Curriculum Development Centers Program

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

HEALTH IT WORKFORCE CURRICULUM
COMPONENT BLUEPRINT
Version 2.0/Spring 2011

Component Number: 6
Component Name: Health Management Information Systems

Component Description (from FOA): 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: Pitt Community College
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Workforce Roles:
- Practice workflow and information management redesign specialist (primary component)
- Clinician/practitioner consultants (primary component)
- Implementation support specialists (secondary component)
- Implementation managers (secondary component)
- Technical/software support staff (secondary component)
- Trainers (primary 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.

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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.
7. Outline the hardware, software, operating system and networking considerations necessary for effective data storage and use in health care organizations.

Component Units with Objectives and Topics

Unit 6-1 What is Health Informatics?:
Description:
Unit 6-1 defines information management, information technology, and informatics, describes the fundamental theorem of informatics, explains the meaning of biomedical and health informatics as a field of study, offers definitions of the major biomedical informatics areas of applications, and provides an overview of informatics drivers and trends. In addition, this unit 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 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.

Topics:
1.0– Definitions of information management, information technology, and informatics
2.0– Fundamental theorem of informatics
3.0– Meaning of biomedical and health informatics as a field of study
4.0– Major biomedical informatics areas of application
5.0– Overview of informatics drivers and trends
6.0– Informatics team
7.0– Informatician skills, roles and responsibilities

Unit 6-2 Hardware and Software Supporting Health Information Systems:
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Unit 6-2 explains the major hardware and software components used in computer systems, describes the types of network configurations, defines an information system and its characteristics, identifies the types of information systems that support the health care enterprise requirements, and summarizes the technologies that support health care information systems. In addition, this unit lists some challenges with the use of emerging information technology trends and discusses the advantages and disadvantages of the Internet as a platform for health care applications.

Objectives:
1. Describe the major hardware components of a computer and major types of software used in computer systems.
2. Describe major types of network configurations.
3. Define the concept of an information system in general and characteristics of an information system and a health information system in particular.
4. Describe the different types of information systems in terms of their ability to support the requirements of a health care enterprise.
5. Describe various types of technologies (e.g. medication administration systems/bar-coding, chart tracking, patient databases) that support health care information systems.
6. Examine 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.
7. Discuss the advantages and disadvantages of using the Internet as a platform for health care applications.

Topics:
1.0– Major hardware and software components used in computer systems
2.0– Types of network configurations
3.0– What is an information system? What are its characteristics?
4.0– Types of information systems that support the health care enterprise requirements
5.0 - The technologies that support health care information systems
6.0– Challenges with the use of emerging information technology trends
7.0– Advantages and disadvantages of the Internet as a platform for health care applications

Unit 6-3 Electronic Health Records:
Description:
Unit 6-3 defines an electronic medical record (EMR) and electronic health record (EHR) and explains their similarities and differences, identifies the attributes and functions of an EHR, discusses the issues surrounding EHR adoption and implementation, and describes the impact of EHRs on patient care. In addition, this unit 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 care system and

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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 the 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:
1.0– Definitions of an electronic medical record (EMR) and electronic health record (EHR)
2.0– Identify attributes and functions of an EHR
3.0 – Industry issues surrounding EHR adoption and implementation
4.0– Impact of EHRs on patient care
5.0– Perspectives on Health Information Exchange (HIE) and the Nationwide Health Information Network (NHIN) and their impact on health care delivery and the practice of health care providers
6.0– Governmental efforts related to EHR systems including meaningful use of interoperable health information technology and a qualified EHR
7.0– Institute of Medicine's vision of the future health care system
8.0– Effects of developments in bioinformatics on health information systems

Unit 6-4 Computerized Provider Order Entry (CPOE):
Description:
Unit 6-4 defines CPOE, states the purpose of CPOE, lists attributes and functions of CPOE, and explain how CPOE is currently being used in health care. In addition, this unit 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

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2. Explain ways in which CPOE is currently being used in health care
3. Discuss the major values 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:
1.0– Purpose of CPOE
2.0– Characteristics of CPOE
3.0– Functions of CPOE
4.0– Uses of CPOE in health care
5.0– Major value of CPOE
6.0– Common barriers to CPOE adoption
7.0– Affects of CPOE on patient care safety, quality and efficiency, and patient outcomes

Unit 6-5 Clinical Decision Support Systems:
Description:
Unit 6-5 defines clinical decision support systems, provides some historical context surrounding these systems, describes the requirements of a clinical decision support system, and discusses the relationship of clinical practice guidelines and evidence-based practice to clinical decision support systems. In addition, this unit identifies challenges and barriers in building and using clinical decision support systems, explains how legal and regulatory considerations may affect their use, and introduces the future directions for clinical decision support systems.

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

Topics:
1.0– Definition of a clinical decision support system
2.0– History and evolution of clinical decision support systems
3.0– Dimensions of a clinical decision support system
4.0– Relationship of clinical practice guidelines and evidence-based practice to clinical decision support systems
5.0– Challenges and barriers in building and using clinical decision support systems
6.0– Legal and regulatory considerations that affect the use of clinical decision support systems
7.0– Future directions for clinical decision support systems

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Unit 6-6 Patient Monitoring Systems:
Description:
Unit 6-6 defines 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. In addition, this unit discusses how Telehealth supports clinical care, explains the effectiveness and economic benefit of Telehealth, and examines the role of smart technology in the home and links to health information systems.

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:
1.0– Purpose, components, and functions of patient monitoring systems
2.0– Applications of and ways in which automation can improve the quality of patient care
3.0– Advantages and disadvantages of using computers at the bedside
4.0– Integrating data from many sources
5.0 – Telehealth as a patient monitoring system
6.0 – Role of smart technology and links to health information systems for use in the home

Unit 6-7 Medical Imaging Systems:
Description:
Unit 6-7 defines 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 factors that will influence the future direction of imaging systems.

Objectives:
1. Examine the purposes, processes, and management issues related to the use of imaging systems in health care.

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2. Describe the economic and technological factors that must be addressed when considering the adoption of digital displays in radiology departments.
3. Describe the major challenges imaging systems present to health care institutions and informaticians.
4. Describe factors that will influence the future direction of imaging systems.

Topics:
1.0– Purposes, processes, and management issues
2.0– Challenges with imaging systems
3.0– Future directions

Unit 6-8 Consumer Health Informatics
Description:
Unit 6-8 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. In addition, this unit defines 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 – including the Internet – 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 for patients, health care providers, and health systems.
4. Discuss how consumerism influences the ongoing development and use of health information systems.

Topics:
1.0 – The impact of the Internet on consumer health informatics
2.0 – Current and emerging technologies affecting consumer health informatics
3.0 – Role of genomics in consumer health informatics
4.0– Definition of personal health records
5.0 – Role of PHRs and their implications within health care
6.0 – Definition of health consumerism
7.0 – Benefits of consumerism in health information systems
8.0 – Challenges of consumerism in health information systems

Unit 6-9 Administrative, Billing and Financial Systems:
Description:
Unit 6-9 examines the relationship of administrative, billing, and financial systems to the health care information system, explores health care organizations' integration strategies, identifies the critical requirements for integration of these systems with clinical information systems, and explains how automation tools need to be and are

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being integrated in health care information systems. In addition, this unit defines a master patient index or MPI and describes its core elements, reviews the current trends in establishing a national patient identifier, and discusses data analysis and trending.

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 the components integral to a Unique Patient Identifier (UPI)

Topics:
1.0– Applications that need to be integrated in health care information systems
2.0 – Health care organizations strategies to ensuring integration of clinical data collection and billing functions
3.0– Integrated billing and financial and clinical systems elements
4.0– Definition and core elements of a MPI
5.0 – Components integral to a UPI
6.0 – Data analysis and trending

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