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: 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.

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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:
1. Explain the rationale for elements of the HITECH Act in terms of the history of health IT
2. Describe the background of today's health IT landscape including EHR, HIE, CDS, applications in Public Health, relevant professional organizations
3. Describe the history of regulation of Health IT in the U.S.

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4. Describe how legislation related to privacy and security of electronic health information has evolved in the US.
5. Discuss how financial incentives for use of HIT have changed over time.

Component Units with Objectives and Topics

Unit 1: Evolution of Health IT: The Early Years

Description:
This unit describes the early years of the evolution of health IT.

Objectives:
1. Discuss the enduring values that have been foci for HIT stakeholders and how the social, educational, and professional environments in healthcare influence these values.
2. Discuss the impact of key developments in the 1950s and 1960s including Sputnik, Medicare/Medicaid legislation and medical research on healthcare.
3. Describe how medical records and the use of health information technology changed from the 1950's through the 1980's.
4. Describe some of the key informatics innovations in the 1970's and 1980's including the problem-oriented medical record, Medline, the early electronic medical records and clinical decision support systems.
5. Discuss the increasing professionalization of informaticians and HIT professionals including training programs and professional organizations.

Topics:
1a.1 Influences, goals and values of key players in healthcare and health IT
1a.2 The healthcare environment prior to 1970
1b.1 The 1970s environment
1b.2 Key informatics innovations in the 1960s and 1970s (Medline, early EHRs, medical expert systems)
1c.1 The 1980s environment
1c.2 Information systems in healthcare
1c.3 Early clinical decision support systems
1c.4 Professionalization of informatics

Unit 2: Evolution of Health IT: The Modern Era

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

Objectives:

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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 from1990-2009
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

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3b.1 “Meaningful Use” of Health IT
3b.2 Promotion of Health Information Exchange
3b.3 Strategic Health IT Advanced Research Projects

Unit 4: Evolution of Public Health Informatics

Description:
This unit describes the evolution of public health informatics.

Objectives:
1. Discuss how the sub-discipline of public health informatics has evolved over time.
2. Describe how health IT (HIT) can be used to enhance public health practice.
3. List potential ethical, social, and political issues associated with the development of HIT applications for public health purposes.

Topics:
4.1 What is public health?
4.2 What is public health informatics (PHI) and how did it evolve?
4.3 What were early PHI applications?
4.4 What are emerging and future PHI uses?

Unit 5: Evolution of Nursing Informatics and HIT Tools Used By Nursing

Description:
This unit describes the evolution of nursing informatics and the HIT tools used by nursing.

Objectives:
1. Discuss how health IT (HIT) tools have evolved to support the practice of nursing.
2. List common nursing HIT applications and describe how they have evolved over time.
3. Describe the evolving role of nurse informaticists in healthcare organizations.

Topics:
5.1 How nurses spend their time
5.2 The changing definitions of nursing informatics over time
5.3 Early nursing informatics tools, and how they evolved over time
5.4 Evolving Role of the Nurse Informaticist

Unit 6: History of Electronic Health Records (EHRs)

Description:
This unit describes the history of electronic health records.

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Objectives:
1. Describe some early examples of electronic medical records.
2. Discuss lessons learned from the early EHR implementations.
3. Discuss how the attributes that were identified for a computer-based patient record in the 1991 Institute of Medicine Report relate to the concept of meaningful use.
4. Discuss differences between the terms electronic health record (EHR) and personal health record (PHR).

Topics:
6a.1 EHR terminology changes over time
6a.2 Example of an early EHR--COSTAR
6a.3 Example of an early EHR—TMR
6a.4 Example of an early EHR—RMRS
6a.5 Lessons learned from the early systems
6a.6 Barriers to widespread use
6b.1 The Computer-Based Patient Record (1991)
6b.2 Electronic Health Record System Capabilities (2003)
6b.3 Meaningful Use (2010)

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
7b.1 Examples of CDS and how they evolved
7c.1 Evolution of CDS architecture
7c.2 Challenges to be overcome

Unit 8: History of CPOE and E-Prescribing

This material was developed by The University of Alabama at Birmingham, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number 1U24OC000023.

Description:
This unit describes the history of CPOE and e-prescribing.

Objectives:
1. Explain how the evolving capabilities of CPOE systems impact quality and patient safety in the hospital setting.
2. Explain how the evolving capabilities of e-prescribing systems impact quality and patient safety in the ambulatory setting.

Topics:
8a.1 The unreliability of physician handwriting
8a.2 Automation of the ordering process
8a.3 Early CPOE systems
8b.1 Early e-prescribing systems

Unit 9: History of Health Information Exchange

Description:
This unit describes the history of health information exchange.

Objectives:
1. Describe historical U.S. efforts at realizing health information exchange.
2. Define community health information networks or CHINs and regional health information organizations known as RHIOs.
3. Describe why CHINs failed in the 1990s.
4. Describe the concept of RHIOs and articulate how they relate to Nationwide Health Information Network now called the NwHIN.

Topics:
9.1 What is health information exchange (HIE)?
9.2 How is health information currently exchanged?
9.3 What were early HIE systems, and why did they fail?
9.4 The goals of the Nationwide Health Information Network

Unit 10: History of Privacy and Security Legislation

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

Objectives:
1. Discuss the reasons why the administrative simplification provisions were attached to the original HIPAA legislation.
2. Explain the five principles underlying the HIPAA privacy rule.

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3. Discuss the reasons why the privacy rule was an action of the executive, not the legislative branch of Congress.
4. Describe security recommendations in the 1997 report “For the Record.”
5. Describe the major changes in privacy and security requirements as a result of HITECH and the reasons why the changes were needed.

Topics:
10a.1 Definitions of privacy, confidentiality and security
10a.2 HIPAA legislation-1996
10a.3 Privacy and confidentiality prior to HIPAA
10a.4 Principles underlying the HIPAA Privacy Rule
10a.5 HIPAA-1998-2009
10b.1 Practices recommended by National Research Council (NRC) to ensure confidentiality
10b.2 NRC Recommended Security Practices
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 11: Software Certification and Regulation

Description:
This unit describes the history of software certification and regulation.

Objectives:
1. Discuss the history of FDA involvement in the regulation of clinical software.
2. Describe the origins, focus and activities of CCHIT.
3. Discuss the changes in the EHR certification process as a result of the HITECH Act.
4. Discuss the recent efforts to improve the safety of EHRs.

Topics:
11.1 Explanation of EHR certification and FDA regulation processes
11.2 Challenges in regulation of EHRs
11.3 1989 FDA policy on ‘competent human intervention’
11.4 Recommendations on software regulation from 1996 FDA workshop
11.5 Rise of interest in HIT-1999-2004
11.6 2004-2009 Certification of EHRs-origins and role of CCHIT
11.7 Patient safety and HIT regulation
11.8 HITECH requirements for certification of HIT
11.9 Unintended consequences of HIT
11.10 Improving the Safety of HIT

Unit 12: History of Mobile Computing

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Description:
This unit describes the history of mobile computing in healthcare.

Objectives:
1. Discuss the developments in mobile computing that have enabled portable computers to be used in health care settings.
2. List the benefits of using mobile computers in the clinical setting, and discuss how these benefits have developed over time.
3. Give examples of three applications for mobile computers in healthcare.

Topics:
12.1 History and examples of mobile devices
12.2 Medical uses for mobile devices
12.3 History of use of mobile devices in medicine
12.4 Benefits of mobile devices in healthcare
12.5 Characteristics of users of mobile devices in healthcare

Unit 13: History of Telemedicine

Description:
This unit describes the history of telemedicine.

Objectives:
1. Define telemedicine.
2. Describe the differences between telemedicine and telehealth.
3. Discuss key developments in the history of telemedicine.
4. Identify and describe at least two current applications of telemedicine.

Topics:
13.1 Telemedicine definitions
13.2 Differences between telemedicine and telehealth
13.3 History of telemedicine in the early and late 20th century
13.4 Telemedicine reports to Congress
13.5 Current and future developments in telemedicine

Unit 14: History of Quality Improvement and Patient Safety

Description:
This unit describes the history of the use of information technology as a part of quality improvement and patient safety.

Objectives:
1. Describe conditions and notable publications concerning patient safety and quality improvement from 1959 to the present.

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2. Describe the background to the Institute of Medicine reports on Patient Safety
3. Summarize the main findings from several Institute of Medicine reports on quality, patient safety, and health information technology (HIT).
4. Describe various ways in which HIT has evolved to improve quality or enhance patient safety**.**

Topics:
14.1 The Institute of Medicine Reports
14.2 History of patient safety and role of HIT
14.3 History of patient safety and quality
14.4 HITECH and patient safety and quality

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

Unit 16: History of Health IT Organizations

Description:
This unit describes the history of health IT organizations.

Objectives:
1. Describe the background and original constituencies of AMIA, HIMSS, and AHIMA.
2. Describe the changes in major interests that have occurred at AMIA, HIMSS, and AHIMA over time.
3. Describe the origins, current focus, and relationships among the following standards development organizations: HL-7, HITSP, ONC Health IT Standards Committee.

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Topics:

16a.1 American Medical Informatics Association (AMIA)
16a.2 Healthcare Information and Management Systems Society (HIMSS)
16a.3 American Health Information Management Association (AHIMA)
16a.4 Collaborations among organizations
16b.1 Standards Development Organizations

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