The Department of Veterans Affairs Employee Education System (EES) and the Health Informatics Initiative (hi2) have collaborated to produce the Health Informatics Lecture Series (301). The curriculum was designed based on the core curriculum outlined by the American Medical Informatics Association (AMIA) in the AMIA Board White Paper titled “Core Content for the Subspecialty of Clinical Informatics” (J Am Med Inform Assoc. 2009; 16:153–157).

This lecture series provides an opportunity for all DoD personnel to learn about the field of health informatics from 41 lectures presented by experts in the field. The series provides a broad overview of the history, concepts, methods and tools of biomedical and health informatics.

Series Objectives

- Explore how technology can be used to improve health care delivery in health care organizations and in public health.
- Acquire depth and breadth of knowledge of the principles of health informatics.
- Provide a conceptual and theoretical framework of the design, development and implementation of health information systems.

Participation

The lectures average about one hour in length. Participants can complete one or more individual lectures that are of particular interest or may complete the entire series. The series can be taken in any order and at the participant’s pace.
FUNDAMENTALS OF HEALTH INFORMATICS

Introduction to Clinical Informatics #001
Homer Warner, MD, PhD, FACMI

To provide an overview and introduction to the concept of “informatics” and the field of clinical informatics, as well as a review of key turning points in the evolution of the field from the perspective of one of the pioneers of clinical informatics.

Learning Objectives:
• Recognize a definition of “informatics”
• Recognize that a primary focus of the domain of Clinical Informatics is to facilitate the understanding and care of patients
• Identify examples of information gathering, information manipulation, information storage and retrieval, and information classification

Applying Quantitative Evidence to Make Patient Predictions #004
Mike Lincoln, MD, FACMI

This presentation provides an understanding of how patient diagnostic probabilities are often misestimated and why these faulty estimates can occur, and demonstrates a method to calculate correct probabilities based on medical statistics.

Learning Objectives:
• Recall three relevant heuristic errors
• Identify the mathematical equations for these essential concepts
• Population base rate (prevalence)
• Test sensitivity and specificity
• Predictive Value Positive (PVP) and Predictive Value Negative (PVN)
• Calculate predictive values

The Health System #002
Rob Kolodner, MD, FACMI

This presentation provides an overview of the U.S. Health System, highlighting the unique aspects of the health-related services provided to Veterans by the Department of Veterans Affairs.

Learning Objectives:
• Identify individual and population health determinants
• Recognize VA perspective on “The Health System”
• Classify health system domains
• Map data and information flows
• Discuss health economics and financing
• Inform about U.S. health reform

Decision Support for Quality Care #005
Brent James, MD, M Stat, FACPE

This presentation will assist the learner in understanding health information technology (HIT), including clinical decision support, as tools whose primary purpose is to support clinical care delivery: “The best medical outcome at the lowest necessary cost.”

Learning Objectives:
• List 2 key principles that underlie effective clinical decision support, with implications and examples
• Lay out a hierarchy of HIT decision support tools
• Outline how HIT decision support tools interact with clinical workflows

CLINICAL DECISION SUPPORT

A General Introduction to the Art and Practice of Clinical Decision Support#003
Randolph A. Miller, MD, FACMI

This presentation will introduce the viewer to the general topic of Clinical Decision Support or CDS.
Algorithms in Clinical Decision Support #006
Peter Haug, MD, FACMI
This presentation will introduce you to the algorithms and approaches used in this field as well as the software environment in which these kinds of tools can be most effectively implemented.

Learning Objectives:
• Describe key aspects of the software environment required for CDS
• Demonstrate familiarity with CDS workflows
• Recognize two families of CDS algorithms: Rule-based CDS approaches and Probabilistic CDS approaches
• Describe some recurring challenges for implementers and users of CDS systems

Clinical Decision Support at the Point of Care: The View from 50,000 Feet #007
Clayton Curtis, MD, PhD
This presentation will describe the challenge of scoping the terms “Clinical Decision Support” (CDS) and “Point of Care”. In addition it will recognize the type of Clinical Decision Support being delivered in clinical software applications that you may encounter.

Learning Objectives:
• Present a spectrum of types of “Clinical Decision Support”
• Provide illustrative examples of their application
• Establish a foundation for a more detailed examination of CDS modalities

Clinical Decision Support: Emphasis on Users #008
Ben Davoren, MD, PhD
This presentation will demonstrate the critical importance of user characteristics in the design, deployment and utility of clinical decision support tools.

Learning Objectives:
• Identify the role of the user
• Recognize important user characteristics
• Discuss effects of CDS systems’ output on clinicians, patients and other user groups
• Recognize the broad scope of CDS’ potential for multiple user types in a single disease state

Understanding and Resolving Clinician Information Needs: A Problem Domain for Biomedical Informatics #009
James Cimino, MD, FACMI, FACP
Describe challenges and options for understanding information needs of practicing clinicians and provide an example methodology using context-specific Info buttons to meet those needs.

Learning Objectives:
• Identify methods for studying clinical information need
• Recognize types of clinical information needs
• Recognize examples of intelligent links between clinical information systems and computer-based knowledge resources
• Recall at least one mechanism for linking Info buttons in a clinical information system

Knowledge Representation #010
Keith Campbell, MD, PhD, FACMI
This presentation will provide the learner an introduction to knowledge representation covering three basic areas: historical perspectives, representative categories and development practicalities.

Learning Objectives:
• Discuss the key historic foundations
• Explain the difference between intentional and extensional meaning
• Recognize the difference between terminological knowledge and assertional knowledge
• Relate how SNOMED clinical terms can be bound to a language or terminology
• Identify how SNOMED binding within a rules engine can work to represent the assertional knowledge desired in knowledge representation
Enterprise Governance and Organizational Structures for Clinical Knowledge Management #011
Tonya Hongsermeier, MD, MBA
This presentation provides training to understand how effective, well-aligned governance structures in healthcare systems can improve effectiveness of Clinical Knowledge Management programs.

Learning Objectives:
- Recognize the attributes of an effective governance structure for Clinical Knowledge Management
- Recall the steps in the Clinical Knowledge Management lifecycle
- Identify approaches to building a Clinical Knowledge Management organization
- Identify the tools and processes that support effective team collaboration in Clinical Knowledge Management

Legal and Ethical Issues Related to Clinical Decision Support Systems #012
Randolph A. Miller, MD, FACMI
This presentation will introduce the learner to software systems in care-providing institutions in a manner that poses no potential risks to patients, care providers or institutions. It will also discuss what principles, practices, oversight mechanisms and regulatory strategies can help increase the ethical and the legal goodness of management for such clinical care software systems.

Learning Objectives:
- Recognize ethical and legal issues related to clinical informatics systems
- Acquire basic concepts underlying legal and ethical concerns
- Promote responsible use of software in your own clinical environment

EVIDENCE-BASED PATIENT CARE
Evidence Sources, Grading and Guidelines #013
David Atkins, MD, MPH
This presentation will review sources of clinical guidance that can be incorporated into Health Information Technology (HIT) applications, discuss key elements of evidence-based processes and differentiate between “quality of evidence” and “strength of recommendations.”

Learning Objectives:
- Identify different sources of evidence to include in decision support
- Recognize criteria for evidence-based guidelines
- Compare two leading systems for evaluating quality of evidence (U.S. Preventive Services Task Force (USPSTF) and Grading of Recommendations Assessment, Development and Evaluation (GRADE))
- Discuss the relationship between strength of evidence and strength of recommendation

Implementation of Guidelines: Lessons Learned, Clinical Reflections #014
David Bates, MD, MSc, FACMI
The purpose of this presentation is to discuss some of the benefits of, and issues with, computerization of clinical guidelines.

Learning Objectives:
- Identify the keys to success in computerizing a clinical guideline
- Recognize the types of conditions amenable to computerization
- Recall some of the pitfalls of guideline implementation
- Identify the main issues which arise once multiple guidelines are in place
Knowledge-Based Decision-Support Systems for Implementing Clinical Practice Guidelines #015
Mary K. Goldstein, MD
This presentation describes how knowledge-based systems designed to assist health professionals in care management can be developed. In addition, it will provide an understanding of implementing, evaluating and maintaining a knowledge-based Clinical Decision Support tool and how guidelines may be implemented as clinical algorithms.

Learning Objectives:
• Distinguish the following information types
• Individual patient data vs. general clinical knowledge
• Identify steps to encoding knowledge of clinical practice guidelines
• Recall design choices for implementing Clinical Decision Support (CDS)
• Recognize methods of evaluation at several steps of development of CDS

Principles of Workflow Re-engineering #017
Mike Davies, MD, FACP
The purpose of this training is to introduce you to the “why” and the “how” of system improvement; describe “How to think” about re-engineering workflow; and discuss the steps necessary for an organized approach to re-engineering workflow to create high-reliability systems.

Learning Objectives:
• Recall two Veterans Health Administration goals that facilitate system improvement
• Recognize the elements of VA-TAMMCS (Vision, Analysis, Team, Aim, Map, Measure, Change, Sustain/Spread)
• Identify tools and components of the VA Improvement Framework
• Identify principles for building reliable and sustainable processes

CLINICAL WORKFLOW ANALYSIS, PROCESS REDESIGN AND QUALITY IMPROVEMENT
Methods of Workflow Analysis #016
Laurie L. Novak, PhD, MHSA
This presentation provides an introduction and historical perspective on the study of work; discusses how workflow analysis can improve the outcome of healthcare processes; and describes methods of data collection and analysis.

Learning Objectives:
• Identify benefits of workflow analysis in healthcare
• Recognize four perspectives to workflow analysis

Quality Improvement Principles and Practices #018
Rosemary Kennedy, PhD, RN, MBA, FAAN
The purpose of this training is to provide an introduction to quality improvement, the principles and practices that are pertinent from a health informatics perspective and review the foundation of quality improvement, the national landscape and the implications for the electronic health record.

Learning Objectives:
• Recognize at least one common model for Quality Improvement
• Identify national drivers for Quality Improvement in healthcare
• Recall examples of tools useful for measuring compliance with quality standards
• Identify the role of electronic medical records in healthcare quality improvement

visit www.swankhealth.com
HUMAN FACTORS ENGINEERING
Models, Theories and Practices of Human Computer Interaction #019
Vimla L. Patel, PhD, DSc, FRSC, FACMI
This module provides an overview of some of the theories and methods in human factors and Human Computer Interaction (HCI) as they relate to healthcare practice.

Learning Objectives:
• Recall principles and approaches useful in capturing human aspects of Human Computer Interaction (HCI)
• Identify problems that may arise if human dimension is not considered during design and implementation of health care technology
• Recognize why cognitive, social and engineering principles are necessary for effective and safe interaction with technology

Human Computer Interaction Evaluation, Usability Testing, Study Design and Methods #020
Peter Elkin, MD, MACP, FACMI
The purpose of this training is to discuss why Human Factors Engineering is important for safe and effective clinical systems and to learn the usability methodology and how to develop and run a usability study.

Learning Objectives:
• Identify what can be learned from the results of a usability study
• Recall methodologies for assessing usability that can be applied to the development of clinical systems
• Recognize the components and steps involved in running a usability study
• Recognize when usability testing should not be used
• Recognize the linkage between patient safety and usable systems

Interface Design Standards and Principles #021
Nancy Staggers, PhD, RN, FAAN
The purpose of this training is to give students an appreciation of issues in interface design and provide guidance for developing and evaluating user interfaces.

Learning Objectives:
• Identify the four elements that comprise the definition of usability
• Recall two current issues with interface design in health devices or applications
• Recognize heuristics that are useful for interface design and usability

DATA STANDARDS
Standards Development History and Current Process #022
Stan Huff, MD, FACMI
The purpose of this training is to provide students with an introduction to the leading health information standards development organizations and the processes that are used to develop the standards.

Learning Objectives:
• Recognize the names of the leading standards development organizations
• Recognize the kinds of standards that each organization creates
• Recognize how the organizations relate to each other
• Identify the basic principles of open consensus standards development

VA Data Standards and Data Sharing #023
Tim Cromwell, RN, PhD
The purpose of this training is to describe the current Department of Veterans Affairs plans for health information exchange and the strategic role that data standards play.
Learning Objectives:
• Identify factors that support the VA Business Case for Interoperability
• Distinguish between the two different types of Health Information Exchange with Private Sector Partners: The Direct Project
• The Nationwide Health Information Network
• Recognize the intent and capability areas (deployment levels) of the Virtual Lifetime Electronic Record (VLER)

SNOMED Clinical Terms #024
Keith Campbell, MD, PhD, FACMI
The purpose of this training is to understand the basic structure of SNOMED (Systematized Nomenclature of Medicine) CT (Clinical Terms), the benefits of that basic structure for representing and retrieving clinical data and the governance structure of the organization that owns SNOMED CT.

Learning Objectives:
• Recognize the change management features in the SNOMED CT data structures
• Recognize types of standard extensions to SNOMED CT
• Identify the organization that maintains SNOMED CT
• Recall the size of SNOMED CT by the number of concepts and relationships it holds
• Identify at least 5 domains available within the scope of SNOMED CT

The purpose of this training is to understand the basic structure of SNOMED CT.

INFORMATION SYSTEM LIFECYCLE
Acquiring a New Clinical Information System: First Step #025
Anita Ground, PhD, RN, BC, MBA
The purpose of this training is to communicate recommended components of clinical system needs assessment, requirements documentation and return on investment.

Learning Objectives:
• Recognize components of the ‘Clinical Decision Support (CDS) Five Rights’ approach to measurably improving targeted outcomes with CDS
• Recognize pitfalls in a narrow approach to configuring CDS interventions
• Identify critical success factors for CDS programs that support information needs and information delivery for health care organizations

Addressing Information Needs with Clinical Decision Support to Improve Care Delivery and Outcomes #026
Jerry Osheroff, MD, FACMI
To present an action-oriented framework and approach for addressing information needs that arise during patient care delivery.

Learning Objectives:
• Recognize components of the ‘Clinical Decision Support (CDS) Five Rights’ approach to measurably improving targeted outcomes with CDS
• Recognize pitfalls in a narrow approach to configuring CDS interventions
• Identify critical success factors for CDS programs that support information needs and information delivery for health care organizations

Overview of Clinical Systems Implementation #027
Brian S. Mittman, PhD
This session provides an overview of the field of implementation science and its application to the planning and implementation of Health Information Technology systems.

Learning Objectives:
• Recognize the key policy and practice foundations of implementation science
• Recognize the definition of implementation science and its key goals
• Identify key frameworks for designing and conducting implementation projects
• Identify key requirements for successful implementation
Bar Code Medication Administration System Implementation #028
Elizabeth A. Mims, MBA, BSN, RN, PMP
This session will focus on the lessons learned with implementing a clinical information system, Bar Code Medication Administration (BCMA), in the VA.

Learning Objectives:
- Cite reasons for system circumvention that impact the BCMA system
- Identify actions taken to optimize the use of BCMA
- Identify processes to assess workflow prior to implementing a clinical information system, such as BCMA

Clinical Information System Testing #029
Eduardo Miranda, PhD
The purpose of this training is to expose the participants to basic concepts and techniques in software verification.

Learning Objectives:
- Recognize the importance of performing software verification
- Identify different verification approaches
- Recognize the definition of coverage
- Recall examples of basic test case design techniques

Disaster Recovery #030
Peter Whitson and Steven Kastin, MD
To acquaint the audience with the fundamental components of the restoration of data availability and information technology services in the event of a disaster or other significant disruption. Equipped with an understanding of the various considerations and implications, informaticists and other healthcare experts can lend critical insight into the proactive planning, trade-off decisions and execution involved.

Learning Objectives:
- Recognize drivers and rationale behind Disaster Recovery (DR) planning
- Identify elements of DR planning
- Identify at least three disaster recovery approaches
- Identify important considerations for effective data replication
- Recall tenets of recovery execution

Clinical Informatics System Evaluation #031
Cynthia S. Gadd, PhD, MBA, MS, FACMI
The purpose of this training is to understand what health informatics technology evaluation is all about and why we should care. We will focus on the most common evaluation questions and some generic study types to address them.

Learning Objectives:
- Recognize the dimensions on which clinical information resources can be evaluated
- Recall the process used to design and conduct evaluation studies and to analyze results
- Identify the characteristics of common methodological approaches and the circumstances under which each can be used

Meaningful Use of Electronic Health Records #032
George Hripcsak, MD, MS, FACMI
The purpose of this training is to familiarize the participant with the HITECH (Health Information Technology for Economic and Clinical Health) Incentive Program and Meaningful Use, focusing on the goals, the process and the clinical objectives and measures.
Learning Objectives:
- Recognize a definition of Meaningful Use (MU) of Health Information Technology
- Identify the goals and tradeoffs of the Meaningful Use Incentive Program
- Identify the main focus of the first three stages of Meaningful Use
- Recognize elements of the process used to generate Meaningful Use regulation
- Recognize the relation of the Meaningful Use requirements to the National Quality Strategy priorities

LEADING AND MANAGING CHANGE

Change Management: Mastering the Change Maze #033
Nancy Lorenzi, MLS, MA, PhD, FACMI
The purpose of this presentation is to set the stage for the topics in the change management section of the VA Health Informatics Course.

Learning Objectives:
- Identify basic change concepts
- Identify one conceptual change management strategy
- Recognize organizational change realities
- Recognize the practical side of implementing change

Leadership Models, Processes and Practices #034
Mark Frisse, MD, MS, MBA, FACMI
Examine Information Technology (IT) leadership models, policies and practices among different organizations caring for the same patient, compare these approaches to what you know about leadership within a single enterprise or facility and complement introductory work, as well as discussions concerning effective teams, communication and other related topics.

Learning Objectives:
- Identify key factors contributing to the success or failure of major Information Technology (IT) initiatives
- Describe key ways in which leadership is exercised in major IT initiatives

Effective Interdisciplinary Teams #035
Karen Hughart, MSN, RN-BC
The purpose of this training is to provide an introduction to the importance of effective Project Teams in successful Informatics Change Processes including assembling the right team and managing the team for optimum effectiveness.

Learning Objectives:
- Examples from successful change processes will be used to illustrate principles presented
- Four areas of focus for Human Resource Management of an effective team
- Three key tasks required to ensure team productivity and effectiveness
- Three Key Phases of Meeting planning and execution
- Three techniques for managing group deliberations and decision-making

Communication in Informatics #036
Joan S. Ash, PhD, MS, MBA, FACMI
The purpose of this module is to discuss communication in informatics as it relates to the workplace and clinical systems implementation.

Learning Objectives:
- Recognize workplace communication using models, theories and examples
- Identify ways clinical systems impact communication using themes from fieldwork
Theory and Overview of Project Management & Planning #037
John Cable, RA, PMP
The purpose of this module is to introduce you to some of the basic concepts of project management that are relevant to all types of projects.

Learning Objectives:
- Recognize the project management life cycle
- Identify the role of project initiation and its key elements
- Identify the role of project planning
- Recall where to look for project management standards and information

Implementing Project Management at VA #038
Dan Carroll, MBA
The purpose of this module is to provide orientation to the project management best practices used in VAs Office of Information and Technology (OIT).

Learning Objectives:
- Recognize the differences between two common project management models
- Recall the most common traits of failed information technology (IT) projects
- Identify some of the best practices for project management used in VA

Change Management Summary: Adoption Strategy Gaining Provider Buy-in for EHRs Best Practices #039
Nancy Lorenzi, MLS, MA, PhD, FACMI
The purpose of this presentation is to discuss why IT system failures occur, why we resist change and to introduce you to models of implementation that contain best practice elements for change adoption.

Learning Objectives:
- Identify why IT system failures occur
- Recognize resistance to change
- Recognize elements of three implementation models:
  1. Rogers Diffusion Model
  2. A Bridge/Chasm Diffusion Model
  3. Technology Adoption Model

Health Informatics Course Instructions

1. Log in at army.swankhealth.com
   - Select your facility
   - Enter your ID
   - Enter your Password
   - Click the Login button

If you have forgotten your login information, click the “Forgot your Login Information?” button
2. Locate the Courses

- Click the Course List tab
- Locate the VA Health Informatics heading
- Click the General Staff Education link

3. Select a Course

- Click the View Course link of the course you wish to view
- Click the View Module link
- Click the Click here to view link

4. View A Course

- Click the Next button inside the course to navigate through the slides
- Select the viewing option from the Viewing Format Selection slide:
  - Single Slide Mode or Section Mode: View the videos and receive a checkmark for each topic after the videos play until the end
  - Download Presentation Mode: Download the manuscript and read the course
- Click Exit to confirm that you wish to exit the course, the course will save your progress

5. Take the Test

- Click the Test link from the course page
  A score of 80% is required to pass

6. Print your Certificate

- Click the View Certificate link on the Program Test History page
- The certificate is also saved under the My Completed Courses tab for future reference