with creating Infobutton manager knowledge bases and the librarian Infobutton Tailoring Environment (LITE)

Health Information Exchanges

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

1. Describe and differentiate between two perspectives of “health information exchange”
2. Understand the rationale for and history of health information exchange
3. Describe some known benefits of health information exchange
4. State at least one major barrier to implementing health information exchange related to people, process, and technology issues.

Natural Language Processing Resources at the NLM

At the completion of the session, the participant will be able to:

1. Have a basic understanding of the Unified Medical Language System (UMLS)
 - a. Metathesaurus
 - b. Semantic Network
 - c. Specialist LEXICON
2. Gain exposure to the UMLS Terminology Services interface (UTS)
3. Have a basic understanding and gain exposure to the natural language processing tools and resources developed at NLM
 - a. MetaMap
 - b. SemRep

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 the different approaches to evaluation
5. Outline methods for evaluation of the sociotechnical issues related to informatics interventions
6. Review and discuss a case and determine what needs to be addressed in terms of evaluation.

Semantic MEDLINE

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

Clinical Research Informatics

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

1. Recognize broad topics of interest in the field of clinical research informatics
2. Understand and apply best practices related to research data collection and management
3. Understand regulatory context, information security and privacy requirements for research data
4. Recognize the importance of research data warehousing in supporting clinical and translational research
5. Understand informatics approaches for increasing research participant recruitment and engagement

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 web based and downloadable tools to guide first responders and first receivers
3. Understand how disparate information sources can be applied as solutions for specific problems
4. Learn and understand how hospital partnerships and informatics tools can be created to successfully respond to a large scale disaster
5. Understand how a network of Disaster Information Specialists can supply and support information and communication needs for disaster preparedness and response
6. Understand how to apply informatics to "boots on the ground" activities.

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

Genetics/Genomics and Why

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

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.

Research Issues in Biomedical Informatics

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

1. Understand the some important but unanswered research questions in bio-medical informatics.
2. Have an understanding of consumer health information access issues.
3. Have pointers to useful resources in digital library research.