Component 5:

History of Health Information Technology in the U.S. Component Guide

Health IT Workforce Curriculum
Version 4.0/Spring 2016

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 use of health IT to support the new models of care that have been developing after the passage of the Affordable Care Act, including the introduction of the concepts of "meaningful use" of electronic health records, population health and value-based care.

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.
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 Files

Each unit within the component includes the following files:

- Lectures (voiceover PowerPoint in .mp4 format); PowerPoint slides (Microsoft PowerPoint format), lecture transcripts (Microsoft Word format); and audio files (.mp3 format) for each lecture.

- Application activities (discussion questions, assignments, or projects) with answer keys.

- Self-assessment questions with answer keys based on identified learning objectives.

- Some units may also include additional materials as noted in this document.

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.

Lectures:

a. Introduction and Pre-1970 (18:56)

   1. Influences, goals and values of key players in healthcare and health IT
   2. The healthcare environment prior to 1970

b. The 1970s (20:55)

   1. The 1970s environment
   2. Key informatics innovations in the 1960s and 1970s (Medline, early EHRs, medical expert systems)

c. The 1980s (15:12)

   1. The 1980s environment
   2. Information systems in healthcare
   3. Early clinical decision support systems
   4. Professionalization of informatics

Suggested Readings

Collen MF: Origins of medical informatics, In Medical informatics [Special Issue]. West J Med 1986; 145:778-785. Available

from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1307150/pdf/westjmed00160-0042.pdf/

Weed LL. The importance of medical records. Can Fam Physician. 1969; 15(12):23-25. Available
from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2281464/pdf/canfamphys00405-0025.pdf/

Miller RA, McNeil MA, Challinor SM, Masarie FE, Myers JD. The INTERNIST-i/QUICK MEDICAL REFERENCE Project Status ReportWest J Med. 1986 December; 145(6): 816–822. Available
from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1307155/pdf/westjmed00160-0080.pdf/

Pryor TA, Gardner RM, Clayton PD, Warner HR. The HELP system. Proc Annu Symp Comput Appl Med Care. 1982 November 2: 19–27. Available
from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2580236/pdf/procascamc00008-0043.pdf/

Barnett GO, Zielstorff RD, Piggins, J et al. COSTAR: A Comprehensive Medical Information System for Ambulatory Care. Proc Annu Symp Comput Appl Med Care. 1982 November 2: 8–18. Available
from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2580195/pdf/procascamc00008-0032.pdf

Hammond WE. How the past teaches the future. J Am Med Inform Assoc. 2001 May–Jun; 8(3): 222–234. Available
from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC131030/pdf/0080222.pdf

Additional Materials

None

Unit 2: Evolution of Health IT: The Modern Era

Description:

This unit describes the evolution of health IT from 1990 - 2016.

Objectives:

1. Discuss factors that led to increasing clinical use of computers from 1990 to the present, including the HITECH Act of 2009. and the Affordable Care Act of 2010
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 precision medicine.
5. Discuss why there is more receptivity to the use of Health IT now than during the previous 50 years.

Lectures:

a. The Environment (21:45)

    1. Changes in the general environment from 1990-2016
    2. Changes in the healthcare environment from1990-2016
    3. Changes in healthcare organizations from 1990-2016

b. Key Stakeholders (16:27)

    1. The practice of medicine in the modern era
    2. Academic medicine and the role of Informatics
    3. Impact of changes over the last 50 years

Suggested Readings

Berner ES, Detmer DE, Simborg D. Will the wave finally break? A brief view of the adoption of electronic medical records in the United States. J Am Med Inform Assoc. 2005;12(1):3-7. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC543824/

Kohn LT, Corrigan JM and Donaldson MS, (eds). To Err Is Human: Building a Safer Health System . Committee on Quality of Health Care in America, Institute of Medicine, Washington DC: National Academies Press, 1999. Free Executive Summary. Available from: http://www.nap.edu/catalog/9728.html

Committee on Quality of Health Care in America, Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st Century, Washington, DC: National Academy Press, 2001. Free Executive Summary. Available from: http://www.nap.edu/catalog.php?record_id=10027

The White House. The Precision Medicine Initiative. Available from: https://www.whitehouse.gov/precision-medicine

Additional Materials

None

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:

a. Regional Extension Centers and Workforce Training (19:11)

   1. Barriers to the use of Health IT to improve quality and reduce cost
   2. The HITECH vision
   3. Regional Extension Centers
   4. Workforce Development

b. Meaningful Use, Health Information Exchange and Research (28:31)

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

Suggested Readings

Blumenthal D. Stimulating the adoption of health information technology. N Engl J Med. 2009; 360;15:1477-9. Available from: http://content.nejm.org/cgi/reprint/360/15/1477.pdf

Blumenthal D and Tavenner M. The "Meaningful Use" Regulation for Electronic Health Records. N Engl J Med 2010; 363:501-504. Available from: http://www.nejm.org/doi/full/10.1056/NEJMp1006114http://dashboard.healthit.gov/evaluations/data-briefs/non-federal-acute-care-hospital-ehr-adoption-2008-2015.php#figure1

Goldstein MM, Thorpe Jane H. The First Anniversary of the Health Information Technology for Economic and Clinical Health (HITECH) Act: the regulatory outlook for implementation. Perspect Health Inf Manag. 2010 Sep 1;7. pii: 1c. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2921301/

Henry J, Pylypchuk Y, Searcy T, Patel V. Adoption of Electronic Health Record Systems among U.S. Non-Federal Acute Care Hospitals: 2008-2015. ONC Data Brief 35. May, 2016. Available from: http://dashboard.healthit.gov/evaluations/data-briefs/non-federal-acute-care-hospital-ehr-adoption-2008-2015.php#figure1

Additional Materials

HITECH Programs. This is the official website for the Office of the National Coordinator and includes information on all the HITECH programs. Available from: http://www.healthit.gov

Martin R. HITECH An interoperetta in three acts. This is a humorous musical introduction to the HITECH Act. It also includes definitions of many of the terms connected with health IT. It was made shortly after the HITECH legislation passed but before many of rules had been finalized. Available from: http://www.youtube.com/watch?v=Gv1s8fM3mMk

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.

Lectures:

a. Public Health Informatics (27:07)

   1. What is public health?
   2. What is public health informatics (PHI) and how did it evolve?
   3. What were early PHI applications?
   4. What are emerging and future PHI uses?

Suggested Readings

Houser SH, Manger BJ, Price BJ, Silvers C, Hart-Hester S. Expanding the Health Information Management Public Health Role. Perspect Health Inf Manag 2009; 6(Summer):1b. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2781725/

Kukafka R, Yasnoff WA. Public health informatics. J Biomed Inform. 200740(4):365-369. Available
from: http://www.sciencedirect.com/science/article/pii/S1532046407000640

Tokars JI, English R, McMurray P, Rhodes B. Summary of data reported to CDC's national automated biosurveillance system 2008. BMC Med Inform Decis Mak 2010 May 25;10:30. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2890598/

Yasnoff WA, Overhage JM, Humphreys BL, LaVenture M. A national agenda for public health informatics: summarized recommendations from the 2001 AMIA Spring Congress. J Am Med Inform Assoc 2001 Nov-Dec;8(6):535-45. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC130064/

Additional Materials

None

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.

Lectures:

a. Nursing Informatics (21:07)

   1. How nurses spend their time
   2. The changing definitions of nursing informatics over time
   3. Early nursing informatics tools, and how they evolved over time
   4. Evolving Role of the Nurse Informaticist

Suggested Readings

Bakken S, Stone PW, Larson EL. A nursing informatics research agenda for 2008-18: contextual influences and key components. Nurs Outlook 2008 Sep-Oct;56(5):206-214.e3. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2613178/

Masys DR, Brennan PF, Ozbolt JG, Corn M, Shortliffe EH. Are medical informatics and nursing informatics distinct disciplines? The 1999 ACMI debate. J Am Med Inform Assoc 2000; May-Jun;7(3):304-12. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC61434/

Westra BL, Delaney CW. Informatics competencies for nursing and healthcare leaders. AMIA Annu Symp Proc. 2008 Nov 6:804-8. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2655955/

Additional Materials

Videotaped Stories from Nursing Informatics Pioneers. Available from: (http://www.amia.org/programs/working-groups/nursing-informatics/history-project/video-library-1)

Unit 6: History of Electronic Health Records (EHRs)

Description:

This unit describes the history of electronic health records.

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).

Lectures:

a. Early EHR Prototypes (18:09)

   1. EHR terminology changes over time
   2. Example of an early EHR--COSTAR
   3. Example of an early EHR—TMR
   4. Example of an early EHR—RMRS
   5. Lessons learned from the early systems
   6. Barriers to widespread use

b. Evolution of Functional Requirements (16:35)

   1. The Computer-Based Patient Record (1991)
   2. Electronic Health Record System Capabilities (2003)
   3. Meaningful Use (2010)

4. Increased Adoption of EHRs

Suggested Readings

Barnett GO, Zielstorff RD, Piggins J, et al. COSTAR: A Comprehensive Medical Information System for Ambulatory Care. Proc Annu Symp Comput Appl Med Care. 1982 November 2: 8–18. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2580195/pdf/procascamc00008-0032.pdf

Dick RS, Steen EB, Detmer DE. Committee on Improving the Patient Record, Institute of Medicine. The Computer-Based Patient Record: An Essential Technology for Health Care, Revised Edition. Washington, DC: National Academy Press, 1997(Free Executive Summary). Available from: http://www.nap.edu/catalog/5306.html

Hammond WE. How the past teaches the future. J Am Med Inform Assoc. 2001 May–Jun; 8(3): 222–234. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC131030/pdf/0080222.pdf

Committee on Data Standards for Patient Safety, Institute of Medicine. Key Capabilities of an Electronic Health Record System: Letter Report. National Academies Press. Available from: http://www.nap.edu/catalog.php?record_id=10781

Additional Materials

None

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.

Lectures:

a. What is CDS? (18:30)

   1. Definition of clinical decision support (CDS)
   2. Types of CDS
   3. "Classic" clinical decision support systems

b. Examples of Early CDS (14:29)

c. Evolution of CDS (19:05)

   1. Challenges to be overcome

Suggested Readings

Berner ES. Clinical decision support systems: State of the art. AHRQ publication No. 09-0069-EF. Rockville, Maryland: Agency for Healthcare Research and Quality. June 2009. Available from: https://healthit.ahrq.gov/sites/default/files/docs/page/09-0069-EF_1.pdf

Miller RA. Medical diagnostic decision support systems-past, present, and future: a threaded bibliography and brief commentary. J Am Med Inform Assoc 1994; 1(1):8-27. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC116181/

Osheroff JA, Teich JM, Middleton B, Steen EB, Wright A, Detmer DE. A roadmap for national action on clinical decision support, J Am Med Inform Assoc 2007; 14:141-145. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2213467/

Wright A, Sittig DA. A four-phase model of the evolution of clinical decision support architectures. Int J Med Inform 2008; 77(10):641-649   Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2627782/pdf/nihms68821.pdf

Additional Materials

Demonstration of DXplain CDS: Massachusetts General Hospital. DXplain. [Homepage on the Internet]. 2008 [cited 2010 Jul 12]. Available from: http://dxplain.mgh.harvard.edu/dxp/dxp.sdemo.pl

Unit 8: History of CPOE and E-Prescribing

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.

Lectures:

a. Computer Provider Order Entry (22:38)

   1. The unreliability of physician handwriting
   2. Automation of the ordering process
   3. Early CPOE systems

b. E-Prescribing (10:48)

   1. Early e-prescribing systems
   2. Adoption of CPOE and e-prescribing

Suggested Readings

Ammenwerth E, Schnell-Inderst P, Machan C, Siebert U. The effect of electronic prescribing on medication errors and adverse drug events: a systematic review. J Am Med Inform Assoc 2008 Sep-Oct;15(5):585-600. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2528040/

Doolan DF, Bates DW. Computerized physician order entry systems in hospitals: mandates and incentives. Health Aff (Millwood) 2002 Jul-Aug;21(4):180-8. Available from: http://www.ncbi.nlm.nih.gov/pubmed/12117128

Papshev D, Peterson AM. Electronic prescribing in ambulatory practice: promises, pitfalls, and potential solutions. Am J Manag Care 2001 Jul;7(7):725-36. Available from: http://www.ncbi.nlm.nih.gov/pubmed/11464430

Sittig DF, Stead WW. Computer-based physician order entry: the state of the art. J Am Med Inform Assoc 1994 Mar–Apr;1(2):108–123. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC116190/

Additional Materials

None

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 the idea of a Nationwide Health Information Network
5. Discuss the reasons for the increased interest in health information exchange

Lectures:

a. Health Information Exchange (24:09)

   1. What is health information exchange (HIE)?
   2. How is health information currently exchanged?
   3. What were early HIE systems, and why did they fail?
   4. The goals for health information exchange and interoperability

Suggested Readings

Adler-Milstein J, Landefeld J, Jha AK. Characteristics associated with regional health information organization viability. JAMIA 2010;17:61-65. doi:10.1197/jamia.M3284. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2995627

Hersh W, Totten A, Eden K, Devine B, Gorman P, Kassakian S, Woods SS, Daeges M, Pappas M, McDonagh MS. Health Information Exchange. Evidence Report/Technology Assessment No. 220. (Prepared by the Pacific Northwest Evidence-based Practice Center under Contract No. 290-2012-00014-I.) AHRQ Publication No. 15(16)-E002-EF. Rockville, MD: Agency for Healthcare Research and Quality; December 2015. Available from: http://www.effectivehealthcare.ahrq.gov/ehc/products/572/2154/health-information-exchange-report-151201.pdf

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.
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.

Lectures:

a. Background of HIPAA (14:52)

1. Definitions of privacy, confidentiality and security
2. HIPAA legislation-1996
3. Privacy and confidentiality prior to HIPAA
4. Principles underlying the HIPAA Privacy Rule
5. HIPAA-1998-2009

b. Best Practices for Information Security (10:07)

1. Practices recommended by National Research Council (NRC) to ensure confidentiality
2. NRC Recommended Security Practices

c. HITECH Privacy and Security (22:35)

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

Suggested Readings

Shalala, DE. Testimony before the Senate Committee on Labor and Human Relations, Thursday, September 11, 1997. Available from: http://aspe.hhs.gov/admnsimp/pvctest.htm

Committee on Maintaining Privacy and Security in Health Care Applications of the National Information Infrastructure, Commission on Physical Sciences, Mathematics, and Applications, National Research Council. For the Record: Protecting Electronic Health Information. Washington DC: National Academy Press, 1997 (Free Executive Summary). Available from: http://www.nap.edu/catalog/5595.html

Additional Materials

Department of Health and Human Services, Office of Civil Rights, Health Information Privacy. This website provides information on HIPAA Privacy and Security requirements. Available from: http://www.hhs.gov/ocr/privacy/

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 efforts to improve the safety of EHRs.

Lectures:

a. Software Certification and Regulation (28:01)

   1. Explanation of EHR certification and FDA regulation processes
   2. Challenges in regulation of EHRs
   3. 1989 FDA policy on 'competent human intervention'
   4. Recommendations on software regulation from 1996 FDA workshop
   5. Rise of interest in HIT-1999-2004
   6. 2004-2009 Certification of EHRs-origins and role of CCHIT
   7. Patient safety and HIT regulation
   8. HITECH requirements for certification of HIT
   9. Evolution of certification requirements
   10. Unintended consequences of HIT
   11. Improving the Safety of HIT

Suggested Readings

Note: This reading addresses the history of FDA regulation. Additional materials for the topic of certification are in the section below on **Additional Materials.**

Miller RA, Gardner RM. Recommendations for responsible monitoring and regulation of clinical software systems. American Medical Informatics Association, Computer-based Patient Record Institute, Medical Library Association, Association of Academic Health Science Libraries, American Health Information Management Association, American Nurses Association. J Am Med Inform Assoc. 1997 Nov-Dec;4(6):442-57. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC61262/

Committee on Patient Safety and Health Information Technology. Board on Health Care Services.Health IT and Patient Safety:Building Safer Systems for Better Care, Washington, DC: National AcademiesPress, 2011. Free Executive Summary. Available from: http://books.nap.edu/openbook.php?record_id=13269

FDA, FCC, ONC. FDASIA Health IT Report. Proposed Strategy and Recommendations for the Risk-Based Framework. April, 2014. Available from:https://www.healthit.gov/sites/default/files/fdasia_healthitreport_final.pdf

Office of the National Coordinator for Health IT. ONC Health IT Safety Program – Progress on Health IT Patient Safety Action and Surveillance Plan. 2014. Available

from: https://www.healthit.gov/sites/default/files/ONC_HIT_SafetyProgramReport_9-9-14_.pdf

Additional Materials

ONC Standards and Certification— This website is useful to monitor the changes in the certification process. It is available from: https://www.healthit.gov/policy-researchers-implementers/standards-and-certification-regulations

Unit 12: History of Mobile Computing

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.
4. Discuss the special security issues related to mobile devices

Lectures:

a. History of Mobile Computing (15:09)

1. History and examples of mobile devices
2. Medical uses for mobile devices
3. History of use of mobile devices in medicine
4. Benefits of mobile devices in healthcare
5. Characteristics of users of mobile devices in healthcare
6. Security issues of mobile devices

Suggested Readings

Andersen P, Lindgaard A-M, Prgomet M, Creswick N, Westbrook JI. Mobile and fixed computer use by doctors and nurses on hospital wards: Multi-method study on the relationships between clinician role, clinical task, and device choice. J Med Internet Res.2009 July-Sep;11(3):e32. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2762853/

Lane SJ, Heddle NM, Arnold E, Walker I. A review of randomized controlled trials comparing the effectiveness of hand held computers with paper methods for data collection. BMC Med Inform Decis Mak. 2006 May 31;6:23. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1513201/

Lindquist AM, Johansson PE, Petersson GI, Saveman BI, Nilsson GC. The use of the Personal Digital Assistant (PDA) among personnel and students in health care: a review. J Med Internet Res. 2008 Oct 28;10(4):e31. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2629360/

Mosa ASM, Yoo I, Sheets L. A Systematic Review of Healthcare Applications for Smartphones. 2012. BMC Med Inform Decis Mak. V. 12. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3534499/

Additional Materials

None

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.

Lectures:

a. History of Telemedicine (16:08)

   1. Telemedicine definitions
   2. Differences between telemedicine and telehealth
   3. History of telemedicine in the early and late 20th century
   4. Telemedicine reports to Congress
   5. Current and future developments in telemedicine

Suggested Readings

The 2001 Telemedicine Report to Congress – This review of telemedicine issues and policy direction emerged as the Internet grew in importance and most of the content is equally relevant today. The whole report is almost 100 pages. If a shorter assignment is desirable, the Executive Summary is only 10 pages.

Evolution & Summative Evaluation of the Alaska Federal Health Care Access Network Telemedicine Project – This summary and evaluation of the Alaska telehealth initiative is an excellent model for building and evaluating a telemedicine program.

<u>Telemedicine Reimbursement Report</u> – This review of telemedicine licensing and reimbursement, while dated in 2003, contains an excellent review of the status at that time, and the framework by which it is constructed is valid today for structuring an updated understanding.

Additional Materials

None

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.
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.

Lectures:

a. Quality Improvement and Patient Safety (20:51)

   1. The Institute of Medicine Reports
   2. History of patient safety and role of HIT
   3. History of patient safety and quality
   4. HITECH and patient safety and quality

Suggested Readings

Amalberti R, Auroy Y, Berwick D, Barach P. Five system barriers to achieving ultrasafe health care. Ann Intern Med. 2005 May 3;142(9):756-64. Available from: http://www.annals.org/content/142/9/756.long

Kohn LT, Corrigan JM and Donaldson MS, (eds). To Err Is Human: Building a Safer Health System. Committee on Quality of Health Care in America, Institute of Medicine, Washington DC: National Academies Press, 1999. Free Executive Summary and Free Brief. Available from: http://www.nap.edu/catalog/9728.html

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Additional Materials

None

Unit 15: 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.

Lectures:

a. Professional Organizations (14:08)

   1. American Medical Informatics Association (AMIA)
   2. Healthcare Information and Management Systems Society (HIMSS)
   3. American Health Information Management Association (AHIMA)
   4. Collaborations among organizations
b. Standards Development Organizations (5:48)

Suggested Readings

None

Additional Materials

Professional Associations related to health information technology

American Medical Informatics Association (AMIA) http://www.amia.org/

About AMIA http://www.amia.org/about-amia

History of the American College of Medical Informatics (ACMI)
http://www.amia.org/programs/acmi-fellowship

Health Information and Management Systems Society (HIMSS) http://www.himss.org/

History of HIMSS
http://www.himss.org/sites/himssorg/files/HIMSSorg/Content/files/HistoryHIMSS_January2013.pdf

American Health Information Management Association (AHIMA) http://www.ahima.org/

Background and History http://www.ahima.org/about/aboutahima

Standards Development Organizations

International Organization for Standardization (ISO) http://www.iso.org

Background and History http://www.iso.org/iso/about/the_iso_story.htm

American National Standards Institute (ANSI) http://www.ansi.org

Background and History
http://www.ansi.org/about_ansi/introduction/history.aspx?menuid=1

Health Level 7 (HL 7) http://www.hl7.org

Background and History http://www.hl7.org/about/index.cfm?ref=nav

Health IT Standards Committee https://www.healthit.gov/facas/health-it-standards-committee

National Institute of Standards and Technology (NIST) http://www.nist.gov

Background and History http://www.nist.gov/public_affairs/general_information.cfm

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