

HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 1

Component Title: Introduction to Healthcare and Public Health in the US

Component Description: This component is a survey of how healthcare and public health are organized and services delivered in the US. It covers public policy, relevant organizations and their interrelationships, professional roles, legal and regulatory issues, and payment systems. It also addresses health reform initiatives in the US.

Assigned Institution: Oregon Health & Science University

Principal Investigator: William Hersh, MD, OHSU

Team Lead(s): Vishnu Mohan, MD, OHSU

Team Members:

Thomas Blehl, MD, Valencia Community College, FL (Curriculum Developer)

Karen Eden, PHD OHSU(Curriculum Developer)

Bill Hersh, MD, OHSU(Curriculum Developer)

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Workforce Roles:

- Implementation Managers
- Implementation Support Specialist
- Practice Workflow and Information Management Redesign Specialist
- Technical/Software Support
- Trainer

Component Objectives:

At the completion of this component, the student will be able to:

1. Define healthcare terms.
2. Describe paradigm shifts in healthcare.
3. Describe the medical model of healthcare in the US.
4. Describe the administrative and functional organization of entities that deliver healthcare in the US, both in the inpatient as well as the outpatient settings.

5. Discuss the role of various healthcare professionals, their education, and certification/licensure requirements.
6. Distinguish between public and private funding for healthcare.
7. Describe healthcare financing structures, including insurance plans, third-party payers, Medicare, and Medicaid.
8. Describe the organization and structures of Health Maintenance Organizations (HMOs), Preferred Provider Organizations (PPOs), and Independent Practice Associations (IPAs).
9. Describe methods of billing and reimbursement in healthcare.
10. Describe elements of coding and charge capture in healthcare.
11. Compare and contrast the function of the Joint Commission, Food and Drug Administration (FDA), Centers for Disease Control (CDC), and National Institutes of Health (NIH), with an emphasis on Electronic Health Records (EHRs).
12. Discuss legal issues in medicine including the Health Insurance Portability and Accountability Act (HIPAA), confidentiality, medical malpractice, and tort reform.
13. Describe the organization of public health in the US at the federal, state, and local levels, and discuss the role of public health in averting epidemics and bioterrorism.
14. Describe evidence-based medicine, clinical practice guidelines, and quality indicators in medicine. Identify key organizations involved in developing clinical guidelines.
15. Discuss the key issues driving healthcare reform in the US.
16. Describe the implementation of meaningful use of health information technology in the context of the Health Information Technology for Economic and Clinical Health (HITECH) Act.

Component Units with Objectives and Topics

Unit 1: Introduction and History of Modern Healthcare in the US

Description:

This introductory unit covers definitions of terms used in the component, with an emphasis on paradigm shifts in healthcare, including the transition from physician-centric to patient-centric care, the transition from individual care to interdisciplinary team-based care, and the central role of technology in healthcare delivery. This unit also emphasizes the core values in US healthcare.

Objectives:

1. Delineate key definitions in the healthcare domain (Lectures a, b, c, d)
2. Explore components of healthcare delivery and healthcare systems (Lecture a)
3. Define public health and review examples of improvements in public health (Lecture b)
4. Discuss core values and paradigm shifts in US healthcare (Lecture c)
5. Describe in overview terms, the technology used in the delivery and administration of healthcare (Lecture d)

Topics:

1. Description of terms commonly used in healthcare including:
 - a) Health
 - b) Healthcare
 - c) Healthcare Delivery
 - d) Healthcare Industry
 - e) Healthcare Systems
 - f) Public Health
2. Core values in US healthcare
3. Discussion of critical paradigm shifts in medicine including
 - a) Physician-centric to patient-centric care
 - b) Individual to team-based care
 - c) Physician-kept records to personal health records
 - d) Dominance of technology in healthcare delivery
4. The dominant role of technology in healthcare delivery - technology used in the delivery and administration of healthcare, with emphasis on technology used in:
 - a) Clinical medicine
 - b) Telemedicine
 - c) Pharmacy
 - d) Radiology
 - e) Rehabilitation
 - f) Dentistry
 - g) Healthcare education

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Component Number: 2

Component Title: The Culture of Healthcare

Component Description: For individuals not familiar with healthcare, this component addresses job expectations in healthcare settings. It discusses how care is organized within a practice setting, privacy laws, and professional and ethical issues encountered in the workplace.

Assigned Institution: Oregon Health & Science University

Principal Investigator: William Hersh, MD, OHSU

Team Lead(s): Vishnu Mohan, MD, OHSU

Team Members:

Tim Hickman, MD, University of Missouri, Kansas City (Curriculum Developer)

Vishnu Mohan, MD, OHSU (Curriculum Developer)

William Hersh, MD, OHSU (Curriculum Developer)

Workforce Roles:

- Implementation Managers
- Implementation Support Specialists
- Practice Workflow and Information Management Redesign Specialist
- Technical/Software Support
- Trainer

Component Objectives:

At the completion of this component, the student will be able to:

17. Describe the major types of clinical personnel involved in healthcare, including their education and training, certification and licensure, and typical roles in healthcare.
18. Describe the major types of settings in which healthcare occurs including ambulatory care, acute and emergency care, hospital based and critical care, and community health and public health settings.
19. Describe the major processes of information gathering, analysis, and documentation used by clinicians to detect, understand, and prevent or treat diseases.
20. Give examples and explain the differences between common forms of care delivery including episodic one-on-one care, multidisciplinary care, interdisciplinary care,

care of chronic conditions, population based care, disease management, long-term care, and end of life care.

21. Describe the role of community health and public health in managing illness outbreaks, epidemics, and pandemics.
22. Understand the basic principles of evidence-based practice, including the application of the best evidence in clinical decision-making.
23. Describe common forms of quality measurement, performance improvement, and incentive payment schemes meant to influence care delivery.
24. Discuss the role of medical ethics and professional values in care delivery including such issues as ethical conflicts, and health disparities.
25. Understand the concepts underlying the application of privacy, confidentiality, and security to health care practice and information technology, being able to help individuals and organizations adhere to the HIPAA Privacy and Security Rules.

Component Units with Objectives and Topics

Unit 2: Health Professionals – the People in Healthcare

Description:

This unit discusses the health professionals who deliver healthcare and the training needed to work in these professions. The following professionals are described in this unit: physicians, nurses, advanced practice nurses, physician assistants, pharmacists, therapists, allied health professionals, paramedics, EMTs, dental professionals, mental health professionals, and social workers.

Objectives:

1. Define terms used in healthcare including clinician, patient, disease, and syndrome and in health professionals' education and training. (Lecture a)
2. Describe the education, training, certification, licensure and roles of physicians including those in primary care and other specialties. (Lecture a)
3. Describe the education, training, certification, licensure and roles of nurses, advanced practice nurses, LPNs, MA's and Medication Aids. . (Lecture b)
4. Describe the education, training, certification, licensure and roles of physician assistants, pharmacists, therapists, allied health professionals. (Lecture c)
5. Describe the education, training, certification, licensure and roles of paramedics, EMTs, dental professionals, mental health professionals, and social workers. (Lecture c)

Topics/Lectures:

1. Introduction and Physicians
2. Nursing Professionals
3. Physician assistants, Pharmacists, Therapists, Technicians, Paramedics, Dental Professionals, Mental Health Professionals, Care Coordinators

Unit 4: Healthcare Processes and Decision Making

Description:

This unit describes the process used by a clinician to make a diagnosis and determine a care plan. This includes gathering information from the patient as well as other objective and subjective sources, managing and organizing the information, comparing the information to known states of disease, and developing a care plan for the patient.

Objectives:

1. Describe the elements of the 'classic paradigm' of the clinical process. (Lecture a)
2. List the types of information used by clinicians when they care for patients. (Lecture a)
3. Describe the steps required to manage information during the patient-clinician interaction. (Lecture a, b, c)
4. List the different information structures or formats used to organize clinical information. (Lecture b)
5. Explain what is meant by the 'hypothetico-deductive' reasoning process. (Lecture a, b)
6. Explain the difference between observations, findings, syndromes, and diseases. (Lecture a, b, c)
7. Describe techniques or approaches used by clinicians to reach a diagnosis. (Lecture a, b, c, d, e)
8. List the major types of factors that clinicians consider when devising a management plan for a patient's condition, in addition to the diagnosis and recommended treatment. (Lecture e)

Topics/Lectures:

1. The clinical process - overview of the classic paradigm
2. Gathering data and analyzing findings
3. Making a diagnosis
4. Choosing therapy
5. Communicating the plan

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Component Number: 3

Component Title: Terminology in Health Care and Public Health Settings

Component Description: This component explains specific terminology used by workers in health care and public health. This is NOT a course in data representation or standards.

Assigned Institution: University of Alabama at Birmingham

Team Lead(s): Kay Clements, MA, RHIA, UAB

Team Members:

Kay Clements, MA, RHIA, UAB (Curriculum Developer)
Robert Garrie, MPA, RHIA, UAB (Curriculum Developer)
Jacqueline A. Moss, PhD, RN, UAB (Curriculum Developer)
Midge N. Ray, RN, MSN, CCS, UAB (Curriculum Developer)
Donna Slovensky, PhD, RHIA, UAB (Curriculum Developer)

Workforce Roles:

- Clinician/Practitioner Consultant
- Implementation Managers
- Implementation Support Specialist
- Practice Workflow and Information Management Technology Specialist
- Technical/Software Support
- Trainer

Component Objectives:

At the completion of this component, the student will be able to:

1. Define, understand and correctly pronounce medical terms related to each of the major body systems.
2. Define commonly used terms in public health, nursing, health information technology, and clinical vocabularies & terminologies related to the implementation of electronic health records.
3. Identify the purpose and uses of pertinent health care terminologies in the electronic health record.

4. Demonstrate the ability to integrate and use health care terminology in the various health information technology roles.

Component Units with Objectives and Topics

Unit 14: What is Health Information Management and Technology?

Description:

This unit describes health information management and technology.

Objectives:

1. Define and explain the terms and concepts used in the field of Health Information Management and Technology.
2. Understand the terms that frame Health Information Management (HIM) and Health Information Technology (HIT) practice.
3. Describe health IT hardware and software.
4. Define acronyms and abbreviations.

Topics:

- 14.1 Electronic Health Information Management
- 14.2 Health Information Technology: Hardware and Software
- 14.3 Types of Networks
- 14.4 Data Entry Devices and Locations
- 14.5 Commonly Used Health Information Technology (HIT) Acronyms
- 14.6 Professional Organizations Supporting HIT
- 14.7 National Agencies Supporting HIT
- 14.8 US Governmental Oversight for HITECH
- 14.9 Organizations Supporting HIT Standards
- 14.10 Commonly Used Health Information Technology Acronyms
- 14.11 Commonly Used HIT Acronyms
- 14.12 Commonly Used HIPAA Acronyms

Unit 16: Standards to Promote Health Information Exchange

Description:

This unit describes standards to promote health information exchange.

Objectives:

1. Define terms related to standardized terminologies.
2. Identify and define HIPAA standard code sets.
3. Identify and define terminologies and vocabularies that represent nursing care.
4. Define and give examples of data interchange standards.

Topics:

- 16.1 Terms Related to Health Information Standards

- 16.2 EHR Messaging Standards
- 16.3 Digital Imaging Communications in Medicine (DICOM)
- 16.4 Health Level 7 (HL7)
- 16.5 Classifications, Terminologies and Vocabularies
- 16.6 Clinical Terminologies
- 16.7 Health Information Standards
- 16.8 HIPAA Standard Code Sets
- 16.9 International Classification of Diseases, 9th Revision, Clinical Modification
- 16.10 National Drug Codes (NDC)
- 16.11 Healthcare Common Procedure Coding System (HCPCS)
- 16.12 American Nursing Association's Recommended Standardized Nursing Terminologies
- 16.13 North American Nursing Diagnosis Association (NAND)
- 16.14 Nursing Intervention Classification (NIC)
- 16.15 Nursing Outcomes Classification (NOC)
- 16.16 Perioperative Nursing Data Set (PNDS)
- 16.17 National Committee on Vital and Health Statistics Recommended Data Interchange Standards
- 16.18 Health Level 7
- 16.19 SNOMED CT
- 16.20 Logical Observation Identifiers, Names, and Codes (LOINC)
- 16.21 Consolidated Health Informatics (CHI) Initiative

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Component Number: 4

Component Title: Introduction to Information and Computer Science

Component Description: For students without an IT background, this Component provides a basic overview of computer architecture; data organization, representation and structure; structure of programming languages; networking and data communication. It also includes basic terminology of computing.

Assigned Institution: Oregon Health & Science University

Principal Investigator: William Hersh, MD, OHSU

Team Lead(s): Michelle R. Hribar, PhD, OHSU

Team Members:

John Blackwood, MS, Umpqua Community College

Justin Fletcher, PhD, OHSU

Workforce Roles:

- Clinician/Practitioner Consultant
- Implementation Support Specialist
- Practice Workflow and Information Management Redesign Specialist
- Technical/Software Support
- Trainer

Component Objectives:

At the completion of this component, the student will be able to:

1. Learn correct terminology for computing and technology including for hardware, software, networks, Internet and databases
2. Identify commonly used hardware components.
3. Identify commonly used software applications and operating systems.
4. Explain the function and use of programming languages and identify commonly used languages.
5. Define what a database is, explain what querying languages are and identify commonly used database systems.
6. Describe network computing, its benefits and risks, and identify commonly used communications hardware and software components.

7. Identify security risks for computing systems and discuss potential solutions.
8. Explain the design and development process of a software information system such as an EHR.

Component Units with Objectives and Topics

Unit 2: Internet and the World Wide Web

Description:

This unit covers the implications, origins, and use of the Internet and the World Wide Web, including the advantages and disadvantages of this technology.

Objectives:

1. Discuss security and privacy concerns on the Internet. (Lecture c)
2. Describe ethical issues for the Internet. (Lecture c, d)

Topics/Lectures:

1. Internet security and privacy concerns
2. Internet devices and methods of attack
3. Operating system and device security
 - a. File security
 - b. Internet security
4. Password security
 - a. User accounts
 - b. Miscellaneous security considerations
5. Trojans, viruses, worms, phishing, and hoaxes
6. Ethical considerations of the Internet
 - a. Sharing Internet connectivity with others
 - b. Copyright infringement
 - c. Internet-based databases
 - d. False information on the Internet
7. Online information sharing
 - a. Online privacy
 - b. Online confidentiality

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Component Number: 5

Component Title: History of Health Information Technology in the U.S.

Component Description: This component traces the development of IT systems in health care and public health, beginning with the experiments of the 1950s and 1960s and culminating in the HITECH act, including the introduction of the concept of “meaningful use” of electronic health records.

Assigned Institution: University of Alabama at Birmingham

Team Lead(s): Eta S. Berner, EdD, UAB

Team Members:

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Nir Menachemi, PhD, MPH, UAB (Curriculum Developer)

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Workforce Roles:

- Clinician/Practitioner Consultant
- Implementation Managers
- Implementation Support Specialist
- Practice Workflow and Information Management Technology Specialist
- Technical/Software Support
- Trainer

Component Objectives:

At the completion of this component, the student will be able to:

5. Explain the rationale for elements of the HITECH Act in terms of the history of health IT
6. Describe the background of today’s health IT landscape including EHR, HIE, CDS, applications in Public Health, relevant professional organizations
7. Describe the history of regulation of Health IT in the U.S.
8. Describe how legislation related to privacy and security of electronic health information has evolved in the US.
9. Discuss how financial incentives for use of HIT have changed over time.

Component Units with Objectives and Topics

Unit 2: Evolution of Health IT: The Modern Era

Description:

This unit describes the evolution of health IT from 1990 - 2009.

Objectives:

1. Discuss factors that led to increasing clinical use of computers from 1990- 2009.
2. Discuss key influences on health IT developments including the Internet, HIPAA, and the Institute of Medicine reports.
3. Discuss the focus of health IT in the late 90s up to the present.
4. Discuss the role of health IT in clinical and translational research and personalized medicine.
5. Discuss why there is more receptivity to the use of Health IT now than during the previous 50 years.

Topics:

- 2a.1 Changes in the general environment from 1990-2009
- 2a.2 Changes in the healthcare environment from 1990-2009
- 2b.1 Changes in healthcare organizations from 1990-2009
- 2b.2 The practice of medicine in the modern era
- 2b.3 Academic medicine and the role of Informatics
- 2b.4 Impact of changes over the last 50 years

Unit 3: Evolution of Health IT: The HITECH Act

Description:

This unit describes the background and provisions of the HITECH Act.

Objectives:

1. Discuss the barriers to adoption of Health IT that the HITECH Act is designed to address.
2. Discuss how the following ARRA/HITECH requirements relate to previous developments in health IT:
 - a. Certified electronic health records
 - b. Concept of meaningful use including e-prescribing, clinical decision support, interoperability and HIE, structured documentation of quality measures
 - c. Incentives to providers
 - d. Education of clinicians
 - e. Workforce development.
3. Give examples of how the HITECH provisions support healthcare reform efforts.
4. Discuss the overall vision for the effects of the HITECH Act.

Topics:

- 3a.1 Barriers to the use of Health IT to improve quality and reduce cost
- 3a.2 The HITECH vision
- 3a.3 Regional Extension Centers
- 3a.4 Workforce Development
- 3b.1 “Meaningful Use” of Health IT
- 3b.2 Promotion of Health Information Exchange
- 3b.3 Strategic Health IT Advanced Research Projects

Unit 7: History of Clinical Decision Support Systems**Description:**

This unit describes the history of clinical decision support systems.

Objectives:

1. Describe various types and structures of clinical decision support (CDS) systems.
2. Discuss the evolution of clinical decision support from expert system research.
3. Discuss the changes in focus of clinical decision support from the 1980s to the present.
4. Discuss the change in architecture and mode of access of clinical decision support systems from the 1980s to the present.
5. Describe some of the early clinical decision support systems.
6. Discuss the historical challenges in implementing CDS.

Topics:

- 7a.1 Definition of clinical decision support (CDS)
- 7a.2 Types of CDS
- 7a.3 “Classic” clinical decision support systems
- 7c.1 Evolution of CDS architecture
- 7c.2 Challenges to be overcome

Unit 10: History of Privacy and Security Legislation**Description:**

This unit describes the history of privacy and security legislation in the US.

Objectives:

1. Describe the major changes in privacy and security requirements as a result of HITECH and the reasons why the changes were needed.

Topics:

- 10c.1 Background to HITECH changes to HIPAA
- 10c.2 HITECH changes to HIPAA
- 10c.3 Challenges in implementing HITECH privacy and security requirements

Unit 15: Payment-Related Issues and the Role of HIT

Description:

This unit describes payment-related issues and the role of HIT.

Objectives:

1. Discuss the evolution of incentives for adoption of HIT.
2. Discuss direct and indirect ways in which health care payors can influence the adoption of HIT.
3. Describe past and current strategies employed by payors to influence HIT adoption.

Topics:

- 15.1 Third party payors and misalignment of incentives
- 15.2 Payor's influence on HIT
- 15.3 Incentivizing the use of HIT
- 15.4 Payor generosity and HIT
- 15.5 Other roles for payors and HIT
- 15.6 Payors and health information exchange
- 15.7 Incentives under the HITECH Act

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Component Number: 6

Component Title: Health Management Information Systems

Component Description: A “theory” component, specific to health care and public health applications. Introduction to health IT standards, health-related data structures, software applications; enterprise architecture in health care and public health organizations.

Assigned Institution: Duke University

Team Lead(s):

Kathy Giannangelo, MA, RHIA, CCS, CPHIMS, FAHIMA, Pitt Community College

Team Members:

Sandra Crockett, RHIA (Curriculum Contributor and Reviewer)

Constance M. Johnson, PhD, RN (Curriculum Contributor and Reviewer)

Brian Reynolds, PhD (Curriculum Reviewer)

Workforce Roles:

- Practice Workflow and Information Management Redesign Specialist (primary component)
- Clinician/Practitioner Consultant (primary component)
- Trainer (primary component)
- Implementation Managers (secondary component)
- Implementation Support Specialist (secondary component)
- Technical/Software Support (secondary component)

Component Objectives:

At the completion of this component, the student will be able to:

1. Describe general functions, purposes and benefits of health information systems in various health care settings
2. Describe the federal initiatives and other significant developments that have influenced the evolution and adoption of health information systems
3. Compare/Contrast different types of health information systems in terms of their ability to meet the needs of various types of health care enterprises

4. Explain how electronic health records affect patient safety, quality care, efficiency, productivity, and reporting/documentation mechanisms
5. Propose strategies to minimize major barriers to the adoption of electronic health records
6. Explain how the principles of health care data exchange and health care data standards relate to patient care, productivity and data analysis

Component Units with Objectives and Topics

Unit 2: Health Information Systems Overview

NOTE: This Unit was previously titled Hardware and Software Supporting Health Information System. It is now Health Information Systems Overview

Description: Lecture a defines the concept of an information system and its characteristics, describes the different types of information systems, and describe various types of technologies that support health care information systems. Lecture b examines the challenges presented by emerging trends in information technology (e.g., mobility, web services, the Internet, Intranet, and wireless computing), social media, and global communications and discusses the advantages and disadvantages of using the Internet as a platform for health care applications.

Objectives:

1. Define the concept of an information system and its characteristics
2. Describe the different types of information systems
3. Describe various types of technologies that support health care information systems

Topics:

1. Introduction to Health Information Systems

Unit 4: Computerized Provider Order Entry (CPOE)

Description: Lecture a defines CPOE, states the purpose of CPOE, lists attributes and functions of CPOE, and explains how CPOE is currently being used in health care. Lecture b describes the major value to adopting CPOE applications, identifies the common barriers to adoption, and summarizes the potential impact CPOE has on patient care safety, quality and efficiency, and patient outcomes.

Objectives:

1. Describe the purpose, attributes and functions of CPOE
2. Explain ways in which CPOE is currently being used in health care
3. Discuss the major value to CPOE adoption
4. Identify common barriers to CPOE adoption

5. Identify how CPOE can affect patient care safety, quality and efficiency, as well as patient outcomes

Topics:

2. Introduction to CPOE
3. Aspects of CPOE

Unit 6: Patient Monitoring Systems

Description: Lecture a offers a definition of patient monitoring systems, describes the purpose, attributes, and functions of patient monitoring systems, discusses the primary applications and how automation can improve quality of care, and analyzes how the integration of data from many sources assists in medical decision making. Lecture b discusses how telehealth communication technologies support clinical care, explains the effectiveness and economic benefit of telehealth, and examines the role smart technology in the home and remote links to health information systems play in enhancing the quality of patient care.

Objectives:

1. Describe the purpose, attributes, and functions of patient monitoring systems
2. Discuss ways in which automation can improve the quality of patient care
3. Analyze how the integration of data from many sources assists in making clinical decisions
4. Discuss how telehealth communication technologies support clinical care
5. Discuss the effectiveness and economic benefit of telehealth
6. Examine how smart technology in the home and remote links to health information systems can enhance the quality of patient care

Topics:

4. Introduction to Patient Monitoring Systems
5. Telehealth and Other Remote Patient Monitoring Technology

Unit 7: Medical Imaging Systems

Description: The lecture offers a definition of medical imaging, describes the purpose, processes, and management issues of medical imaging systems, analyzes the economic and technological factors that must be considered in the adoption of digital displays in radiology departments, looks at the major challenges with imaging systems faced by health care institutions and informaticians, and examines the future directions for imaging systems.

Objectives:

1. Examine the purposes, processes, and management issues
2. Understand the economic and technological factors associated with digital displays

3. Describe the major challenges
4. Describe the future directions

Topics:

6. Medical Imaging Systems

Unit 8: Consumer Health Informatics

Description: Lecture a provides a definitions of health communication, e-Health, consumer health informatics, and interactive health communication, identifies how the Internet has impacted consumer health informatics, explains how current and emerging technologies may affect consumer health informatics, and introduces the role of genomics in consumer health informatics. Lecture b offers definitions of personal health records or PHRs, describes the role of PHRs and their implications within health care, and discusses the challenges of consumerism in health information systems.

Objectives:

1. Explain how current and emerging technologies have impacted and may continue to affect consumer health informatics
2. Describe the role of genomics in consumer health informatics
3. Describe the emergence of personal health records and their implications
4. Discuss how consumerism influences the ongoing development and use of health information systems

Topics:

1. Introduction to Consumer Health Informatics
2. Personal Health Records and Consumerism

Unit 9: Administrative, Billing, and Financial Systems

Description: Lecture a examines the relationship of administrative, billing, and financial systems to the health care information system, explains applications that need to be integrated in health care information systems, explores health care organizations' integration strategies, identifies the critical elements for integration of these systems with clinical information systems, and discusses how health care organizations may gain valuable insights from integrated data through data analytics and trending. Lecture b defines a master patient index or MPI and describes its core elements and discusses current trends to establish a unique patient identifier.

Objectives:

1. Explain applications that need to be integrated in health care information systems
2. Describe the strategies used by health care organizations to ensure integration of functions

3. Discuss the critical elements needed to integrate billing, financial, and clinical systems
4. Discuss the core elements of a Master Patient Index (MPI)
5. Describe current trends to establish a Unique Patient Identifier (UPI)

Topics:

7. Introduction to Administrative, Billing, and Financial Systems and Health Care Information Systems Integration
8. Master Patient Index and the Unique Patient Identifier

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Component Number: 7

Component Name: Working with Health IT Systems

Component Description: A laboratory component. Students will work with simulated systems or real systems with simulated data. As they play the role of practitioners using these systems, they will learn what is happening “under the hood.” They will experience threats to security and appreciate the need for standards, high levels of usability, and how errors can occur. Materials must support hands-on experience in computer labs and on-site in health organizations.

Assigned Institution: Johns Hopkins University

Team Lead(s): Patricia (Patti) Abbott, PhD, RN, FAAN, JHU School of Nursing
Michael Vaughn, MS, JHU School of Nursing

Team Members: Robert Kolodner, MD, FAMCI
David Hinton, Howard Community College

Workforce Roles: Clinician/ Practitioner Consultant, Implementation Support
Specialist and Technical/ Software Support

Component Objectives

At the completion of this component, the student will be able to:

1. Identify common components of an HIT system and types of HIT applications
2. Describe data flows across HIT systems and implication of standards.
3. Identify root causes of HIT-induced error (i.e. usability, workflow interference, system error, etc.) and suggest solutions.
4. Assess the strengths and weaknesses of identified solutions to identified HIT problems (to emphasize the reality of “solutions” and illustrate the frequent domino effect/unintended consequences of change of an HIT system)
5. Defines usability, describes general usability principles, and relates usability to adoption in relation to HIT.
6. Define and differentiate security, confidentiality, and privacy and identify common threats.
7. Demonstrate beginning level competency in general HIT system use

Component Units with Objectives and Topics

Unit 1 Introduction & Overview: Components of HIT Systems

Description:

Unit 1 is an introductory unit where the core definitions and concepts of systems in general and healthcare specifically are presented. Using hands on exploratory lab exercises, students will be introduced to an example HIT system where they will learn basic navigation and gain familiarity with components common to many clinical HIT systems. Specific examples of HIT systems from a variety of settings will be discussed.

Objectives:

1. Define a system and relate systems concepts to HIT
2. Discuss specific examples of settings where Health IT is used (acute, rural, public health, clinic, office, patient home, etc.)
3. Identify common components of a clinical HIT system
4. Demonstrate beginning level competency in maneuvering the demonstration EHRs

Topics:

- 1.1 - Understanding Systems - Conceptualizing HIT Use
- 1.2 - HIT Systems
- 1.3 - Big Picture of HIT Systems
- 1.4 - Common Aspects of Clinical HIT Systems

Unit 3 Understanding Information Exchange in HIT Systems

Description:

Unit 3 will focus upon the functional aspects of interoperability within and between systems. Applying didactically presented concepts to hands on lab assignments, students will be challenged to locate and collate data from disparate systems, to respond to user requests for reports, and to assist users in planning for enhanced information flow in HIT systems.

Objectives:

1. Identify common elements of the HIT system.
2. Explain the need for standards and why they exist.
3. Define and differentiate between messaging standards and terminology standards. (transmission VS meaning – very basic)
4. Compare current efforts to facilitate health information exchange between providers, communities, regions, & nation. (basic level definitions/descriptions – NHIN, HIEs, etc.)

Topics:

- 3.1 – Types of Information Exchange
- 3.2 – “Meaningful Use” and HIT Information Exchange

- 3.3 – Types of Standards
- 3.4 – HIE Initiatives

Unit 4 The Effective HIT System

Description:

Unit 4 is designed to emphasize the aspects of HIT that contribute to effectiveness and meaningful use. The concepts of usability, consistency, and reliability in regards to HIT systems and how each contributes to, or detracts from, effectiveness will be presented. Definitions of evidence-based practice and guideline-enhanced care will be covered in addition to how HIT can support effective, safe, and efficient patient-centered care.

Objectives:

1. Identify characteristics of an effective HIT system.
2. Define and provide examples of how evidence-based practice can be supported in HIT Systems.
3. Define and cite examples of usability / configurability / scalability and reliability in HIT Systems.
4. List and contrast different types of reports/queries (predefined vs. ad hoc) required for internal and external reporting.

Topics:

- 4.1 – Effective HIT
- 4.2 – Characteristics of Effective HIT
- 4.3 – Supporting Workflows

Unit 5 Fundamentals of Usability in HIT Systems – What Does It Matter?

Description:

Unit 5 will present the basic concepts of usability in general and HIT usability specifically. Students will be exposed to usability bottlenecks and learn to identify usability roadblocks in the EHRS lab system, hypothesizing potential downstream effects of poor usability, and suggesting solutions/alternate designs. This unit will detail the relationships between usability, user satisfaction, and workarounds.

Objectives:

1. Define usability in relation to HIT systems.
2. Explain the impact of HIT usability on user satisfaction, adoption, and workarounds in error rates or unintended consequences.
3. Provide alternatives to HIT usability bottlenecks.

Topics:

- 5.1 – Defining Usability
- 5.2 – User Centered Design
- 5.3 – Usability in HIT

- 5.4– Impact of Poor HIT Usability
- 5.5– Strategies for Bottlenecks

Unit 7 Protecting Privacy, Security, and Confidentiality in HIT Systems

Description:

Unit 7 is designed to present an overview of the concepts of privacy, security, and confidentiality of protected health information (PHI) in relation to HIT systems. Threats to PHI frequently encountered in HIT environments such as password sharing, offsite access to EHRs, challenges of staff turn-over and student access, unauthorized access, etc. will be detailed. Students will be exposed to simulated breaches of privacy, security and confidentiality of PHI in lab exercises, asked to identify, and propose strategies to thwart.

Objectives:

1. Explain and illustrate privacy, security, and confidentiality in HIT settings.
2. Identify common threats encountered when using HIT.
3. Formulate strategies to minimize threats to privacy, security, and confidentiality in HIT systems.

Topics:

- 7.1 – Administrative Safeguards
- 7.2 – Physical Safeguards
- 7.3 – Technical Safeguards

Unit 9 Potential Issues with Adoption and Installation of an HIT system

Description:

The basics of human behavior, change, and adaptation will be discussed. Strategies for dealing with barriers to implementation (human and structural) will be covered.

Objectives:

1. Identify frequently encountered challenges to adoption and implementation of HIT systems
2. Design an action plan to address barriers to implementation of an HIT system.
3. Propose solutions to common problems in the implementation of HIT systems.

Topics:

- 9.1 – Why Systems Fail
- 9.2 – Critical Success Factors in HIT Adoption/Implementation
- 9.3 – Common Challenges
- 9.4 – Potential Strategies



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**HEALTH IT WORKFORCE CURRICULUM
COMPONENT BLUEPRINT
Version 3.0/Spring 2012**

Component Number: 8

Component Name: Installation and Maintenance of Health IT Systems

Component Description: Instruction in installation and maintenance of health IT systems, including testing prior to implementation. Introduction to principles underlying system configuration. Hands-on experiences in computer labs and on-site in health organizations.

Assigned Institution: Duke University

Team Lead(s):

Scott Neal, Durham Technical Community College

R. Clayton Musser, MD, MS, Duke University

Team Members:

Harry Bulbrook, (Consultant)

Charlene West, (Consultant)

Workforce Roles:

- Implementation support specialists
- Implementation managers
- Technical/software support staff

Component Objectives:

At the completion of this component, the student will be able to:

1. Articulate the elements of Health IT systems, including their advantages and disadvantages.
2. Justify criteria to be considered when recommending vendors and software
3. Design a comprehensive plan to install a health IT system
4. Design a comprehensive plan to maintain and troubleshoot a health IT system, incorporating system updates and user feedback
5. Implement project plans by installing and configuring hardware and software, interacting with vendors and users as needed
6. Verify plan implementation

Component Units with Objectives and Topics

Unit 1 (Elements of a Typical EHR System):

Description: This unit will give a brief overview of a typical Electronic Health Record (or EHR) system, including discussion of the Institute of Medicine's six aims for improving healthcare, what an EHR is, and how it has evolved. Additionally, it will outline the types of network elements an EHR system needs to function, as well as its typical hardware and software components.

Objectives:

1. Identify the core elements that comprise an EHR system
2. Describe the use of client and server hardware for access to and storage of EHRs
3. Describe network needs for access to and storage of EHRs
4. Identify the application software and back-end data storage software needed for a comprehensive, effective health IT system

Topics:

1. Six aims for improving Healthcare
2. Outline and advantages of EHR system functions and capabilities
3. Elements of EHR system
 - a. Hardware
 - b. Software
 - c. Client-Server model
 - d. Network – LAN and WAN

Unit 3 (System Selection - Functional and Technical Requirements):

Description: This unit explores aspects of functional requirements of systems (by users) and technical requirements (by the system), including how to determine, document, prioritize, and act on those requirements.

Objectives:

1. Identify 12 possible steps to choosing an EHR system
2. Gather functional requirements from institution and users
3. Document use-cases and relate them to functional requirements

Topics:

1. Twelve steps in evaluating EHR systems
2. Functional requirements and the HL7 model
3. Non-Functional requirements
4. Use Cases pre- and post-EHR
5. Hardware and software requirements

Unit 7 (System Interfaces and Integration):

Description: This unit will define interface and integration and explain their importance, discuss common interface methods point to point and interface engines and the types of protocols they use, examine HL7 and how it simplifies the process of communicating between various dissimilar components, and connecting your EHR system to the outside world.

Objectives:

1. Determine and document system interfaces and integration requirements
2. Describe the pitfalls associated with installing a new application in an environment of pre-existing applications
3. Give examples of interfacing modalities

Topics:

1. Interface and Integration
 - a. HL7 communication protocol
 - b. Integration between EHRs
1. Methods
 - a. Interface Engine
 - b. Point to point

Unit 8 (Troubleshooting, Maintenance and Upgrades, and Interaction with Vendors, Developers, and Users):

Description: This unit will discuss ways you can implement an infrastructure for troubleshooting, and maintaining EHRs and their existing infrastructure.

Objectives:

1. Identify and implement an effective troubleshooting procedure for reporting, evaluating, fixing, deploying, and follow-up of errors, problems, or limitations for the system
2. Integrate downtime schedule for OS, network, database, and client application maintenance and updates
3. Develop a process for communicating requirements and supplying updates between vendors/developer and users
4. Create a baseline for system performance measurement and comparison for troubleshooting

Topics:

1. Support staff
 - a. Troubleshooting workflow
 - b. Tiered approach
 - c. Request prioritization
2. Application to small business
3. Diagnosing Infrastructure issues
4. Performance testing
 - a. Baseline measurement
 - b. Measurement utilities
 - c. Next steps
5. Maintenance and Upgrades
 - a. Structured approach
6. Relationships
 - a. Users
 - b. Vendors

**HEALTH IT WORKFORCE CURRICULUM
COMPONENT BLUEPRINT
Version 3.0/Spring 2012**

Component Number: 9

Component Name: Networking and Health Information Exchange

Component Description: In-depth analysis of data mobility including the hardware infrastructure (wires, wireless, and devices supporting them) , the ISO stack, standards, Internet protocols, federations and grids, the NHIN and other nationwide approaches.

Assigned Institution: Duke University

Team Lead(s):

W. Ed Hammond, Ph.D., Duke Center for Health Informatics

Michele Parrish, Durham Technical Community College

Team Members:

Harry Bulbrook, (Consultant)

Charlene West, (Consultant)

Workforce Roles:

- Practice workflow and information management redesign specialist
- Clinician/practitioner consultants
- Implementation support specialists

Component Objectives:

At the completion of this component, the student will be able to:

1. Explain the functions of all layers of the ISO OSI models, including how they are interconnected and supported.
2. Recommend components of networking hardware that meet standards and support information exchange.
3. Analyze standards associated with the EHR functional model, the PHR functional model, and the family of profiles associated with specific domain functional requirements
4. Explain the process and value of EHR certification.

5. Describe data standards required for the interoperable exchange of health care data, including terminology, data elements, document standards, imaging standards, and medical device standards.
6. Describe components of health IT standards (including HL7 and TC215) for health information exchange used by various stakeholders.
7. Examine additional standards related to shared and effective use of data, including clinical decision support.
8. Describe enterprise architecture models, including centralization vs federation and grids, service oriented architectures, and local implementations with respect to systems from single units to organizations, regions (RHIOS and HIEs), states, and nationwide healthcare information systems (NHIN).
9. Incorporate professional and regulatory standards related to privacy, confidentiality, and security when implementing and maintaining networks and health information exchange systems, including NHIN.

Component Units with Objectives

Unit 9 (Privacy, Confidentiality, and Security Issues and Standards):

Description: This unit explores issues related to creating an environment in which to transport data in a secure manner that ensures privacy and confidentiality.

Objectives:

1. Explain the concepts of privacy and confidentiality requirements and policies and learn how to implement the requirements
2. Describe how to secure data storage and transmission using data encryption, signatures, validation, non-repudiation, and integrity (PKI, certificates, and security protocols)
3. Define access control methods
4. Analyze access restrictions to data storage and retrieval (physical and software)

Topics:

1. Security Concepts
2. Access Control
 - a. Logical
 - b. Physical

Unit 10 (Health Information Exchange):

Description: This unit explores the networking standards and the standards required for interoperability to enable the creation of Health Information Exchanges.

Objectives:

1. Understand the purpose and importance of a Health Information Exchange strategy,
2. Understand what an HIE is,
3. Understand the components of an

Topics:

1. EHR Settings
2. Issues for Sharing EHRs
3. Regional Centers

HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 10

Component Title: Fundamentals of Health Workflow Process Analysis & Redesign

Component Description: Fundamentals of health workflow process analysis and redesign is a necessary component of complete practice automation and includes topics of process validation and change management.

Assigned Institution: Duke University

Team Lead(s):

Meredith Nahm, PhD, Duke University

Team Members:

Meredith Nahm, PhD, (Developer)

Kaye Fendt, MSPH, (Developer)

Brian Reynolds, PhD, (Developer)

Marcy Corjay, PhD, (Rowan Cabarrus Community College Principal Investigator)

Charmaine Smith, MA (Quality Control)

Workforce Roles:

Health IT Roles to Which this Content Applies:

- Clinician/Practitioner Consultant
- Implementation Support Specialist
- Practice Workflow and Information Management Redesign Specialist

Component Objectives:

At the completion of this component, the student will be able to:

7. Identify the elements involved in providing patient care within a complex health care setting that must be taken into consideration when examining and proposing changes in workflow processes.
8. Create a diagram of processes in the health care setting that support workflow analysis and re-design.
9. Critically analyze the workflow processes in a selected health care setting to determine their effectiveness from the perspective of those being served (i.e.,

- patients), those providing the services (i.e., professional and non-professional staff), and the organization's leadership (i.e., decision makers).
10. Propose ways in which quality improvement methods, tools and health IT can be applied within a health care setting to improve workflow processes.
 11. Suggest approaches that would ensure the success of workflow re-design from development and presentation of the implementation plan, to facilitation of decision making meetings, implementation of the changes, evaluation of the new processes, sustainability of new workflow processes, and continuous quality improvement efforts to achieve meaningful use.
 12. Apply to these activities an understanding of health IT, meaningful use, and the challenges practice settings will encounter in achieving meaningful use.

Component Units with Objectives and Topics

Unit 1: Concepts of Processes and Process Analysis

Description: This unit focuses on the six aims for health care process improvement. In this unit, students are helped to understand the concepts of systems, systems thinking and health care processes. Such understanding provides a foundation for the study of clinical process analysis and redesign.

Objectives:

6. Describe the purpose for process analysis and redesign in the clinical setting
7. Describe the role of a Practice workflow and information management redesign specialist and contrast it with other roles such as technical support and implementation management
8. Explain how health care process analysis and redesign and meaningful use are related
9. Analyze a health care scenario and identify the components of clinical workflow.
10. Given a scenario of a health care analysis and redesign, analyze the responsibilities of each participant in the process and how the roles complement or overlap with one another
11. Describe how the workflow processes used by a health care facility might differ depending on the type of facility

Topics:

1. Role of Health Care Workflow Analysis and Redesign Specialist
 - a. Definitions
 - b. Health care Roles and Responsibilities
2. IOM 6 Quality Areas
3. Importance of HIT to Health Care - Meaningful Use
4. The Clinical Setting
5. Common Health Care Processes
6. Clinical Workflow
7. Summary: What a Process Analysis and Redesign Specialist Does

Unit 2: Process Mapping Theory and Rationale

Description: In two parts, Fundamentals of Health Workflow Process Analysis and Redesign: Process Mapping Theory and Rationale, Lecture a and Process Mapping Diagramming Tools, Lecture b, covers the background necessary for graphically representing processes. It uses flowcharts and basic flowchart symbols to provide an introduction to graphical process representation, also called process diagramming. Separate units cover complete symbol sets and conventions for different types of process diagrams.

Objectives:

1. Articulate the value of process mapping.
2. Describe standard process mapping symbols and conventions.
3. Analyze an existing workflow process chart in terms of the information that could be generated, and the sequence of steps that are being communicated.
4. Choose the correct scope and detail level for a process map.
5. Choose an appropriate process mapping methodology.
6. Create a process map for a health care system (or system component) using correct symbols and conventions.

Topics:

1. Purpose of graphic process representation
2. Process diagram vocabulary
3. Identifying process steps
4. Basic flowchart symbols
5. Creating a basic flowchart

Unit 3: Interpreting and Creating Process Diagrams

Description: Unit 3 is composed of several lectures, one for each diagramming method. Lecture a, Interpreting and Creating Process Diagrams: Introduction - provides an introduction to these concepts and reviews information from Unit 2, Lecture b. Based on feedback from practitioners, we recommend using two methods (data flow diagrams in Yourdon notation, and flowcharts). In Lecture a, we review the process aspects that

each diagram type covers. In separate presentations, we cover each diagram type. For the two recommended methods, the presentation covers concepts and skills from reading and interpreting the diagrams to actually creating them. For the rest of the diagrams, we cover only background, use, and notation, i.e., the presentation prepares the student to read and interpret the diagram but not to create them.

Objectives:

1. Create a process flowchart for a health care system (or system component) using appropriate ISO 5807 symbols and conventions,
2. Create context and data flow diagrams for a health care system (or system component) using appropriate Yourdon symbols and conventions,
3. Choose the correct scope and detail level for a process flowchart and data flow diagram,
4. Read and interpret Gane-Sarson data flow diagram,
5. Read and interpret an entity relationship diagram in crow's foot notation, and
6. Read and interpret UML class, activity, and state diagrams.

Topics:

1. Key process aspects that may require analysis and diagramming
2. Types of process diagrams
3. Standard ISO 5807 process diagramming symbols and conventions
4. Reading an ISO 5807 flowchart in terms of the information that could be generated and the workflow steps that are being communicated
5. Create ISO 5807 flowcharts for a health care system (or system component) using correct symbols and conventions
6. Yourdon data flow diagram symbols and conventions
7. Creating data flow diagrams (DFDs) for a given a health care scenario
8. Gane-Sarson symbols and conventions for process mapping
9. Reading Gane-Sarson data flow diagrams
10. Understand the background of how Entity-Relationship Diagrams (ERDs) are used and maintained, the symbol set used in producing ERDs, and process aspects covered by them
11. Understand the notation conventions and be able to read (not create) a simple Entity Relationship Diagram (ERD)
12. Purpose, symbols, and conventions for UML
 - a. Class,
 - b. Activity and
 - c. State machine diagram
13. Reading and interpreting the diagrams

Unit 4: Acquiring Clinical Process Knowledge

Description: In three lectures, this unit covers the concepts and methods for Acquiring Clinical Process Knowledge in the health care setting needed by the health care Workflow Analysis and Redesign Specialist.

Objectives:

1. Identify how the strategic goals and stakeholders for a given health care facility can influence workflow processes in that facility,
2. Create an agenda for an opening meeting to discuss workflow processes in a health care facility, in light of that facility's strategic goals and stakeholders,
3. Compare and contrast different types of knowledge and their impact on organizations,
4. Analyze a health care scenario according to CMMI levels,
5. Identify the workflow processes that are likely to be used by a health care facility,
6. Identify the workflow processes that are essential to observe in order to determine how best to streamline the operations in a given health care facility, and
7. Identify key individuals with whom the Practice Workflow and Information Management Redesign Specialist should meet or observe in order to gain an understanding of the nature and complexity of their work.
8. Given a process observation scenario, formulate the questions that would facilitate a productive discussion of the workflow of information, activities and roles within that facility,
9. Suggest ways to successfully respond to common challenges encountered in knowledge acquisition,
10. Given a practice scenario, choose an appropriate knowledge acquisition method,
11. Given a process analysis scenario including list of observations, create agenda for visit closing meeting and an initial meeting report, and
12. Given a set of diagrams and observations from an information gathering meeting, draft a summary report.

Topics:

1. Knowledge Acquisition (KA) goals in health care,
2. Importance of KA,
3. Categories of knowledge, and
4. Knowledge and the Capability Maturity Model (CMM).
5. Clinic information such as mission, stakeholders and goals that can help inform the analysis,
6. Common clinic processes, and
7. Creating a process inventory.
8. Knowledge sources,
9. Process information that should be considered in the analysis,
10. Methods to obtain the information,
11. Knowledge acquisition plan, and
12. Initiating a relationship with a clinic.

Unit 5: Process Analysis

Description: In two lectures, Fundamentals of Health Workflow Process Analysis and Redesign: Process Analysis covers the background and methodology for process analysis.

Objectives:

1. Describe the purpose of process analysis,
2. Describe skills and knowledge necessary for process analysis,
3. Perform a process analysis for a given clinic scenario,
4. Given results of a process analysis draft a summary report, and
5. Given results of a process analysis, identify desired EMR functionality

Topics:

1. Objectives of Process Analysis
2. Relevant concepts for process analysis
3. Steps for process analysis
4. Starting with process inventory and diagrams
5. For each process, listing
 - a. Variations applicable to the clinic
 - b. Exceptions
6. And Reporting findings
7. Process Variations for common clinic processes
 - a. Patient check-in
 - b. Patient visit
 - c. Prescription
 - d. Received documentation
 - e. Labs & diagnostic tests
 - f. Referral and consults
 - g. Disease management
 - h. Billing
8. Identifying EHR functionality from Process Analysis

Unit 6: Process Redesign

Description: This unit, Process Design, consists of 4 lectures and covers the background and methodology for process redesign in the health care facility.

Objectives:

1. Identify the factors that optimize workflow processes in health care settings.
2. Describe how information technology can be used to increase the efficiency of workflow in health care settings.
3. Identify aspects of clinical workflow that are improved by EHR.
4. Propose ways in which the workflow processes in health care settings can be re-designed to ensure patient safety and increase efficiency in such settings.
5. Use knowledge of common software functionality and meaningful use objectives to inform a process redesign for a given clinic scenario.

Topics:

1. Objectives and goals of Process Redesign,
2. Unproductive work,
3. Twenty seven strategies for optimizing processes, and
4. An example of each optimization strategy.
5. Describe how information technology can be used to increase the efficiency of workflow in health care settings
6. Identify aspects of clinical workflow that are improved by EHR
7. Objectives, Skills and Knowledge for Process Redesign,
8. Common process problems,
9. Solutions to process problems, and
10. Human-Centered Design Framework as applied to Process Redesign.
11. Matching common clinic system functionality to solve process problems.
12. Objectives, skills and knowledge for Process Redesign,
13. Human-Centered Design framework applied to Process Redesign,
14. Common process problems,
15. Solutions to process problems,
16. Matching common clinic system functionality to solve process problems, and
17. Process redesign for Meaningful Use.

Unit 7: Facilitating Meetings for Implementation Decisions

Description: In one lecture, this unit, Facilitating Meetings for Implementation Decisions, covers a method and the associated logistics for conducting meetings in which health care facility decision makers review options for major process and implementation related decisions and make decisions. The purpose of the meetings is to outline the decisions that need to be made, to assure that decision makers have the necessary information for decision making, and to facilitate decision making. This unit provides the Practice Workflow and Information Management Redesign Specialist with tools for conducting decision making meetings. There are many methods for conducting and facilitating meetings. Here, we provide one method, discuss key concepts, and provide references to resources that you can use as you develop your skills and portfolio of tools for meeting facilitation.

Objectives:

12. Describe major health care facility decisions in process redesign that includes EHR technology
13. Draft an agenda and facilitation plan for a decision making meeting,
14. Prepare a presentation to communicate findings of a workflow analysis or process redesign to health care facility decision makers,
15. Document those decisions that are made and actions identified in a decision making meeting, and
16. Critique a decision making meeting agenda, facilitation plan or scenario to identify problems and how they could have been prevented

Topics:

1. Coordinating a decision making meeting
2. Using appropriate group methods to discuss and make decisions on inefficiencies
3. Identifying opportunities for streamlining manual and computer-aided processes, and the
4. Transition from analysis and redesign to implementation planning, and we will also give examples of the plan content.

Unit 8: Quality Improvement Methods

Description: This unit covers Quality Improvement Methods recommended for use in the Health Care Setting. Many different approaches to quality improvement have been used in the health care arena. The workflow analysts will encounter organizations and people with experience with a multitude of proven methods and fads. Thus, an awareness of the history, methods, and tools of quality improvement is critical. This unit introduces students to these elements of QI, as well as categories of mistakes seen in these methods. It is not intended to teach the student how to use these methods and tools.

Objectives:

17. Describe strategies for quality improvement
18. Describe the role of Leadership in Quality Improvement
19. Describe the local clinic improvement capabilities
20. Describe and recommend tools for quality improvement
21. Compare and contrast the quality improvement methodologies and tools and their appropriate uses in the health care setting

Topics:

1. Foundations of Quality Improvement
2. Methods for Quality Improvement
3. Tools for performing Quality Improvement
4. A culture of Quality Improvement
5. Mistakes in Quality Improvement

Unit 9: Leading and Facilitating Change

Description: This unit, Leading and Facilitating Change, introduces the concepts of change and the impact of such change on the providers and staff within a health care facility. It enhances the understanding that workflow analysts must be sensitive to the human component as they examine and propose modifications in processes. This unit prepares the student to recognize and address common change management problems, and to work with individuals and groups to facilitate change.

Objectives:

22. Explain concerns expressed by participants in a process analysis & redesign scenario in terms of common change management concepts.
23. Propose strategies to gain acceptance of changes in work processes.
24. Create and critique a facilitation plan, including appropriate facilitation tools for a given process analysis & redesign scenario, and
25. Given a health care change management scenario, explain outcomes in terms of common change management concepts

Topics:

1. Change Management concepts
2. Tools for Facilitating change
3. Facilitation Planning

Unit 10: Process Change Implementation and Evaluation

Description: This unit focuses on helping students develop skills needed to implement and evaluate the effectiveness of changes designed to improve workflow processes and the quality of care in health care facility. This unit prepares the student to implement a process change by covering three key skill sets: 1) develop a process change plan (implementation plan), 2) communicate a process change plan, and 3) develop an evaluation plan.

Objectives:

26. Develop a Process Change Implementation Plan for a health care facility that includes tasks to be accomplished, responsible parties for various tasks, a timeline, and the human and material resources needed
27. Identify management tracking and measurement opportunities for the process change
28. Outline elements of an evaluation plan that will help determine the success of a workflow process change implemented in a health care facility
29. Describe how the workflow analyst can help a health care facility continually improve its workflow processes, based on results of ongoing evaluations

Topics:

1. Common process changes

2. Implementation plan components
3. Communication for implementation
4. Common implementation problems
5. Evaluating the new process

HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 12

Component Name: Quality Improvement

Component Description: Introduces the concepts of health IT and practice workflow redesign as instruments of quality improvement. Addresses establishing a culture that supports increased quality and safety. Discusses approaches to assessing patient safety issues and implementing quality management and reporting through electronic systems.

Assigned Institution: Johns Hopkins University

Team Lead(s): Stephanie Poe, DNP, RN, The Johns Hopkins Hospital
Anna Maria Izquierdo-Porrera, MD PhD, BlueNovo, Inc.

Peter Pronovost, PhD, MD, JHU, School of Medicine

Team Members: Patricia Dawson, MSN, RN, The Johns Hopkins Hospital
Kelly Hugo, MBA, Anne Arundel Community College

Workforce Roles:

- Clinician/Practitioner Consultant
- Practice Workflow and Information Management Redesign Specialist

Component Objectives

At the completion of this component, the student will be able to:

1. Analyze clinical decision-making requirements, including who, what, when, how, and where information is needed.
2. Design and implement information technology that supports effective teamwork, fosters open communication and enables shared decision-making to achieve quality patient care
3. Analyze clinical workflows to design information technology that supports clinical decision-making and care coordination.
4. Design and apply of information technology and standardized practices that support safety and quality
5. Formulate activation planning that supports and maintains safety and quality

6. Select and apply quality measures for incorporation into information systems to enable review of outcomes of care and identification of improvement opportunities
7. Assess findings from quality reviews of reported events to design and implement clinical information system improvements.
8. Select improvement tools to assist clinical teams in improving the quality and safety of the electronic health record.
9. Monitor use of information technology for inappropriate use leading to hazards and errors
10. Design an information technology culture conducive to highly reliable processes built on human factors research.
11. Design and implement effective strategies to use information technology to decrease reliance on memory.

Component Units with Objectives and Topics

Unit 1 Introduction to Quality Improvement and Health Information Technology

Description:

This unit will introduce the learner to the concept of health care quality and the importance of meaningful use of health information technology in improving health care quality. The Institute of Medicine aims of quality improvement and the Institute of Healthcare Improvement's triple aim are used to frame a discussion of the role of health information technology in leading to improvement of patient safety, efficiency, effectiveness, equity, timeliness, and patient-centeredness. The learner is also provided with examples of how health IT can facilitate quality improvement as well as unintended consequences of health IT that can be byproducts of poor system design and user work-arounds.

Objectives:

1. Identify the current challenges in health care quality.
2. Examine the components of the health care system that have an impact on quality.
3. Describe QI as a goal of meaningful use of HIT.
4. Analyze the ways that HIT can either help or hinder quality improvement.
5. Explain health care quality and quality improvement (QI).

Topics:

- 1.1 – Health Care Quality and HIT
- 1.2 – Relationship of QI and HIT

Unit 2 Principles of Quality and Safety for HIT

Description:

This unit is designed to introduce the learner to the magnitude of the problem of medical error in the US. Health care system and the role of the learning in helping to make our system safer. Emphasis is placed on how the science of safety can be applied to health care and the impact of system factors on patient safety. Three principles of safe design are introduced (eliminate steps, create independent checks. and learn from mistakes).

Objectives:

1. Investigate the fallibility of people and systems.
2. Describe the ways that every system is designed to achieve the results it gets.
3. Apply the basic principles of safe design.
4. Explain the ways that teams make wise decisions with diverse and independent input.

Topics:

- 2.1 – Improving Patient Safety

Unit 5 Decision Support for Quality Improvement

Description:

This unit presents an in depth review of ways in which decision support can enhance quality and safety in patient care. Definitions of decision support are provided.

Objectives:

1. Define decision support, its importance and why it is difficult to implement.
2. Compare decision support tools that help improve quality.
3. Analyze the benefits and shortfalls of alerts and clinical reminders.

Topics:

- 5.1 – Clinical Decision Support System (CDSS) Basics
- 5.2 – Alerts and Clinical Reminders.

Unit 6 Workflow Design

Description:

This unit introduces the learner to good practices for determining current workflow design and whether this design can be supported by HIT. It also presents ways of assisting users to redesign clinical work-flow as needed without loss of quality and safety in the clinical environment. Discussion of questions to ask when determining hard-wired and mobile technology placement is included.

Objectives:

1. Assess decision-making requirements in health or health care.
2. Construct a work process flow chart.
3. Appraise ways of incorporating decision-making requirements into HIT design.

Unit Topics/Lecture Titles

- 6.1 - Workflow Assessment

6.2 - Work Process Flow Charts

Unit 9 HIT Implementation Planning for Quality and Safety

Description:

This unit focuses the attention of the learner on ways in which HIT implementation can be managed to ensure the quality and safety are maintained during the transition period. Use of internal support pools, super-users, and front-line clinical experts to provide at-the-elbow support during the transition period is discussed. Emphasis is placed on the need for local adaptation and ongoing development of skills so that users can gain expertise in safe use of electronic health records and other information technology.

Objectives:

1. Critique an implementation team and the roles they play in ensuring quality.
2. Analyze effective implementation planning.
3. Assess the quality implications of “big bang” versus “staggered” approaches to activation.
4. Discuss “go live” support strategies that minimize risk.

Topics:

- 9.1 - The Implementation Team and Effective Implementation Planning
- 9.2 - Go-Live Support Strategies

Unit 10 Measuring Quality

Description:

This unit we will discuss the basics of measurement for quality. We will introduce the concepts of understanding variation. We will also discuss the fact that the design of electronic documents and flow sheets have a significant impact on the ability to extract quality measures from the resulting database. The importance of rigorous design and testing of system reports used for quality purposes is emphasized. Sample quality measures that are frequently requested of HIT systems are identified, and questions that guide data extraction are suggested.

Objectives:

1. Understand the basic concepts of variation.
2. Explain the attributes of an effective reporting system.
3. Examine the importance of having standardized and structured health information so that you can use those data to make valid reports.
4. Discuss how HIT can facilitate data collection and reporting for improving quality of care and patient safety.

Topics:

- 10.1 – Measuring Patient Safety

Unit 11 Data Quality Improvement

Description:

This unit will introduce the learner to the importance of data quality and the role of the HIT professional in monitoring and ensuring the quality of data in clinical information systems. The theme of this unit is "beginning with the end in mind" and a review of both measurable and intangible dimensions of data quality is provided. Examples of each dimension are reviewed and a business case for quality is presented.

Objectives:

1. Understand the different purposes of data.
2. Discuss the impact of poor data quality on quality measurement.
3. Identify ten attributes of data quality and key process recommendations.
4. Explore the attributes of data quality and key process recommendations for maintaining data integrity.
5. Discuss common causes of data insufficiency.
6. Describe how health information technology design can enhance data quality.

Topics:

- 11.1– Characteristics and use of data.
- 11.2 – Common causes of Insufficient Data Quality and Design Recommendations.

Unit 12 Learning from Mistakes: Error Reporting and Analysis and HIT

Description:

This unit is designed to assist the learner in understanding the role of HIT in error detection and reporting and analysis of errors. The unit pulls together the links between learning from mistakes and the science of safety and safe culture. It includes a review of three tools for error detection and reporting: automated surveillance systems, error reporting systems, and predictive analytics and modeling. Examples of two powerful quality improvement tools (root cause analysis and failure mode effects analysis) are provided and the role of HIT professional in contributing to these efforts is discussed.

Objectives:

1. Explain how reporting errors can help to identify HIT system issues.
2. Describe ways in which HIT can facilitate error reporting and detection.
3. Assess HIT for unintended negative consequences.
4. Examine common themes in HIT design deficiencies.
5. Apply QI tools to examine HIT errors.

Topics:

- 12.1 – HIT, Error Detection, and Reporting
- 12.2 – Quality Improvement Tools and HIT



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**HEALTH IT WORKFORCE CURRICULUM
COMPONENT BLUEPRINT
Version 3.0/Spring 2012**

Component Number: 13

Component Name: Public Health Information Technology

Component Description: This component is designed for individuals specifically contemplating careers in public health agencies. The unit will provide an overview of specialized public health applications such as registries, epidemiological databases, biosurveillance, and situational awareness and emergency response. In addition it will include information exchange issues specific to public health.

Assigned Institution: Columbia University

Team Lead(s):

Rita Kukafka, DrPH, Columbia University

Michael Buck, PhD, New York City Department of Health and Mental Hygiene
(NYCDHMH)

Syncia Sabain, EdD (Project Manager)

Team Members:

Lynda Carlson, PHD, Borough of Manhattan Community College (Content Specialist)

Winfred Wu, MD, NYCDHMH (Content Specialist)

Marlena Plagianos, NYCDHMH (Content Specialist)

Sarah Shih, NYCDHMH (content Specialist)

Sharib Khan, DBMI (Content Specialist)

Anna Ritko, PhD Candidate (Content Specialist)

Madhabi Chatterji, PhD (Curriculum Developer)

John Allegrante, PhD (Curriculum Developer)

John Zimmerman, DDS (Instructional Design Specialist)

Cindy Smalletz, (Instructional Design Specialist)

Elizabeth Oliver, Bronx Community College (Content Specialist)

Component Objectives:

Upon completion of this component, the student will be able to:

1. Distinguish (draw distinctions) among core functions and essential services of 'public

health' and 'clinical care'.

2. Synthesize key reasons and current contextual factors for providers in clinical practice to improve public health services and practices using EHRs
3. Apply health data definitions and standards, as well as privacy and confidentiality issues, in typical public health scenarios.
4. Summarize the strategies, features, and systems needed for public health agencies to define and build the necessary connections to EHRs as identified by meaningful use legislation.
5. Describe the roles and functions of existing public health data and health databases and networks
6. Identify current needs and future directions for EHR biosurveillance, disaster-preparedness, and situational awareness in improving public health.
7. Summarize/describe the main role, functions and applications of public health reporting, alerts and decision support systems.
8. Summarize the role, functions and applications of public health IT for health promotion and chronic disease prevention
9. Delineate the critical role of advocacy in adoption/use of EHRs and Consumer functions for PHRs to improve public health.

Component Units with Objectives and Topics

Unit 1:

Overview & contribution to public health through Electronic Health Record use

Description:

Synthesize key reasons and current contextual factors for providers in clinical practice to improve public health practice using EHRs.

Objectives:

By the end of this unit students will be able to:

1. Explain what is public health?
2. Discuss what distinguishes public health from the other health sciences
3. Explain public health's unique contributions to the health of the public
4. To define Public Health (PH) Information Technology and PH Informatics
5. To illustrate how innovative IT solutions are being applied to PH practice
6. To explain the role of electronic health records and data exchange to clinical care and health care improvement
7. Describe PH organizational structure

Topics:

- A. Introduction to Public Health
- B. Historical Context of Public Health
- C. Opportunities for Public Health enabled electronic health records
- D. Public Health + Health Information Technology (PHIT)
- E. Public Health Informatics



Curriculum Development Centers Program

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HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 14

Component Name: Special Topics Course on Vendor-Specific Systems

Component Description: Provides an overview of the most popular vendor systems highlighting the features of each as they would relate to practical deployments, and noting differences between the systems.

Assigned Institution: Columbia University

Team Lead(s):

David Vawdrey, PhD, Columbia University

Bob Sideli, MD, Columbia University and Columbia-Presbyterian Medical Center

Team Members:

Sarah Collins, PhD (Content Specialist)

Rita Kukafka, Dr.Ph (Principal Investigator)

Syncia Sabain, EdD (Project Manager)

Michael Buck, PhD, New York City Department of Health and Mental Hygiene (NYCDHMH)

Lynda Carlson, BMCC (Content Specialist)

Madhabi Chatterji, PhD (Curriculum Developer)

John Allegrante, PhD (Curriculum Developer)

John Zimmerman, DDS (Instructional Design Specialist)

Cindy Smalletz, MS (Instructional Design Specialist)

Component Objectives:

Upon completion of this component, the student will be able to:

1. Assess and compare common commercial Electronic Health Record (EHR) systems using KLAS ratings in training and organizational decision-making contexts.
2. Apply Certification Commission for Health Information Technology (CCHIT), meaningful use, Joint Commission and National Patient Safety Goals to decisions about

commercial EHR vendor selection, when given typical workplace scenarios.

3. Evaluate key factors (costs of an EHR, including capital, licensing, maintenance and staffing, and stakeholder needs) into workplace decisions for selecting vendor-specific systems

4. Analyze the functionality of a vendor EHR system, given a set of user needs

5. Compare database architectures employed by different vendor applications to evaluate how these impact performance and extensibility

6. Evaluate EHR systems based on vendor strategies for terminology management, knowledge management and data exchange

7. Compare decision support capabilities and customizability, given different vendor EHRs

8. Evaluate training and go-live strategies of different EHR vendors in terms of impact on cost, workflow, and patient safety.

Component Units with Objectives and Topics

Unit 3:

How do organizations select an EHR? Lessons from the front lines

Description:

Evaluate key factors (costs of an EHR, including capital, licensing, maintenance and staffing, and stakeholder needs) into workplace decisions for selecting vendor-specific systems.

Objectives:

Students will be able to:

1. Demonstrate concept knowledge of the RFP process
2. Identify the key stakeholders involved in EHR selection and the roles they each play
3. Identify and give examples of the categories of project costs when selecting vendor-specific EHR systems
4. Analyze the financial components that strengthen an EHR vendor
5. Identify the key steps in the selection process for choosing a vendor HER

Topics:

- A. RFP process
- B. Stakeholders involved
- C. Cost (capital, licensing, maintenance, staffing)
- D. Financial strength of vendor

Unit 4:

Electronic Health Record (HER) Functionality

Description:

Analyze the functionality of a vendor EHR system, given a set of user needs.

Objectives:

Students will be able to:

1. Describe EHR functionality of Results Review
2. Describe the EHR functionality of Computerized Provider Order Entry (CPOE)
3. Describe the EHR functionality of Documentation
4. Describe the EHR functionality of Messaging among different vendor systems
5. Describe the procedures for billing supported by EHR vendor systems.

Topics:

- A. Results Review
- B. Computerized Provider Order Entry (CPOE)
- C. Documentation
- D. Messaging



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HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 15

Component Name: Usability and Human Factors

Component Description: Discussion of rapid prototyping, user-centered design and evaluation, usability; understanding effects of new technology and workflow on downstream processes; facilitation of a unit-wide focus group or simulation.

Assigned Institution: Columbia University

Team Lead(s):

Dave Kaufman, PhD, Columbia University

Team Members:

Yalini Senathirajah, PhD (Content Specialist)

Olena Mamykina, Columbia University (Content Specialist)

Rita Kukafka, DrPH (Principal Investigator)

Syncia Sabain, EdD (Program Manager)

Lynda Carlson, BMCC (Content Specialist)

Madhabi Chatterji, PhD (Curriculum Developer)

John Allegrante, PhD (Curriculum Developer)

John Zimmerman, DDS (Instructional Design Specialist)

Cindy Smalletz, (Instructional Design Specialist)

Component Objectives:

Upon completion of this component, the student will be able to:

1. Articulate a systems approach to usability and human factors as it applies to health information technology.
2. Explain the cognitive consequences of health information technology on clinical performance.
3. Identify the consequences of suboptimal design in the delivery of healthcare.
4. Apply methods of cognitive research, sources of usability evidence, and principles of

user-centered design to decisions regarding systems evaluation, technology evaluation, and iterative design, given a population of users.

5. Apply requirements engineering methods to inform design and technology selection.

6. Demonstrate concept knowledge of cognition and human performance models in their relevance to systems evaluation methods.

7. Apply concept knowledge of cognitive, physical and organization ergonomics to human factors engineering.

8. Select the most appropriate usability evaluation method, given particular system, setting, and development phase.

9. Apply principles of usability and design to critiquing EHR systems and to making recommendations for iterative improvement.

10. Diagnose problems associated with a clinical decision support system.

11. Apply cognitive methods of analysis to medical device testing.

12. Evaluate user interface designs using cognitive methods of analysis, usability testing, and Nielsen's heuristic evaluation method.

13. Diagnose various types of error and create or select potential solutions.

14. Select appropriate technology input methods given different technology uses, user populations and contexts.

15. Describe how information visualization can support and enhance the representation of trends and aggregate data.

16. Describe the role of mobile and ubiquitous computing in healthcare.

Component Units with Objectives and Topics

Unit 4:

Human factors and healthcare

Description:

Apply concept knowledge of human factors to the evaluation of systems-design and the study of human errors and patient safety.

Objectives:

Students will be able to:

1. Distinguish between human factors and human computer interactions (HCI) as they apply to usability
2. Explain how cognitive, physical and organization ergonomics can be applied to human factors engineering
3. Describe how the concepts of mental workload, selective attention and information overload affect usability
4. Describe the different dimensions of the concept of human error
5. Describe a systems-centered approach to error and patient safety
6. Apply methods for measuring mental workload and information overload
7. Describe how human factors analysis can be applied to the study of medical devices

Topics:

- A. Introduction to human factors engineering

- B. Cognitive, physical and organization ergonomics
- C. Mental workload
- D. Selective attention and information overload
- E. The nature of human error and patient safety

HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 16

Component Title: Professionalism/Customer Service in the Health Environment

Component Description: This component develops the skills necessary to communicate effectively across the full range of roles that will be encountered in healthcare and public health settings.

Assigned Institution: University of Alabama at Birmingham

Team Lead(s): Beth L. Elias, PhD, MS, UAB

Team Members:

Beth L. Elias, PhD, MS, UAB (Curriculum Developer)

Darrell Burke, PhD, UAB (Curriculum Developer)

Stephen J. O'Connor, PhD, FACHE, UAB (Curriculum Developer)

Robert Weech-Maldonado, MBA, PhD, UAB (Curriculum Developer)

Feliciano Yu, Jr., MD, MSHI, MSPH, Washington University School of Medicine
(Curriculum Developer)

Workforce Roles:

- Implementation Manager
- Practice Workflow and Information Management Technology Specialist
- Technical/Software Support
- Trainer

Component Objectives:

At the completion of this component, the student will be able to:

1. Explain key elements of customer service in health IT.
2. Demonstrate appropriate behaviors in simulations of health IT customer service.
3. Demonstrate effective written and oral communication approaches to common communication interactions.
4. Identify core elements of effective communication and techniques to resolve conflicts.
5. Identify ethical and cultural aspects of communication.

Component Units with Objectives and Topics

Unit 1: Customer Service in Healthcare IT

Description:

This unit describes Customer Service in Healthcare IT.

Objectives:

1. Describe the definitions of customer service.
2. Identify customers' needs based on context.
3. Discuss different metrics to measure customer service in Healthcare IT.

Topics:

- 1a.1 Customer Service in Healthcare IT, Definitions of Customers and Customer Service
- 1a.2 What is customer service?
- 1a.3 A service culture
- 1a.4 Who are healthcare IT customers?
- 1a.5 What do customers want?
- 1b.1 Customer Service in Healthcare IT, Measurement Challenges in Customer Service
- 1b.2 The challenge
- 1b.3 EHR customer service implementation success factors
- 1b.4 Meaningful use perspective
- 1b.5 Balancing customer demands

Unit 3: Overview of Communication Relevant to Health IT

Description:

This unit describes the Overview of Communication Relevant to Health IT.

Objectives:

1. Explain the purpose and goal of professional communication.
2. Describe what is meant by effective communication.
3. Discuss what is meant by ineffective communication.
4. Identify communication needs of common roles in healthcare.
5. Describe Disability Etiquette's contribution to professional communication.

Topics:

- 3.1 Overview of communication relevant to Health IT
- 3.2 Unit 3: Objectives
- 3.3 Professional communication: purpose and goal
- 3.4 Effective communication
- 3.5 Ineffective communication
- 3.6 Communication and healthcare roles
- 3.7 Description of different professional roles in healthcare
- 3.8 Communication guidelines: face-to-face, electronic, phone
- 3.9 Disability etiquette and professional communication

3.10 Summary

Unit 4: Key Elements of Effective Communication

Description:

This unit describes Key elements of effective communication.

Objectives:

1. Discuss the definition of communication.
2. Discuss assumptions used in communication.
3. Discuss the communication models from general to health-specific.
4. Discuss variables used in communication.
5. Define nonverbal communications.
6. Describe how nonverbal communication functions in the human communication process.
7. Describe specific dimensions and give examples of nonverbal communication.
8. Discuss communication in paper-based and electronic formats.
9. Discuss personal communication in the work setting.
10. Understand the importance of listening skills.
11. Understand the role of diversity.

Topics:

- 4a.1 Lecture 1, Key elements of effective communication, verbal communication
- 4a.2 Learning objectives
- 4a.3 Communication defined
- 4a.4 Assumptions of human communication
- 4a.5 Communication models
- 4a.6 Common health-specific communication models
- 4a.7 HIT communication
- 4a.8 Communication variables in healthcare
- 4a.9 Summary
- 4b.1 Lecture 2, Key elements of effective communication, nonverbal communication
- 4b.2 Nonverbal communication
- 4b.3 Learning objectives
- 4b.4 Nonverbal communication defined
- 4b.5 Importance of nonverbal communication
- 4b.6 Functions of nonverbal communication
- 4b.7 Dimensions of nonverbal communication
- 4b.8 Components of kinesics
- 4b.9 Components of proxemics
- 4b.10 Components of paralinguistics
- 4b.11 Summary
- 4c.1 Lecture 3, Key elements of effective communication, using media for communication
- 4c.2 Using media for communication

Unit 5: Regulatory Issues: HIPAA and Standard Precautions

Description:

This unit describes Regulatory Issues: Standard Precautions and HIPAA.

Objectives:

1. Characterize the importance of and guidelines associated with infection control.
2. Relate protecting yourself and others with standard precautions.
3. Explain HIPAA and communication.

Topics:

- 5.1 Regulatory issues: HIPAA and standard precautions
- 5.2 Infection control
- 5.3 Standard precautions
- 5.4 HIPAA
- 5.5 Important components of HIPAA
- 5.6 HIPAA and communication
- 5.7 Guidelines for communication
- 5.8 Summary

Unit 8: Ethical and Cultural Issues Related to Communication and Customer Service

Description:

This unit describes Ethical and Cultural Issues Related to Communication and Customer Service.

Objectives:

1. Characterize dimensions of ethics.
2. Identify major characteristics of culture.
3. Distinguish elements in intercultural communication.
4. Perform effective intercultural communication.

Topics:

- 8a.1 Lecture 1: Ethical Issues
- 8a.2 Learning objectives
- 8a.3 What are ethics?
- 8a.4 Approaches in ethical decision making
- 8a.5 Medical ethics committees
- 8a.6 Ethics and cultural issues related to communication
- 8a.7 Summary
- 8b.1 Lecture 2: Cultural Issues
- 8b.2 Learning objectives
- 8b.2 Diversity and healthcare
- 8b.3 Diversity and cultural differences
- 8b.4 Dimensions of diversity

- 8b.5 Potential benefits of workforce diversity
- 8b.6 Ethnocentrism and intercultural relationships
- 8b.7 Cultural differences that may affect communication
- 8b.8 Equal Employment Opportunity laws
- 8b.9 Implications of diversity for healthcare delivery
- 8b.10 Cultural competency
- 8b.11 Summary

HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 17

Component Name: Working in Teams

Component Description: An experiential course that helps trainees become “team players” by understanding their roles, the importance of communication, and group cohesion.

Assigned Institution: Johns Hopkins University

Team Lead(s): Pamela R. Jeffries DNS, RN, FAAN, ANEF, JHU, School of Nursing
Rick Milter, PhD, The Johns Hopkins Carey Business School

Team Members: Dawn Kemp, RN, MBA, Johns Hopkins Hospital
Diane Hawkins, BA, COTA/L, Community College of Baltimore County

Workforce Roles: Implementation Managers

Component Objectives:

At the completion of this component, the student will be able to:

1. Establish and monitor ground rules, or rules of engagement, that serve as behavioral guidelines for members of teams involved in HIT.
2. Develop an HIT action plan that can be easily adapted to changing situations, environments, and goals across a variety of health and healthcare settings.
3. Communicate a clearly articulated position in writing and speech.
4. Incorporate diversity in values, critical thinking, and judgments that amplifies the best of individual performance toward the HIT team mission.
5. Provide leadership for continuous assessment and learning on practices, processes, and outcomes of the HIT team mission.

Develop a sustaining framework that maximizes the integrated power of teams while recognizing excellence in individual performance of various stakeholders involved in HIT (patients, families, communities, nation, etc.).

Component Units with Objectives and Topics

Unit 5: Leveraging Integration Techniques: Power of HIT Team Dynamics

Description: This unit will discuss techniques for team members to problem solve within their teams so the team can be more effective. Activities will include how to conduct a SWOT analysis and mind maps within this component. Different activities described within the module will be differentiated between team or individual task. Activities will include a SWOT analysis of a case-based team and other experiential activities associated with team tasks and specific roles within the team.

Objectives:

1. Use problem-solving techniques (mind maps, SWOT analysis, swim lanes, fish bone diagrams) when developing teams.
2. Differentiate between a team task and an individual task.
3. Demonstrate a practical understanding of dimensions of team formation and management.

Topics:

- 5.1 – Problem-solving Techniques
- 5.2 – Team task versus Individual Task

HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 18

Component Title: Planning, Management and Leadership for Health IT

Component Description: This component targets those preparing for leadership roles, principles of leadership and effective management of teams. Emphasis on the leadership modes and styles best suited to IT deployment.

Assigned Institution: University of Alabama at Birmingham

Team Lead(s): Amanda Dorsey, MSHI, UAB

Team Members:

Meg N Bruck, MSHI, UAB (Curriculum Developer)

Amanda Dorsey, MSHI, UAB (Curriculum Developer)

David Friday, MSHI, UAB (Curriculum Developer)

Sherrilynne Fuller, PhD, University of Washington School of Medicine/Information School (Curriculum Developer)

Stephen J. O'Connor, PhD, FACHE, UAB (Curriculum Developer)

Pamela E. Paustian, PhD, RHIA, UAB (Curriculum Developer)

Workforce Roles:

- Clinician/Practitioner Consultant
- Implementation Manager

Component Objectives:

At the completion of this component, the student will be able to:

10.1 Explain leadership traits and theories

11. Recognize leadership's role in IT and EHR project success and project failure

12. Describe importance of effective leadership of teams

13. Demonstrate team leadership competencies.

Component Units with Objectives and Topics

Unit 1: Introduction to Leadership

Description:

This unit describes leadership styles and theories of leadership.

Objectives:

1. Define leadership
2. Distinguish between leadership styles in the Blake and Mouton's Managerial Grid
3. Define and describe classic leadership theories
4. Describe characteristics of classic leaders

Topics:

- 1a.1 What is Leadership
- 1a.2 Leadership Values
- 1a.3 Employee and Production Centered Leaders
- 1a.4 Blake and Mouton's Managerial Grid
- 1b.1 Transformational Leadership
- 1b.2 Transactional Leadership
- 1b.3 Charismatic Leadership
- 1b.4 Visionary Leadership
- 1b.5 Servant Leadership

Unit 2: The Management and Leadership Distinction**Description:**

This unit describes the management and leadership distinction.

Objectives:

1. Compare and contrast concepts of leadership and management
2. Describe the concept and importance of developing followership
3. Discuss challenges of leading in a hybrid HIT organization
4. Define and discuss the Project Management Institute's (PMI) three types of organizations
5. Discuss pros and cons of temporary leadership

Topics:

- 2a.1 The management and leadership distinction
- 2a.2 Leaders and followers
- 2a.3 Leader and follower collaboration
- 2b.1 Leadership challenges in the HIT environment
- 2b.2 PMI Organization types
- 2b.3 Leading in a hybrid organization
- 2b.4 Temporary Leadership

Unit 4: Effective and Ineffective Leaders

Description:

This unit describes the traits of effective and ineffective leaders.

Objectives:

1. Describe the common traits of effective leaders
2. Describe skills needed in order for HIT leaders to be effective
3. Describe the common traits of ineffective leaders
4. Distinguish between de-motivating and motivating leaders
5. Discuss ineffective leadership's role on stress in the work environment

Topics:

- 4a.1 Effective leaders
- 4a.2 Leadership challenges in the healthcare landscape
- 4a.3 The evolving role of healthcare IT leaders
- 4a.4 Traits of effective healthcare IT leaders
- 4a.5 Challenges of the new leader
- 4b.1 De-motivating and motivating leadership styles
- 4b.2 Ten traits and habits of ineffective leaders

Unit 5: Overview of the IT Strategic Planning Process**Description:**

This unit provides a high level of overview of the IT Strategic Planning Process.

Objectives:

1. Describe the importance of an Information Technology Strategic Plan.
2. Describe a typical IT Planning scenario.
3. Describe the importance of prioritizing HIT goals.
4. List common pitfalls in prioritizing IT investments.
5. Recognize common IT governance structures.

Topics:

- 5a.1 What is an IT Plan?
- 5a.2 Why is IT alignment difficult?
- 5a.3 Aligning the IT Plan with Organizational Goals
- 5b.1 Existing IT projects vs. new EHR implementation
- 5b.2 IT Governance structures
- 5b.3 Best of breed vs. single system

Unit 7: Team and Small Group Communication

(All materials for this unit are the same as those for Component 16/Unit 6)

Description:

This unit describes Team and Small Group Communication.

Objectives:

1. Explore the phenomena of teams in our culture and look at the popularity and necessity of teams in delivering quality healthcare services
2. Define a team as compared to a group
3. Identify the stages of team development
4. Identify the characteristics of successful teams and team members
5. Analyze team conflict and performance
6. Define what we mean by virtual teams
7. Explore the guidelines for building and leading successful teams

Topics:

- 7a.1 Lecture 1: Characteristics of Teams and Small Groups
- 7a.2 Learning objectives
- 7a.3 Teamwork is essential to healthcare
- 7a.4 Benefits of teams
- 7a.5 Distinguishing teams from groups
- 7a.6 Stages of team development
- 7a.7 Characteristics of successful teams
- 7a.8 Summary
- 7b.1 Lecture 2: Managing Teams
- 7b.2 Teams in healthcare
- 7b.3 Being a “team player”
- 7b.4 Team conflict and performance
- 7b.5 Virtual teams
- 7b.6 Team building and leadership
- 7b.7 Summary

Unit 8: Conflict Resolution

(All materials for this unit are the same as those for Component 16/Unit 7)

Description:

This unit describes Handling Conflict.

Objectives:

1. Define conflict.
2. Explore historical views of conflict
3. Explore conflict as a positive/negative force
4. Study various styles for handling conflict.
5. Review ways to promote positive conflict in a group.

Topics:

- 8a.1 Lecture 1: Definitions of Conflict
- 8a.2 Conflict defined
- 8a.3 Healthcare context
- 8a.4 Transitions in ideas about conflict

- 8a.5 Conflict good and bad
- 8a.6 Types of conflict
- 8a.7 Conflict resolution
- 8a.8 Summary
- 8b.1 Lecture 2: Managing Conflict
- 8b.2 Handling conflict
- 8b.3 Conflict handling styles
- 8b.4 Individual preferences in conflict situations
- 8b.5 Conflict intensity continuum
- 8b.6 Results of conflict
- 8b.7 Promoting positive conflict
- 8b.8 Summary

Unit 9: Purchasing and Contracting

Description:

This unit describes Purchasing and Contracting.

Objectives:

1. Understand the process for gathering a team to negotiate a contract
2. Understand the need for documenting contract goals and objectives
3. Understand the purpose of a contract and how to participate in negotiation.

Topics:

- 9c.1 Negotiation Team Composition
- 9c.2 Managing Vendor Relationships
- 9c.3 Defining Your Game Plan
- 9c.4 Dual and Single Threaded Negotiation Strategies
- 9c.5 Contracts 101
- 9c.6 Using Consultants

HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 19

Component Name: Introduction to Project Management

Component Description: An understanding of project management tools and techniques that results in the ability to create and follow a project management plan.

Assigned Institution: Johns Hopkins University

Team Lead(s): William Agresti, PhD, Johns Hopkins Carey Business School
Theron Feist, MS, JHU, School of Nursing

Team Members: James Smith, RN, MSITS, Johns Hopkins Hospital
Mary McNally, PMP, Harford Community College, Gabrielle Haskins, PMP

Workforce Roles: Implementation Managers

Component Objectives

Upon completion of this component, the student will be able to:

- Describe factors that are critical to project success.
- Develop a comprehensive project management plan.
- Define project scope that reflects stakeholder perspectives and project requirements.
- Prepare an effective work breakdown structure.
- Differentiate project life cycle models based on project characteristics.
- Develop estimates for project cost and schedule.
- Apply tools and techniques to manage project scope, time, and budget.
- Plan and implement effective communications with the project team and stakeholders.
- Differentiate roles of project team members.
- Select and apply appropriate tools and techniques for risk management, quality management, and change management.

Component Units with Objectives and Topics

Unit 1: Overview of Health IT Projects

Description: Students will receive a broad overview of project management including some distinctive characteristics of health IT projects. This unit includes several real scenarios to illustrate the diversity of projects in health IT.

Objectives:

1. Review the history of project management.
2. Define what a project is.
3. Define project management.
4. Identify reasons that more organizations are implementing HIT projects.
5. Identify key characteristics for project success and failure.
6. Describe the range and characteristics of health IT projects.

Topics:

- 1.1 - Health IT Scenarios
- 1.2 - What Is Project Management?
- 1.3 - Reasons for Projects
- 1.4 - Role of the Project Manager
- 1.5 - Reasons Success/Failure

Unit 2: Project Life Cycles

Description: This unit provides an overview of various project life cycles so that students can assess their appropriateness for use depending on characteristics of a project. Students examine processes, knowledge areas, and organizational influences that are critical to successful project management.

Objectives:

1. Identify process groups and knowledge areas used in project management
2. Differentiate linear, iterative, adaptive, and agile project life cycles
3. Relate life cycle phases to reviews, milestones, and deliverables
4. Compare various organizational structures as contexts for managing projects

Topics:

- 2.1 – Project Management Elements
- 2.2 – Life Cycles
- 2.3 – Phases
- 2.4 – Organizations

Unit 3: Project Selection and Initiation

Description: Students learn what is necessary to get projects off to a strong start. Critical activities are to prepare a project charter and to identify and engage the project stakeholders.

Objectives:

1. Identify the key elements of a project environment and HIT landscape.
2. Outline the needs for projects, how and why they are selected and initiated.

3. Construct a project charter.
4. Identify project stakeholders.
5. Generate a stakeholder register.

Topics:

- 3.1 – Project Initiation
- 3.2 – Project Charter
- 3.3 – Stakeholders & Stakeholder Register

Unit 4: Project Planning Overview

Description: In this unit, students will learn how to effectively plan projects and to develop a project management plan. Several key documentation components will be introduced.

Objectives:

1. Identify the importance and purpose of effective planning.
2. Identify and describe each component of the project management plan.
3. Define and prepare project planning documents.

Topics:

- 4.1 - Project Management
- 4.2 - Project Management Processes and Groups
- 4.3 - Planning a Project
- 4.4 - Project Planning Processes

Unit 5: Managing Project Scope

Description: This unit addresses a critical determinant of project success: defining and managing the scope of the project. Students learn the importance of eliciting stakeholder requirements and developing effective work breakdown structures.

Objectives:

1. Analyze scope to develop the project scope statement.
2. Elicit stakeholder requirements for the project.
3. Create a Work Breakdown Structure (WBS).

Topics:

- 5.1 – Project Scope
- 5.2 – Stakeholder Requirements
- 5.3 – Work Breakdown Structure

Unit 6: Managing Project Time, Cost, and Procurements

Description: In this unit, students will gain an understanding of how to manage project schedules and spending. The unit will cover broad topics such as purchasing, procurement, cost estimation and scheduling.

Objectives:

1. Define project management time activities.

2. Define project cost management activities.
3. Define project procurement activities.

Topics:

- 6.1 – Define activities and project schedule
- 6.2 – Develop estimates for project cost and budget
- 6.3 – Evaluate make or buy decisions
- 6.4 – Develop a procurement plan

Unit 7: Managing Project Risk

Description: A key to successful health IT projects is the pro-active management of risks: beginning with the preparation of a risk management plan. Risk management will be a continuing activity throughout the project, to identify risks and to plan and implement risk responses.

Objectives:

1. Assess project risks
2. Plan project responses
3. Prepare and maintain a risk register, and
4. Develop and execute a risk management plan

Topics:

- 7.1 – Managing Project Risk
- 7.2 – Risk Management Processes
- 7.3 – Risk Management Plan

Unit 10: Quality Management

Description: Quality is an elusive but essential component and consideration in any project. This unit will cover quality management planning and key characteristics of quality assurance and its impact on project management.

Objectives:

1. Develop a quality management plan
2. Perform quality assurance
3. Apply quality tools

Topics:

- 10.1 – Total Quality Management Theory
- 10.2 – Quality Culture
- 10.3 – Quality Tools
- 10.4 – Quality Management Plan

Unit 11: Project Closure and Transition

Description: It is essential that project managers know all the processes required to bring a project to a successful conclusion. Key steps include completing all deliverables

on time, gaining customer acceptance, documenting the project lessons learned, and managing the transition to operations.

Objectives:

4. Bring project activities to a close.
5. Conclude the customer acceptance process.
6. Document and archive lessons learned.
7. Update and close out project documents.
8. Manage transition to operations.

Topics:

- 11.1 – Project Closure and Transition



Curriculum Development Centers Program

Awardee of The Office of the National Coordinator for
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HEALTH IT WORKFORCE CURRICULUM COMPONENT BLUEPRINT Version 3.0/Spring 2012

Component Number: 20

Component Name: Training and Instructional Design

Component Description: Overview of learning management systems, instructional design software tools, teaching techniques and strategies, evaluation of learner competencies, maintenance of training records, and measurement of training program effectiveness.

Assigned Institution: Columbia University

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Component Objectives:

Upon completion of this component, the student will be able to:

1. Plan, design, develop (produce), deliver, and evaluate technology-based instruction according to sound instructional design models and principles.
2. Describe the training cycle by the Instructional Systems Design method and the phases of the ADDIE model of instruction design given a population of adult learners.
3. Plan and implement an instructional needs assessment given a specific population of users in a health care setting.
4. Construct a lesson plan using appropriate instructional methods and approaches,

given a specific population of learners.

5. Construct an instructional product (simple online tutorial) using the appropriate media based instructional method, such as customized images, customized video (e.g., EHR screen captures).

6. Create a custom PowerPoint presentation using the principles of effective PowerPoint design given a particular training program.

7. Demonstrate effective public speaking skills and proper operation of computer and AV equipment for a multimedia presentation, given a set of user needs.

8. Plan and conduct student assessment and program evaluation given different population contexts.

9. Design a training program in LMS that adhere to the standards and open source initiatives in online learning.

10. Select and implement Web 2.0 technologies as instructional technologies given a specific platform and training program.

Component Units with Objectives and Topics

Unit 1:

Introduction to Training and Adult Learning

Description:

Apply the Instructional Systems Design method and the phases of the ADDIE model of instruction design, to a given population of adult learners.

Objectives:

Students will be able to:

1. Define the levels of learning per Bloom's Taxonomic Domains (Cognitive, Affective, and Psychomotor)
2. Describe the characteristics of adult learners and factors that could impact training design and learning outcomes.
3. Describe the recommended training cycle of the Instructional Systems Design method
4. Describe the five phases of the ADDIE model of instruction design.

Topics:

- A. Training Introduction
- B. Roles & Competencies of Trainers
- C. Cone of Learning
- D. Principles of Adult Learning
- E. Knowle's Principles of Adult Learning
- F. Bloom's Taxonomy
- G. Knowledge, Skills & Attitudes (KSA)
- H. Analysis, Design, Development, Implementation & Evaluation Model (ADDIE)

Unit 2:

Needs Analysis

Description:

Plan and implement an instructional needs assessment, given a specific population of users in a health care setting.

Objectives:

Students will be able to:

1. Identify an instructional design problem for a given group of learners and a training setting.
2. List a range of useful data collection methods for conducting needs assessments in healthcare settings.
3. Identify the principles of the planning and implementation process of an instructional needs assessment in a health organization setting.
4. Analyze learner, task, and situational characteristics.
5. Recognize the special training needs and constraints in a health care setting [such as, time constraints and work pressures, resistance to change, impact of system on work flow and patient care, security requirements for EHRs, etc.]
6. Project instruction plans based on data gathered from a needs assessment.

Topics:

- A. Assessing the training/learning needs of the organization and individual learners
- B. Basic computer literacy as well as EHR, security and confidentiality, classroom training/tutoring/helpdesk support
- C. Understanding your students – recognize the special needs and constraints of training users in a health care setting
- D. Time constraints and work pressures, resistance to change, impact of system on work flow and patient care, train-the-trainer programs
- E. Data Collection

Unit 3:**Creating a Lesson Plan****Description:**

Construct a lesson plan using appropriate instructional methods and approaches, given a specific population of learners.

Objectives:

Students will be able to:

1. Write measurable goals and learning objectives for a training program which meet the SMART criteria (Specific, Measurable, Attainable, Relevant, Time-bound)
2. Write specific learning objectives based on Bloom's Taxonomy, classifying learning from the simplest to the most complex levels.
3. Write learning objectives that are tied to needs analysis and outcomes
4. Select appropriate activities for training objectives
5. Identify the appropriate instructional approaches tied to a needs analysis, situational characteristics, and subject matter domain when designing a lesson plan.

Topics:

- A. Defining Instructional Goals
- B. Writing Good Learning Objectives that are tied to Needs Analysis and Outcomes
- C. Creating and Customizing Content
- D. Instructional Approaches

Lectures – classroom and online

Cases-based learning, simulations and other active learning pedagogies

Tutoring or solo training

Unit 4:**Selecting and Working with Media****Description:**

Construct an instructional product (simple online tutorial) using appropriate media, such as customized images, customized video (e.g., EHR screen captures).

Objectives:

Students will be able to:

1. Select appropriate instructional media for a given lesson plan and objectives/goals.
2. Select and customize images to embed in training materials
3. Select and customize video (e.g., EHR screen captures) to embed in training materials
4. Design simple online tutorials using screen capture software

Topics:

A. Text – desktop publishing, creating handouts and web content

B. Images – working with graphics and photographs to enhance learning

C. Video and Audio – use simple editing programs and publish content to online environment

D. Interactive Media – create simple online tutorials using screen capture software

Unit 5:**Building & Delivering Effective PowerPoint Presentation****Description:**

Create a custom PowerPoint presentation using the principles of effective PowerPoint design, given a particular training program and learner population.

Objectives:

Students will be able to:

1. Construct a script or storyboard for a presentation
2. Design a custom slide background for a training program
3. Demonstrate the appropriate use of color and text in a presentation
4. Embed graphics and video in a presentation

5. Demonstrate the appropriate use of 'builds' and 'actions'.
6. Use the PowerPoint graph and chart functions for designing instructional materials.
7. Assess the training environment
8. Modify a presentation to compensate for presentation constraints
9. Demonstrate effective public speaking skills
10. Operate necessary computer and AV equipment to make an effective multimedia presentation

Topics:

- A. Design guidelines for PowerPoint stacks
- B. Scripting and Storyboarding
- C. The Utilization of Color and Text in PowerPoint Presentations
- D. The Utilization of Text in PowerPoint Presentations
- E. The Appropriate Utilization of Multimedia in PowerPoint Presentations
- F. Slide Frame Layout, Format Design, Color, Text Styles and Size
- G. Graphs and Charts
- H. Embedding Media and Actions