Health Informatics Lecture Series (301) Course Catalog

Veterans Health Administration

Health Informatics Workforce Development
VHA Office of Health Informatics (OHI), Health Informatics (10A7A)
Contact VHAhi2CertHelp@va.gov

Individual lectures may be accessed directly in TMS by clicking on the course title.

Fundamentals

Introduction to Clinical Informatics **Homer Warner, MD, PhD, FACMI**
TMS ID 11268

This lecture provides 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

The Health System **Rob Kolodner, MD, FACMI**
TMS ID 9816

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

History of Health IT in the VA, 1955 to 2010 **Peter Groen, MPA**
TMS ID 9041

This presentation provides an overview of the history of Health IT in the VA from 1955 to the present.

Learning Objectives:
- Recognize the IT systems introduced into the VA during the 1950s
- Recognize the importance of computers in the VA during the 1960s
- Recall IT advances that occurred in the VA during the 1970s
- Identify the purpose of DHCP in the VA
- Identify the purpose of VistA in the VA

Individual lectures may be accessed directly in TMS by clicking on the course title.

Evidence Based Care

Evidence Sources, Grading and Guidelines — ***David Atkins, MD, MPH***
TMS ID 11263

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 — **David Bates, MD, MSc, FACMI**
TMS ID 11266

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 — **Mary K. Goldstein, MD**
TMS ID 11269

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

Individual lectures may be accessed directly in TMS by clicking on the course title.

Clinical Workflow Analysis, Process Redesign and Quality Improvement

Methods of Workflow Analysis **Laurie L. Novak, PhD, MHSA**
TMS ID 11271

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

Principles of Workflow Re-engineering **Mike Davies, MD, FACP**
TMS ID 11274

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

Quality Improvement Principles and Practices **Rosemary Kennedy, PhD, RN, MBA, FAAN**
TMS ID 11275

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

Individual lectures may be accessed directly in TMS by clicking on the course title.

Human Factors Engineering

Models, Theories and Practices of Human Computer Interaction — **Vimla L. Patel, PhD, DSc, FRSC, FACMI**

TMS ID 11272

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 — **Peter Elkin, MD, MACP, FACMI**

TMS ID 11265

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 — **Nancy Staggers, PhD, RN, FAAN**

TMS ID 11267

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

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Data Standards

Standards Development History and Current Process **Stan Huff, MD, FACMI**
TMS ID 11278

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

SNOMED Clinical Terms **Keith Campbell, MD, PhD, FACMI**
TMS ID 12644

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

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Clinical Decision Support

A General Introduction to the Art and Practice of Clinical Decision Support — **Randolph A. Miller, MD, FACMI**
TMS ID 9811

This presentation will introduce the viewer to the general topic of Clinical Decision Support or CDS.

Learning Objectives
- Identify situations where CDS might be helpful
- Recognize situations where installed CDS is not particularly helpful, or may require improvement
- Recognize that the key to all good informatics is end-user feedback, acted upon in a timely manner to guide system evolution

Clinical Decision Support at the Point of Care: The View from 50,000 Feet — **Clayton Curtis, MD, PhD**
TMS ID 9931

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

Decision Support for Quality Care — **Brent C. James, MD, M Stat, FACPE**
TMS ID 9946

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

Individual lectures may be accessed directly in TMS by clicking on the course title.

Algorithms in Clinical Decision Support **Peter Haug, MD, FACMI**
TMS ID 9928

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

Knowledge Representation **Keith Campbell, MD, PhD, FACMI**
TMS ID 9949

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 intensional 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

Clinical Decision Support Tools in VA's Computerized Patient Record System (CPRS) **Curtis Anderson, MS**
TMS ID 9927

This presentation will provide an introduction and some detail about the clinical decision support tools available in VA's CPRS; notably, Notifications, Order Checks, and Clinical Reminders.

Learning Objectives
- List the tools and capabilities of the various decision support tools in the VA CPRS
- Discuss how these tools contribute to higher patient safety
- Describe the VA decision support tools' implementation, configuration and maintenance

Individual lectures may be accessed directly in TMS by clicking on the course title.

Understanding and Resolving Clinician Information Needs: A Problem Domain for Biomedical Informatics **James J. Cimino, MD FACMI, FACP**
TMS ID 11279

Describe challenges and options for understanding information needs of practicing clinicians, and provide an example methodology using context-specific Infobuttons 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 Infobuttons in a clinical information system

Applying Quantitative Evidence to Make Patient Predictions **Mike Lincoln, MD, FACMI**
TMS ID 11261

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

Clinical Decision Support: Emphasis on Users **J. Ben Davoren, MD, PhD**
TMS ID 9945

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

Individual lectures may be accessed directly in TMS by clicking on the course title.

Legal and Ethical Issues Related to Clinical Decision Support Systems — **Randolph A. Miller, MD, FACMI**

TMS ID 9929

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

Enterprise Governance and Organizational Structures for Clinical Knowledge Management — **Tonya Hongsermeier, MD, MBA**

TMS ID 11262

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

Addressing Information Needs with Clinical Decision Support to Improve Care Delivery and Outcomes — **Jerry Osheroff, MD, FACMI**

TMS ID 13218

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

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Information System Lifecycle

Acquiring a New Clinical Information System: First Steps — **Anita Ground, PhD, RN, BC, MBA**

TMS ID 13345

The purpose of this training is to communicate recommended components of clinical system needs assessment, requirements documentation, and return on investment.

Learning Objectives

- Identify reasons why an organization would need to begin the process of acquiring a Clinical Information System (CIS)
- Identify methods that can be used to determine the requirements of a system
- Recognize components of the system lifecycle
- Identify important elements when considering the Return on Investment (ROI) of a clinical system

Overview of Clinical Systems Implementation — **Brian S. Mittman, PhD**

TMS ID 13361

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 — **Elizabeth A. Mims, MBA, BSN, RN, PMP**

TMS ID 12832

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

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Clinical Information System Testing **Eduardo Miranda, PhD**
TMS ID 13347

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

Clinical Informatics System Evaluation **Cynthia S. Gadd, PhD, MBA, MS, FACMI**
TMS ID 13346

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

Disaster Recovery **Peter Whitson and Steven Kastin, MD**
TMS ID 13354

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

Individual lectures may be accessed directly in TMS by clicking on the course title.

Leading and Managing Change

Change Management: Mastering the Change Maze — **Nancy Lorenzi, MLS, MA, PhD, FACMI**

TMS ID 13219

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 — **Mark Frisse, MD, MS, MBA, FACMI**

TMS ID 13221

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 — **Karen Hughart, MSN, RN-BC**

TMS ID 13223

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

Individual lectures may be accessed directly in TMS by clicking on the course title.

Communication in Informatics **Joan S. Ash, PhD, MS, MBA, FACMI**
TMS ID 13220

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 **John Cable, RA, PMP**
TMS ID 13222

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 **Dan Carroll, MBA**
TMS ID 13248

The purpose of this module is to provide orientation to the project management best practices used in VA's 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 **Nancy Lorenzi, MLS, MA, PhD, FACMI**
TMS ID 12841

The purpose of this presentation is to discuss why IT system failures occur, why we resist change, and to introduce models of implementation containing best practice elements for change adoption.

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

Individual lectures may be accessed directly in TMS by clicking on the course title.

Certificate of Completion for the Lecture Series

A special *Certificate of Completion* is available in recognition of successful completion of the VA Health Informatics Lecture Series (301), consisting of 39 lectures by renowned informaticians, clinicians, researchers and educators.

In order to access and print the certificate, search in TMS for Item 15352 "Health Informatics Lecture Series (301) Certificate of Completion" or click HERE

Supplemental Lectures

Biomedical Engineering for Informaticists **Richard Ivnik, MS, CCE**
TMS ID 19221

The purpose of this training is to provide a basic understanding of the roles, responsibilities and functions of Biomedical Engineering (BME) in the VA and how the relationship with Biomedical Engineering and Informatics is extremely important for the future of healthcare.

Learning Objectives:
- Describe the role, responsibilities and functions of Biomedical Engineering in the VA;
- Explain the healthcare technologies Biomedical Engineering manages;
- Discuss the relationship between Biomedical Engineering and Informatics; and
- Identify opportunities for collaboration between Biomedical Engineering, Informatics and the Office of Information & Technology (OI&T).

Current and Future Directions for VA Mental Health Mobile Applications **Julia Hoffman, Psy.D.**
TMS ID 19222

The purpose of this course is to gain a basic understanding of the emergence of mobile applications for mental health; to observe initial VA efforts in the mobile space, and to learn about the fundamental requirements for app development and deployment.

Learning Objectives:
- Describe the rationale for development of mobile tools for mental health;
- List the six major phases of application development and deployment; and
- Identify the most fundamental guidelines for user interface development.

The Role of Pharmacists in the Field of Informatics **Brent I. Fox, PharmD, PhD**
TMS ID 19338

The purpose of this knowledge based training is 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. This training module will introduce the field of Informatics and describe the role of Pharmacy Informatics in ensuring safe and effective medication management,

including various
roles for Pharmacists and Technicians.
Learning Objectives:

- State an accepted definition of Informatics;
- Describe the role of informatics as a tool to improve medication management safety and efficacy;
- Identify forces driving the growing importance of informatics and technology as tools to improve medication management; and
- Differentiate between Pharmacy Informatics as a practice and as a tool to support a practice.

The Role of Pharmacy Technicians in the Field of Informatics **Brent I. Fox, PharmD, PhD**

TMS ID 19339

The purpose of this knowledge based training is 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. This training module will introduce the field of Informatics and describe the role of Pharmacy Informatics in ensuring safe and effective medication management, including various roles for Pharmacy Technicians.

Learning Objectives:

- State an accepted definition of Informatics;
- Describe the role of informatics as a tool to improve medication management safety and efficacy;
- Identify forces driving the growing importance of informatics and technology as tools to improve medication management; and
- Differentiate between Pharmacy Informatics as a practice and as a tool to support a practice.