Curriculum Development Centers Program

Awardee of The Office of the National Coordinator for Health Information Technology

HEALTH IT WORKFORCE CURRICULUM
COMPONENT BLUEPRINT
Version 3.0/Spring 2012

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)

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

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 1: What is Health Informatics?

Description: Lecture a defines information management, information technology, and informatics, describe the fundamental theorem of informatics, explains the meaning of biomedical and health informatics as a field of study, and offers definitions of the major biomedical informatics areas of applications. It also provides an overview of informatics drivers and trends in the health care field. Lecture b defines the informatics team, their skills, roles and responsibilities, and identifies how health informaticians process data into information and knowledge for health care tasks with the support of information technology to improve patient care.

Objectives:

1. Define information management, information system (technology) and informatics
2. Explain the basic theoretical concept that underlies informatics practice
3. Define the meaning of biomedical and health informatics as a field of study
4. Describe the biomedical informatics areas of applications
5. Summarize the informatics drivers and trends
6. State the professional roles and skills of health informaticians
7. Identify how health informaticians process data into information and knowledge for health care tasks with the support of information technology to improve patient care

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

Topics:

1. Introduction to Health Informatics
2. Roles and Skills of Health Informaticians

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
4. Examine the challenges presented by emerging trends in information technology, social media, and global communications
5. Discuss the advantages and disadvantages of using the Internet as a platform for health care applications

Topics:

1. Introduction to Health Information Systems
2. Emerging Trends in Health Information Technology

Unit 3: Electronic Health Records

Description: Lecture a defines an electronic medical record (EMR) and electronic health record (EHR) and explains their similarities and differences, identifies attributes and functions of an EHR, discusses the issues surrounding EHR adoption and implementation, and describes the impact of EHRs on patient care. Lecture b links EHRs to the Health Information Exchange (HIE) and the Nationwide Health Information Network (NHIN) initiatives, discusses how HIE and NHIN impact health care delivery and the practice of health care providers, summarizes the governmental efforts related to EHR systems including meaningful use of interoperable health information technology and a qualified EHR, describes the Institute of Medicine's vision of a health

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

care system and its possible impact on health management information systems, and lists examples of the effects of developments in bioinformatics on health information systems.

Objectives:

1. State the similarities and differences between an electronic medical record (EMR) and electronic health record (EHR)
2. Identify attributes and functions of an EHR
3. Describe the perspectives of health care providers and the public regarding acceptance of or issues with an EHR, which can serve as facilitators of or major barriers to its adoption
4. Explain how the use of an EHR can affect patient care safety, efficiency of care practices, and patient outcomes
5. Discuss how Health Information Exchange (HIE) and Nationwide Health Information Network (NHIN) impact health care delivery and the practice of health care providers
6. Outline issues regarding governmental regulation of EHR systems, such as meaningful use of interoperable health information technology and a qualified EHR
7. Summarize how the Institute of Medicine's *Vision for 21st Century Health Care and Wellness* may impact health management information systems
8. Identify how ongoing developments in biomedical informatics can affect future uses and challenges related to health information systems

Topics:

1. Introduction to Electronic Health Records
2. External Influences

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

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

Topics:

1. Introduction to CPOE
2. Aspects of CPOE

Unit 5: Clinical Decision Support Systems

Description: Lecture a will offer a definition of clinical decision support, provide some historical context surrounding clinical decision support, describe the requirements of a clinical decision support system, and discuss the relationship of clinical practice guidelines and evidence-based practice to clinical decision support systems. Lecture b will identify the challenges and barriers in building and using clinical decision support systems, explain how legal and regulatory technologies may affect their use, and introduce the future directions for clinical decision support systems.

Objectives:

1. Describe the history and evolution of clinical decision support
2. Describe the fundamental requirements of effective clinical decision support systems
3. Discuss how clinical practice guidelines and evidence-based practice affect clinical decision support systems
4. Identify the challenges and barriers to building and using clinical decision support systems
5. Discuss legal and regulatory considerations related to the distribution of clinical decision support systems
6. Describe current initiatives that will impact the future and effectiveness of clinical decision support systems

Topics:

1. Introduction to Clinical Decision Support
2. Perspectives on Clinical Decision Support

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.

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

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:

1. Introduction to Patient Monitoring Systems
2. 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:

1. 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

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

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:

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

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.