Johns Hopkins School of Medicine
Division of Health Sciences Informatics
and
Johns Hopkins Bloomberg School of Public Health
Department of Health Policy and Management

600.904 AND 315.708.81 HEALTH INFORMATION TECHNOLOGY STANDARDS AND SYSTEMS INTEROPERABILITY

Course Materials

Baltimore, MD
2013

315.708.81 HEALTH INFORMATION SYSTEMS STANDARDS AND INTEROPERABILITY

INSTRUCTORS

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Towards Nationwide Health Information Network

In April 2004, President Bush's Executive Order No.13335[1] established the Office of National Coordinator for Health Information Technology (ONC) at the Department of Health and Human Services (HHS) to coordinate health information technology adoption.[2] The vision is to develop a Nationwide Health Information Network (NHIN or NwHIN) of regional Health Information Exchanges (HIEs) connecting electronic health record systems (EHR-Ss) deployed in clinical practices with each other and with other systems required to support the healthcare system.

The 2008-2012 ONC Coordinated Federal HIT Strategic Plan[3] focused on two goals: (1) *Patient-focused Healthcare* to enable the transformation to higher quality, more cost-efficient health care through electronic health information access and use by care providers, and by patients and their designees; and (2) *Population Health* to enable the appropriate, authorized, and timely access and use of electronic health information to benefit Public Health, biomedical research, quality improvement and emergency preparedness. The Plan is based on four objectives (Fig. 1): *Collaborative Governance*; *HIT Adoption*, *Privacy and Security* and *Interoperability, i.e.,* the ability of different information systems to communicate (exchange) data accurately, effectively and consistently.[4]

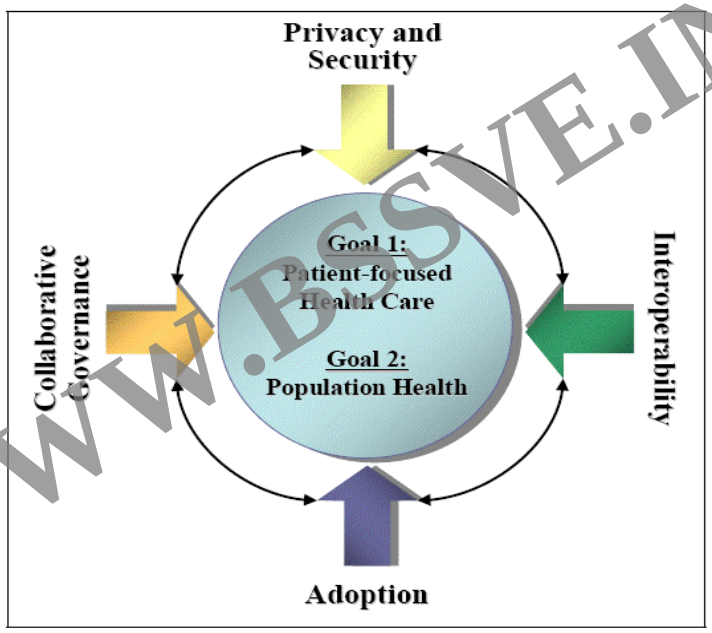

Fig.1. Coordinated Federal HIT Strategic Plan: Goals and Objectives

[1] National Archives and Records Administration. Federal Register. Executive Order 13335 – Incentives for the use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator. URL's: http://edocket.access.gpo.gov/2004/pdf/04-10024.pdf. and URL: http://waysandmeans.house.gov/media/pdf/110/hit2.pdf Last accessed March 05, 2009

[2] Thompson TG and Brailer DJ. The Decade of Heath Information Technology to Deliver Consumer-centric and Information-rich Health Care. Framework for Strategic Action. US DHHS, July 21, 2004. URL: http://www.hhs.gov/healthit/strategicfrmwk.html

[3] Department of Health and Human Services. The ONC Coordinated Federal Health Information technology Strategic Plan. June 3, 2008. URL: http://www.hhs.gov/healthit/resources/HITStrategicPlanSummary.pdf

[4] Department of Health and Human Services. Office of National Coordinator for Health Information Technology. Consensus Conventions for the Use of Key HIT Terms Project. 2008

The Health Information Technology for Economic and Clinical Health (HITECH) Act of the American Recovery and Reinvestment Act of 2009 (ARRA)[5], is aimed at advancing HIT by supporting the adoption and "meaningful use" of certified electronic health record systems through incentive payments to eligible professionals (physicians and hospitals).[6] Recipients of these incentive payments may be required to report clinical, and quality measures to demonstrate accountability for achieving the meaningful use parameters promised. In addition, the EHR-S technology adopted under these provisions must be compatible with State or Federal administrative management systems.[7] The updated Federal Health IT Strategic Plan defines national goals for HIT adoption through 2015.[8]

Public health data systems are created to support specific needs of certain program areas *i.e., newborn screening, birth defects, immunization, communicable disease surveillance, injury prevention, bioterrorism, etc.* Systems maintained by these programs are populated with data reported by health care providers usually using paper-forms. These "silo"-type public health data systems may deploy certain software products that are often custom-made to serve particular programmatic needs and are not interoperable across health departments. Lack of integration and interoperability across public health program systems leads to the inefficient use of resources and frustration among families and providers asked to provide the same information on multiple forms of varying formats to various programs. The current systems do not allow easy aggregation of patient's information to provide real-time data back to the provider's office and to conduct research.

Because of the automation of clinical data – inpatient and increasingly outpatient – via the EHR systems (EHR-S), public health programs stand at the threshold of change in the way in which they can gather and analyze programmatic data. The EHR is a pivotal instrument in integrating clinical and public health data systems - EHR-PH systems, so public health authorities will have reliable, real time access to patient data to support health policy decisions for disease prevention interventions. The EHR-based bi-directional data interchange between clinical and public health settings will improve care coordination, healthcare resources allocation and healthcare delivery planning for better and safer care. The integrated EHR-PH systems will become the backbone of a National Health Information Network and regional health information exchanges (RHIEs).

COURSE DESCRIPTION

[5] The American Recovery and Reinvestment Act. 2009. URL: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h1enr.pdf.

[6] Health Information Technology for Economic and Clinical Health (HITECH) Act. Federal Register/ Vol. 74, No. 101/ Thursday, May 28,
2009/ Notices: p.25550-25552.

[7] Health Information Technology Policy Committee (a Federal Advisory Committee). URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1269&parentname=CommunityPage&parentid=8&mode=2&in_hi_userid=10741&cached=true

[8] HHS Office of National Coordinator of Health Information Technology (ONC). Federal Health Information Technology Strategic Plan: 2011-2015. URL: http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&cached=true&objID=1211&PageID=15583

To facilitate the development of interoperable EHR-PH systems there is a need for standardization of health information exchanges across clinical and public health enterprise. The national Health Information Technology Standards Panel (HITSP)[9] identified the following categories of standards for system interoperability:

1. Data content standards, i.e., vocabularies and terminology standards
2. Information content standards, i.e., Reference Information Models (RIMs)
3. Information exchange standards, e.g., messaging standards
4. Identifier standards, e.g., National Provider Identifier (NPI) standard
5. Privacy and security standards
6. Functional standards, i.e., workflow/dataflow standards
7. Other, e.g., information technology infrastructure standards.

The HIT standardization process consists of the following six phases:
(1) Identify HIT Interoperability Needs and Priorities
(2) Develop and Maintain Standards
(3) Select and Harmonize Standards
(4) Test Standards Interoperability (Trial Implementations)
(5) Certify Interoperable HIT Products
(6) Deploy Interoperable HIT Products

Various public and private entities have been created to carry out these phases as follows:

HIT Standardization Phase	HIT Standardization Entity Examples
♦ Identify HIT Interoperability Needs and Priorities	HIT Policy Committee[10] and HIT Standards Committee[11] (formerly AHIC, American Health Information Community[12])
♦ Develop and Maintain Standards	Health Level Seven (HL7),[13] SNOMED,[14] LOINC,[15] ASC X12[16]
♦ Select and Harmonize Standards	Integrating the Healthcare Enterprise (IHE)[17] (formerly Health Information Technology Standards Panel (HITSP)[18]
♦ Test Standards Interoperability	Integrating the Healthcare Enterprise (IHE)
♦ Certify Interoperable HIT Products	Certification Entities[19]: Certification Commission for HIT (CCHIT), Drummond Group, InfoGard Laboratories, SLI Global Solutions, ICSA Labs, Surecripts LLC
♦ Deploy Interoperable HIT Products	Users: Clinical and Public Health Community at Large, NHIN

[9] Health Information Technology Standards Panel (HITSP). American National Standards Institute (ANSI). URL: http://www.hitsp.org
[10] Health Information Technology Policy Committee. URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1269&parentname=CommunityPage&parentid=0&mode=2&in_hi_userid=10741&cached=true

Each of these entities has been working to produce standards-related documents (e.g., use cases, profiles, interoperability specifications, HIT product certification criteria) to ensure systems interoperability. Table 1, below, presents HIT standardization phases, examples of standardization entities and their products.[20]

[11] Health Information Technology Standards Committee. URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1271&parentname=CommunityPage&parentid=4&mode=2&in_hi_userid=10741&cached=true
[12] American Health Information Community (AHIC). URL: http://www.phdsc.org/health_info/american-health-info.asp
[13] Health Level Seven (HL7). URL: www.hl7.org
[14] International Health Terminology Standards Development Organization (IHTSDO). URL: http://www.ihtsdo.org/ former Systematized Nomenclature of Medicine – Clinical Terms (SNOMED). URL: http://www.cap.org/apps/cap.portal?_nfpb=true&cntvwrPtlt_actionOverride=%2Fportlets%2FcontentViewer%2Fshow&_windowLabel=cntvwrPtlt&cntvwrPtlt{actionForm.contentReference}=snomed%2Fsnomed_ct.html&_state=maximized&_pageLabel=cntvwr
[15] Logical Observation Identifiers Names and Codes (LOINC). URL: http://loinc.org/
[16] The Accredited Standards Committee (ASC) X12. URL: http://www.x12.org/
[17] Integrating the Healthcare Enterprise (IHE). URL: http://www.ihe.net
[18] Health Information Technology Standards Panel (HITSP). URL: http://www.hitsp.org
[19] The Office of the National Coordinator for Health Information Technology (ONC). URL: http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__onc-authorized_testing_and_certification_bodies/3120
[20] Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. On-line Module. URL: http://phdsc.org/standards/health-information-tech-standards.asp

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Table 1. Health Information Technology Standardization Phases, Products and Entities						
HIT Standardization Phases	Needs & Priorities	Development & Maintenance	Selection & Harmonization	Trial Implementation	Certification	Deployment
Goals	*What should be accomplished?*	*What are the standards?*	*What standards to use?*	*Show what can be accomplished*	*Certify standards-based products*	*Deploy standards-based products*
HIT Standardization Entities	HIT Policy Committee HIT Standards Committee *(Formerly AHIC, to be superseded pending ONC decisions)*	SDOs (e.g., HL7, SNOMED (IHTSDO), LOINC, ASC X12)	IHE *(Formerly HITSP, to be superseded pending ONC decision)*	NHIN IHE	Certification Entities	*Proposed* IHE & PHDSC Deployment Workshops
Standards Documents	Use Cases (Description of the health information exchanges)	Standards	Interoperability Specifications Technical Frameworks Integration Profiles	Implementation Reports	Certification Criteria	Deployment Reports

The Health Information Technology Standards and Systems Interoperability course is designed to provide health professionals with an understanding of the existing health information technology (HIT) standards and HIT standardization processes.

The goal of this course is to provide students with methods and tools for participation as users in the HIT standardization activities for the design and evaluation of integrated health data systems at the local, state, regional, national or international levels.

The intended audience is comprised of public health and medical professionals responsible, or advocating, for information systems used in (1) providing services; (2) developing, implementing and evaluating policies; and (3) performing research.

COURSE OBJECTIVES

- To understand health information exchanges (HIEs) between clinical and public health/population health data systems.
- To understand the main categories of HIT standards.
- To understand the HIT standardization process.
- To know HIT standardization entities.
- To understand the role of users in HIT standardization.
- To be able to participate in the design of information systems in public health.

At the end of the course, the students shall be able to:

1. Understand HIT standardization processes and entities.
2. Participate as users in the HIT standardization activities.
3. Develop a functional requirements specification document (functional standards) for the information system for a specific public health problem/domain.

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HEALTH INFORMATION TECHNOLOGY STANDARDS AND SYSTEMS INTEROPERABILITY

Course Content
(The order of the lectures can be changed)

Lecture 1. Towards a Nationwide Health Information Network

Lecture 2. HIT Standards and HIT Standardization

Lecture 3. Health Information Systems Interoperability

Lecture 4. Towards Business Process Standards

Lecture 5 HIT Standards: Functional Standards

Lecture 6. HIT Standards: Data Standards

Lecture 7. HIT Standards: Information Content Standards

Lecture 8. HIT Standards: Information Exchange Standards

Lecture 9. HIT Standards: Identifiers Standards

Lecture 10. HIT Standards: Privacy and Security Standards

Lecture 11. HIT Standards Harmonization

Lecture 12. HIT Interoperability Standards Testing and HIT Products Certification

Lecture 13. HIT Standards: International Perspectives

Lecture 14. Student Presentations: *Functional Requirements Specification for a Selected Public Health (Clinical) Problem (Domain)*

Lecture 15. (Extra Credit): Deployment of Standards-based HIT Solutions in Public Health Practice: Case Studies
Case 1: Integration of Current Procedural Terminology (CPT) Codes into Breast and Cervical Cancer Project (BCCP) System in Cuyahoga County Board of Health
Case 2: Interoperability Standards for Clinical Document Architecture (CDA) for Public Health Pilot Project in New York State

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Course Schedule – 2013

Lecture/ Assignment	Due Date	Title	Speaker/Responders
		MODULE 1	
Lecture 0	**Mon, January 21**	**Course Introduction**	**Anna Orlova**
Discussion	*Sun, January 27*	*Getting to Know You*	*Students*
Lecture 1	**Mon, January 21**	**Towards a Nationwide Health Information Network**	**Anna Orlova**
Discussion	*Sun, January 27*	*Integrating PH into NHIN: Opportunities & Challenges*	*Students*
Lecture 2	**Wed, January 23**	**HIT Standards and HIT Standardization**	**Anna Orlova**
Discussion	*Tues, January 29*	*HIT Standards Categories and Standardization Phases*	*Students*
		MODULE 2	
Lecture 3	**Mon, January 28**	**Systems Interoperability**	**Noam Arzt**
Discussion	*Sun, February 3*	*Integration and Interoperability*	*Students*
Lecture 4	**Wed, January 30**	**Towards Business Process Standards**	**Anna Orlova**
Discussion	*Tues, February 5*	*Guidelines as Examples of Business Processes*	*Students*
	Thurs, January 31	***LiveTalk – NHIN and Public Health***	
Lecture 5	**Mon, February 4**	**Functional Standards**	**Anna Orlova**
Discussion	*Sun, February 10*	*Functional Requirements Analysis Document*	*Students*
		MODULE 3	
Lecture 6	**Wed, February 6**	**Data Standards**	**Keith Boone**
Discussion	*Tues, February 12*	*Ontology and Hierarchy*	*Students*
Lecture 7	**Mon, February 11**	**Information Content Standards**	**Keith Boone**
Discussion	*Sun, February 17*	*Function of Clinical Documentation*	*Students*
	Tues, February 12	***LiveTalk – Final Assignment***	
Lecture 8	**Wed, February 13**	**Information Exchange Standards**	**Michael Henderson**
Discussion	*Tues, February 19*	*IHE Standards; Majority Rule*	*Students*
		MODULE 4	
Lecture 9	**Mon, February 18**	**Identifier Standards**	**Walter Suarez**
Discussion	*Sun, February 24*	*Unique Identifiers*	*Students*
Lecture 10	**Wed, February 20**	**Privacy & Security Standards**	**Walter Suarez**
Discussion	*Tues, February 26*	*Privacy & Security Standards*	*Students*
Lecture 11	**Mon, February 25**	**Standards Harmonization**	**Lori Fourquet**
Discussion	*Sun, March 3*	*Steps of Standards Harmonization*	*Students*
		MODULE 5	
Lecture 12	**Wed, February 27**	**HIT Interoperability Standards Testing & HIT Products Certification**	**William Majursky**
Discussion	*Tues, March 5*	*Standards Testing & Product Certification*	*Students*
	Tues, March 5	***LiveTalk – HIT Standards Development***	
Lecture 13	**Mon, March 4**	**International Perspectives**	**Marjorie Greenberg**
Discussion	*Sun, March 10*	*US and International Standardization*	*Students*
	Mon, March 11	***LiveTalk – HIT Standards Testing, Certification and Use***	
Lecture 14	**Wed, March 6**	Student Presentations (Group Project) - **Due date for submitting group presentation is by midnight on Sunday, March 3**	
Lecture 15	**Mon, March 11**	*Extra Credit: Deployment of Standards-based HIT Solutions in Public Health Practice: Case Studies*	**James Coates Christopher Bauer Nitin Kunte Kathleen Brousseau**

Final Assignment	**Tues, March 26**	Final Assignment - **Due Date for submitting final assignment is by midnight on Tuesday, March 26**

COURSE ASSIGNMENTS

There are three types of assignments for this course, as follows:

1. Discussion Questions
2. Student Group Presentation on a ***Design of the Information System for a Selected Public Health Problem*** – Group Project
3. Final Assignment ***- Functional Requirements Specification*** for the Information System for a Selected Public Health Problem (Domain) – Group Project

Discussion Questions: Students will be asked to respond to discussion questions following each lecture. Most of the lectures have at least one discussion question. Although students are encouraged to respond to others answers, please be aware that each student is required to answer the question.

Please note that the 1st discussion - *Getting to Know You* - will not be graded. Information that students provided in this discussion regarding their area of work / interest will be used by the Instructor to compose the list of public health problems / domains for the Group Projects (student presentation and final assignment) as described below.

Due date for responding to the Discussions is 1 week after correspondent lecture.

Student Presentation (Lecture 14):
The student presentation is a Group Project to present the status of the development of the Functional Requirements Specification. The presentation is entitled "***Design of the Information System for a Selected Public Health Problem."*** The presentation will be developed using MS PowerPoint™. It is limited to up to 14 slides including the title slide. The names of group members must appear on the title slides as co-authors of the presentation indicating the role each member played in the design process. Please see the presentation's outline below. Student presentations will be posted for viewing during Lecture 14.

Final Assignment: The ***final assignment*** for this course is a Group Project to develop ***Functional Requirements Specification for a Selected Public Health Problem*** (10 pages excluding title page; New Times Roman Font; Size 12; single space). *The document is limited to 10 pages maximum excluding the title page. Only the first 10 pages of the document will be graded.* The names of group members must appear on the title page as co-authors of the document indicating the role each member played in the design process. Reference list should be included in the 10 page limit. Please see the Specification's outline below.

Functional Requirements Specification (or Requirements Analysis Document (RAD) describes a problem (domain) (e.g., taking care of patient, conducting public health case investigation, disease surveillance, health education) for which public health practitioners and/or clinicians need to exchange information using information technology (database, information system). This document describes your (user) needs for the information system (functional requirements) in

your own words and in the format of the Requirements Analysis Document that will help IT vendors to better design an information system that will meet your (user) needs.

The **Presentation** is aimed to view the group work progress on the **Specification** document and to facilitate your Group Project review by your classmates from other Groups. The Presentation outline follows the outline of the Specification document (please see below).

For both assignments (**Student Presentation** and **Final Assignment – Functional Requirements Specification**), students will work in groups of 4-6 persons representing the following participants in the design of the information system for a selected public health problem:

- Two-Four (2-4) End Users / Domain Experts (e.g., physician, laboratory personnel, public health official, researcher, funder, etc.) – responsible for describing a public health or clinical problem, identifying the need for information system in solving the problem, and developing an evaluation plan for the information system development.
- One (1) System Designer – responsible for developing diagrams
- One (1) Project Manager – Group Leader – responsible for coordinating Group activities on the presentation and final assignment development, and creating a timeline for the information system development.

The Group will decide on how to assign these roles to its members.

By early February, the Instructor will compose the list of public health (or clinical) problems (domains) for the Group Projects based on students work areas/interests described in the *Getting To Know You* Discussion that follows Lecture 1, e.g., Environmental Health, Chronic Care, Child Health, Women Health, etc.. Students will be given a one-week period to sign-up for a particular problem/domain of his/her interest to form the groups to work on the Presentation and the Specification. The broadcast e-mail message will be sent by the Instructor to announce the group sign-up period.

The Instructor will host a Live Talk Lecture in February to answer student questions regarding Group Projects.

Please note that Group Projects are commonly used in the information systems design and development when users and developers are working together towards an operational IT product that will support user needs. Group Projects are the format of all standards development activities that operate through conference calls, e-mail communication and shared working environment. Thus, the Group Project in this course is aimed to familiarize students with the remote group working practices.

Functional Requirements Specification Document

Outline

1. Introduction
   - 1.1 Description of a Public Health (or Clinical) Problem (Domain)
   - 1.2 Purpose of the Proposed Information System
   - 1.3 Actors and Scope of the Proposed System
   - 1.4 Objectives and Success Criteria of the Project
2. System Requirements
   - 2.1 Functional Requirements
   - 2.2 Non-functional Requirements
3. System Models
   - 3.1 Use Case(s) Description
   - 3.2 Use Case Models
     - 3.2.1 Use Case Diagram(s)
     - 3.2.2 Data Flow and Workflow Diagram (Activity Diagram)
   - 3.3 High-Level System Architecture
4. Selected Standards Table
5. Hardware and Software Requirements
6. Testing / Evaluation Plan
7. Project Development Timeline

The assignment will be graded on two criteria: (1) the extent to which the document is internally consistent; and (2) the extent to which informatics concepts from lectures and readings are utilized.

Due Date for submitting final assignment is by midnight on Tuesday, March 26.

Student Presentation (Lecture 14): Each group will develop a ***PowerPoint Presentation*** describing the development of the ***Functional Requirements Specification for the Design of the Information System for a Selected Public Health (or Clinical) Problem (Domain)***. The Presentation will describe the Specification selected for the Final Assignment. The Presentation follows the Specification's outline.

Presentation Outline

Slide 1 – Title, List of Group Members with Roles in the Project
Slide 2 – Public Health (Clinical) Problem Overview
Slide 3 – Information Systems Overview and Scope
Slide 4 – Information Systems Goals (WHAT)
Slide 5 – Actors (Perspectives) (WHO)
Slide 6 – Functions that System will Support (HOW)
Slide 7 – Non-functional Requirements
Slides 8 & 9 – Use Case(s); Use Case Diagram(s); Work Flow and Data Flow Diagram(s)
Slide 10 – Proposed System Architecture
Slide 11 – Selected Standards Table
Slide 12 – Hardware and Software Requirements

Slide 13 – Evaluation Plan
Slide 14 – System Development Timeline and Deliverables

Due date for submitting group presentation is by midnight on Sunday, March 3. They will be presented (posted) during the Lecture 14 – March 6.

STUDENT EVALUATION

Student evaluation and grading will be based on:

- Completion of the weekly assignments and participation in BBS discussions (33%)
- Presentation-Group Project (33%)
- Final assignment-Group Project (34%).

Extra credit of 7 points will be available for listening to the recording and completing BBS discussions under Lecture 15.

Grades will be assigned based on demonstrated ability to utilize concepts from lectures and readings.

Please note, that the Student Presentation and Final Assignment are the Group Projects. The grade given to the group for these assignments will apply to each group member unless the group will decide to grade members based on each member's contribution to the group work. It is critical for the success of the Group Project that each group member contributes to the best of his/her ability to the group work.

READING MATERIALS AND RESOURCES

Mandatory Reading (in alphabetical order):

Bruegge B. and Dutoit A.H. Object-Oriented Software Engineering. Pearson Prentice Hall. Upper Saddle River, NJ. 3rd Edition. 1-172.

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Required Reading (in alphabetical order):

Gordon Bell. A Time and Place for Standards. URL:http://acmqueue.com/modules.php?name=Content&pa=showpage&pid=210

Integrating the Healthcare Enterprise (IHE). Quality, Research and Public Health Committee. Newborn Screening White Paper. 2009. URL: ftp://ftp.ihe.net/Quality/2009_2010_YR_3/Planning/White%20papers%20yr%203/Newborn%20Screening/IHE_QRPH_Newborn_Screening_WhitePaper_Finall_2009-08-26.doc. Use password ***ihe_user*** to open the document.

Orlova AO, Dunnagan M, Finitzo T, Higgins M, Watkins T, Tien A, Beales S. An Electronic Health Record-Public Health (EHR-PH) System Prototype for Interoperability in 21st Century Healthcare Systems. Am Med Inform Assoc. (AMIA), Annual Symposium, Proc., 2005. 582-586. URL: http://proceedings.amia.org/2005/~searchResults?searchMode=quick&searchText=orlova+Anna&context=45410138

Public Health Data Standards Consortium (PHDSC). Business Case: Role of Public Health in National Health Information Technology Standardization. 2009. URL: http://www.phdsc.org/standards/pdfs/PHDSC_Business_Case_HIT_Standards_for_Public_Health_FINAL.pdf

Public Health Data Standards Consortium (PHDSC) and Integrating the Healthcare Enterprise (IHE). Building a Roadmap for Health Information Systems Interoperability for Public Health. 2007. URL: http://www.ihe.net/Technical_Framework/upload/IHE_PHDSC_Public_Health_White_Paper_2007_10_11.pdf

Public Health Data Standards Consortium (PHDSC). Standards for Public Health Data Exchange: Functional Requirements Standard for Diabetes Care Management and Surveillance. 2008. URL: http://www.phdsc.org/health_info/pdfs/Standards-for-Public-Health-PHDSC-FINAL-Report.pdf

Public Health Data Standards Consortium (PHDSC). Developing a Vision for Functional Requirements Specification for Electronic Data Exchange between Clinical and Public Health Settings: Examples of School Health and Syndromic Surveillance in New York City. 2006, 40p plus attachments.URL:http://www.phdsc.org/about/committees/pdfs/nhin/NYC_School_Health_SSS_Spec_Final_103006.pdf

Recommended Reading (in alphabetical order):

Arzt NH and Salkowitz S. Evolution of Public Health Information Systems: Enterprise-wide Approaches, July 2007. URL: http://www.hln.com/assets/pdf/UT-White-Paper-Final.pdf

Gibbons, et al. Coming to Terms: Scoping Interoperability for Health Care, Health Level 7 Electronic Health Record Interoperability Work Group, February 2007. URL: http://www.hln.com/assets/pdf/Coming-to-Terms-February-2007.pdf

Hammond WE, Cimino JJ. Standards in Medical Informatics. In: Shortliffe EH, Perreault LE, Wiederhold G, Fagan LM, editors. Medical Informatics - Computer Application in Health Care, 2nd ed., New York: Springer, 2002, Chapter 6, 212-56.

HHS Office of National Coordinator of Health Information Technology (ONC). The ONC-Coordinated Federal Health Information Technology Strategic Plan: 2008-2012. Using the Power of Information Technology to Transform Health and Care.

HHS Office of National Coordinator of Health Information Technology (ONC). Federal Health Information Technology Strategic Plan: 2011-2015. URL: http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&cached=true&objID=1211&PageID=15583

Keith W. Boone. The CDA™ Book. Springer-Verlag. 2011

Key Capabilities of an Electronic Health Record System. Institute of Medicine. Letter Report. July 31, 2003.

McDonald CJM, Schadow G. Suico J. Overhage MJ. Data Standards in Health Care. Annals of Emergency Medicine. 2001; 38(3): 303-311.

"Meaningful" Progress Toward Electronic Health Information Exchange. URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1350&parentname=CommunityPage&parentid=5&mode=2&in_hi_userid=11113&cached=true#

Public Health Data Standards Consortium (PHDSC). Electronic Health Record-Public Health Perspectives. White Paper. PHDSC Ad Hoc Task Force on the Electronic Health Record-Public Health. March 9, 2004.: 27p. plus 9 Attachments. ULRs: http://www.phdsc.org/health_info/pdfs/PHDSC_EHRPH_WhitePaper2004.pdf

Public Health Data Standards Consortium (PHDSC). Standards for Public Health Laboratory (PH-Lab) Data Exchange. White Paper. Parts 1-2. 2012. URL: http://phdsc.org/standards/phlab-data-exchange.asp

Public Health Data Standards Consortium (PHDSC). Assure Health IT Standards for Public Health. Clinical Document Architecture for Public Health. Pilot Project Report. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Renly S, Altamore R, Nelson L, Orlova A, Patterson K, Quaynor S, Reed-Fourquet L, Timm J. A New Model for Collaboration: Building CDA Documents in MDHT. Proceedings. Am Med

Inform Assoc. (AMIA), Annual Symposium, Proc. 2012. 733-737. URL: http://proceedings.amia.org/2p8rg7/1?highlightText=sondra%20renly OR https://wiki.phdsc.org/images/3/3e/Amia-2012-phcda_accepted_proof.pdf

Richesson RL, Krischer J. Data Standards in Clinical Research: Gaps, Overlaps, Challenges and Future Directions. JAMIA. 2007; 14: 678-696.

Standards Recommended to Achieve Interoperability in Minnesota. Guide 2: Updated June 2010. URL: http://www.health.state.mn.us/e-health/summit/g2standards2009.pdf

Thompson TG and Brailer DJ. The Decade of Heath Information Technology to Deliver Consumer-centric and Information-rich Health Care. Framework for Strategic Action. US DHHS, July 21, 2004.

White MD, Kolar LM, Steindel SJ. Evaluation of Vocabularies for Electronic Laboratory Reporting to Public Health Agencies. JAMIA, 1999; 6: 185-194.

Resources (in alphabetical order):

American Medical Association (AMA), Current Procedural Terminology (CPT). URL: http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billing-insurance/cpt.page

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

Certification Commission for Health Information Technology (CCHIT). URL: http://www.cchit.org/

Health IT Standards Committee (a Federal Advisory Committee). URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1271&parentname=CommunityPage&parentid=6&mode=2

Health Information Technology Standards Panel (HITSP). URL: http://www.hitsp.org

Integrating the Healthcare Enterprise (IHE): URL: http://www.ihe.net

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

National Library of Medicine. Health Information Technology and Data Standards. http://www.nlm.nih.gov/healthit.html

The Office of the National Coordinator for Health Information Technology (ONC). Standards and Interoperability Framework Initiatives. URL: http://wiki.siframework.org/

Public Health Data Standard Consortium (PHDSC). URL: www.phdsc.org

Lectures # 0 & 1

Towards a Nationwide Health Information Network

Topics:

Course Introduction:

- Course Objectives and Expectations
- Administrative Matters

Lecture #1:

- Towards a Nationwide Health Information Network
  - National Initiatives
  - Public Health and HIT Adoption
  - From Public Health Reporting to Bi-directional Data Exchanges

Lecturer: Anna Orlova, Ph.D.

Objectives:

- To understand national health IT (HIT) initiatives.
- To understand use of HIT in public health
- To understand health information exchanges (HIEs) between clinical and public health/population health data systems.

Suggested Readings and Resources:

"Meaningful" Progress Toward Electronic Health Information Exchange. URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1350&parentname=CommunityPage&parentid=5&mode=2&in_hi_userid=11113&cached=true#

Thompson TG and Brailer DJ. The Decade of Heath Information Technology to Deliver Consumer-centric and Information-rich Health Care. Framework for Strategic Action. US DHHS, July 21, 2004.

HHS Office of National Coordinator of Health Information Technology. The ONC-Coordinated Federal Health Information Technology Strategic Plan: 2008-2012. Using the Power of Information Technology to Transform Health and Care AND The ONC-Coordinated Federal Health Information Technology Strategic Plan: 2011-2015. URL: http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&cached=true&objID=1211&PageID=15583

Key capabilities of an Electronic Health Record System. Institute of Medicine. Letter Report. July 31, 2003.

Orlova AO, Dunnagan M, Finitzo T, Higgins M, Watkins T, Tien A, Beales S. An Electronic Health Record-Public Health (EHR-PH) System Prototype for Interoperability in 21st century Healthcare Systems. Am Med Inform Assoc. (AMIA), Annual Symposium, Proc., 2005. 582-586.

Public Health Data Standards Consortium and Integrating the Healthcare Enterprise. Building a Roadmap for Health Information Systems Interoperability for Public Health. 2007. URL: http://www.ihe.net/Technical_Framework/upload/IHE_PHDSC_Public_Health_White_Paper_2007_10_11.pdf

Discussion Questions:

1. Getting to Know You – Please introduce yourself to the class and describe your professional experience and interests (no more than 5 lines). *Answers to this question will not be graded. They will be used to generate a list of public health domains (areas) for the group projects*.
2. What opportunities do you see in integrating public health into a Nationwide Health Information Network (NHIN)? Why? (no more than 10 lines)
3. What are the main challenges in integrating public health into a Nationwide Health Information Network (NHIN)? Why? (no more than 10 lines)

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Lecture #2

Health IT Standards and Health IT Standardization

Topics:

- Coordinated Federal HIT Strategic Plan
- HIT Standards: Definitions and Categories
- HIT Standardization Phases and Entities
- Role of Public Health in HIT Standardization

Lecturer: Anna Orlova, Ph.D.

Objectives:

- To understand the main categories of HIT standards.
- To understand the HIT standardization process.
- To know HIT standardization entities.
- To understand the role of users in HIT standardization.

Suggested Readings and Resources:

Gordon Bell. A Time and Place for Standards. URL: http://acmqueue.com/modules.php?name=Content&pa=showpage&pid=210

Health IT Standards Committee (a Federal Advisory Committee). URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1271&parentname=CommunityPage&parentid=6&mode=2

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Public Health Data Standards Consortium (PHDSC). Business Case: Role of Public Health in National Health Information Technology Standardization. 2009. URL: http://www.phdsc.org/standards/pdfs/PHDSC_Business_Case_HIT_Standards_for_Public_Health_FINAL.pdf

Public Health Data Standards Consortium (PHDSC). Standards for Public Health Laboratory (PH-Lab) Data Exchange. White Paper. Parts 1-2. 2012. URL: http://phdsc.org/standards/phlab-data-exchange.asp

Discussion Questions:

1. List the main categories of HIT standards.

2. List the main phases of HIT standardizati*on* and provide an example of at least one standardization entity per phase.

Lecture #3

Health Information Systems Interoperability

Topics:

- Evolution of Public Health Systems
- Systems and Systems Integration
- From Integration to Interoperability
- Health Information Exchanges (HIEs) and Health Information Organization (HIOs)
- Public Health Imperatives

Lecturer: Noam Arzt, Ph.D., HLN Consulting LLC

Objectives:

- To understand how public health systems have evolved and changed over time.
- To understand the concepts of information systems integration and interoperability.
- To understand how health information exchanges (HIEs) enable interoperability between clinical and public health/population health data systems.
- To understand three imperatives for public health as a result of interoperability.

Suggested Readings and Resources:

Arzt NH and Salkowitz S. Evolution of Public Health Information Systems: Enterprise-wide Approaches, July 2007. URL: http://www.hln.com/assets/pdf/UT-White-Paper-Final.pdf

Gibbons P, et al. Coming to Terms: Scoping Interoperability for Health Care, Health Level 7 Electronic Health Record Interoperability Work Group, February 2007. URL: http://www.hln.com/assets/pdf/Coming-to-Terms-February-2007.pdf

Orlova AO, Dunnagan M, Finitzo T, Higgins M, Watkins T, Tien A, Beales S. An Electronic Health Record-Public Health (EHR-PH) System Prototype for Interoperability in 21st Century Healthcare Systems. Am Med Inform Assoc. (AMIA), Annual Symposium, Proc., 2005. 582-586. URL: http://proceedings.amia.org/2005/~searchResults?searchMode=quick&searchText=orlova+Anna&context=45410138

Standards Recommended to Achieve Interoperability in Minnesota. Guide 2: Updated June 2010. URL: http://www.health.state.mn.us/e-health/summit/g2standards2009.pdf

Integrating the Healthcare Enterprise (IHE): URL: http://www.ihe.net

Meaningful Use of Health IT and Public Health. Web-Pages. URL: https://www.hln.com/resources/mu-ph.php

1. Meaningful Use: Immunization. URL: https://www.hln.com/resources/mu/mu-iz.php
2. Meaningful Use: Laboratory Reporting. URL: https://www.hln.com/resources/mu/mu-lr.php
3. Meaningful Use: Syndromic Surveillance. URL: https://www.hln.com/resources/mu/mu-ss.php

Discussion Questions:

1. What are some of the obstacles to enabling both integration (within public health agencies) and interoperability (between agencies or agencies and external organizations)?
2. How do standards play a role in enabling interoperability between public health and clinical systems? Can you name at least one specific example?

Lecture #4

Towards Business Process Standards

Topics:

- Need for Business Process Standards: Example of Immunizations
- Business Processes Definitions
- Documenting Business Processes in Public Health
- From Business Processes to Systems Requirements
  - Building a Consensus on Public Health High Level Business Areas
  - Connecting Business Processes, Functional Requirements and IT Solutions

Lecturers: Anna Orlova, Ph.D.

Objectives:

- To learn about Business Processes Standards.
- To understand the role of users in the development of the Business Processes Standards.

Suggested Readings and Resources:

OASIS WS-BPEL Standard. URL: http://docs.oasis-open.org/wsbpel/2.0/OS/wsbpel-v2.0-OS.pdf

A Service-Oriented Architecture (SOA) View of IHE Profiles – White Paper at the Integrating the Healthcare Enterprise (IHE). (URL: http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_WhitePaper_A-Service-Oriented-Architecture_SOA_2009-09-28.pdf

Centers for Medicaid and Medicare Services (CMS). Medicaid Information Technology Architecture (MITA) Project Overview. URL: http://www.cms.gov/MedicaidInfoTechArch/

Centers for Medicaid and Medicare Services (CMS). Medicaid Information Technology Architecture (MITA) Project. Behavioral Health. URL: http://www.cms.gov/MedicaidInfoTechArch/06_Behavioral%20Health-MITA.asp

Discussion Question:

1. Provide at least 2 examples of the clinical or public health guidelines that may serve as a basis for the Business Process Standard in this domain (program).

Lecture #5

HIT Standards: Functional Standards

Topics:

- Functional Standard
- System Development Process - How to Communicate Your Needs to Developers
- Documenting Functional Requirements
- Final Assignment

Lecturer: Anna Orlova, Ph.D.

Objectives:

- To learn about Functional Standards.
- To understand the role of users in the development of the Functional Standards.
- To understand the role of users in the information systems design.

Suggested Readings and Resources:

Bruegge B. and Dutoit A.H. Object-Oriented Software Engineering. Pearson Prentice Hall. Upper Saddle River, NJ. 2nd edition. 1-172.

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Integrating the Healthcare Enterprise (IHE). Quality, Research and Public Health Committee. Newborn Screening White Paper. 2009. URL: ftp://ftp.ihe.net/Quality/2009_2010_YR_3/Planning/White%20papers%20yr%203/Newborn%20Screening/IHE_QRPH_Newborn_Screening_WhitePaper_Finall_2009-08-26.doc.

Public Health Data Standards Consortium (PHDSC). Standards for Public Health Data Exchange: Functional Requirements Standard for Diabetes Care Management and Surveillance. 2008. URL: http://www.phdsc.org/health_info/pdfs/Standards-for-Public-Health-PHDSC-FINAL-Report.pdf

Public Health Data Standards Consortium (PHDSC). Developing a Vision for Functional Requirements Specification for Electronic Data Exchange between Clinical and Public Health Settings: Examples of School Health and Syndromic Surveillance in New York City. 2006, 40p plus attachments.URL:http://www.phdsc.org/about/committees/pdfs/nhin/NYC_School_Health_SSS_Spec_Final_103006.pdf

Discussion Question:

1. What is the most critical step in developing a Functional Requirement Analysis Document (Functional Standard)? Why?

Lecture #6

HIT Standards: Data Standards

Topics:

- Key Concepts
- Features of Terminology Systems
- Terminologies in Use Today
- Tools and Technologies
- Case Study: Integration of CPT Codes into Breast and Cervical Cancer Project (BCCP) System in Cuyahoga County Board of Health

Lecturer: Mr. Keith Boone, GE Healthcare

Objectives:

- Define key concepts related to data standards
- Describe features of various terminology systems
- List several common terminologies used in Healthcare IT and explain what they are used for
- To understand the role of users in the development of the Data Standards.

Suggested Readings and Resources:

Hammond WE, Cimino JJ. Standards in Medical Informatics. In: Shortliffe EH, Perreault LE, Wiederhold G, Fagan LM, editors. Medical Informatics - Computer Application in Health Care, 2nd ed., New York: Springer, 2002. Chapter 6, 212-56.

McDonald CJM, Schadow G, Suico J, Overhage MJ. Data Standards in Health Care. Annals of Emergency Medicine. 2001; 38(3): 303-311.

Richesson RL, Krischer J. Data Standards in Clinical Research: Gaps, Overlaps, Challenges and Future Directions. JAMIA. 2007; 14: 678-696.

White MD, Kolar LM, Steindel SJ. Evaluation of Vocabularies for Electronic Laboratory Reporting to Public Health Agencies. JAMIA, 1999; 6: 185-194.

National Library of Medicine. Health Information Technology and Data Standards. http://www.nlm.nih.gov/healthit.html

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Discussion Question:

1. What is the difference between Ontology and Hierarchy?

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Lecture #7

HIT Standards: Information Content Standards

Topics:

- Clinical Documents
- HL7 Modeling and Clinical Statements
- Data Types

Lecturer: Mr. Keith Boone, GE Healthcare

Objectives:

- Define key features of Clinical Documents
- Describe key classes used in the HL7 CDA Standard
- Describe common data types and classes using in HL7 Version 3
- Understand how to map an HL7 diagram to UML
- To understand the role of users in the development of the Information Content Standards.

Suggested Resources:

Keith W.Boone. The CDA™ Book. Springer-Verlag. 2011

Health Level Seven (HL7). URL: http://www.hl7.org/

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Public Health Data Standards Consortium (PHDSC). Assure Health IT Standards for Public Health. Clinical Document Architecture for Public Health. Pilot Project Report. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Renly S, Altamore R, Nelson L, Orlova A, Patterson K, Quaynor S, Reed-Fourquet L, Timm J. A New Model for Collaboration: Building CDA Documents in MDHT. Proceedings. Am Med Inform Assoc. (AMIA), Annual Symposium, Proc. 2012. 733-737. URL: http://proceedings.amia.org/2p8rg7/1?highlightText=sondra%20renly OR https://wiki.phdsc.org/images/3/3e/Amia-2012-phcda_accepted_proof.pdf

Discussion Question:

1. What is the key function of Clinical Documentation?

Lecture #8

HIT Standards: Information Exchange Standards

Topics:

- Information Exchange Standards: Messaging and Structures Document-based Data Exchanges
  - Standards used in integration
  - HL7 overview and domains
  - DICOM overview and domains
  - The IHE initiative
  - Messaging architectures and examples

Lecturer: Mr. Michael Henderson, Eastern Informatics

Objectives:

- To learn about Information Exchange Standards.
- To understand the role of users in the development of the Information Exchange Standards.

Suggested Resources:

Health Level Seven (HL7). URL: http://www.interfaceware.com/hl7.html?gclid=CPDz_bbAk44CFRGCGgodAiKpDw

Integrating the Healthcare Enterprise: URL: http://www.himss.org/ASP/topics_ihe.asp

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Discussion Questions:

1. What are the most effective inducements toward the development and implementation of interfaces that conform to industry profiles such as those in the IHE Technical Frameworks, as opposed to proprietary interface specifications?

2. What are the relative advantages and disadvantages to a "majority-rules" (50.1% agreement required for adoption) process of standards adoption as opposed to a consensus-based (90%+) process?

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Lecture #9

HIT Standards: Identifiers Standards

Topics:

- Part 1 – Overview
  - Key concepts and definitions
  - Who needs a unique identifier in health care
  - Where are unique identifiers used
- Part 2 – Principles, Standards & Challenges
  - Principles and characteristics of unique identifiers
  - National standards on unique identifiers
  - Challenges ahead

Lecturer: Dr. Walter Suarez, Director, Health IT Strategy, Kaiser Permanente

Objectives:

- To learn about Identifier Standards.
- To understand the users and uses of identifiers in health care.
- To learn about the current state of national health care identifiers and the challenges ahead.

Suggested Readings:

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Discussion Questions:

1. Name five principles and characteristics of unique identifiers.

2. In light of the fact that the US does not have (and will not have in the foreseeable future) a national patient identifier, what are two mechanisms being used to allow to find and link data from the same patient across organizational boundaries?

Lecture #10

HIT Standards: Privacy and Security Standards

Topics:

- Part 1 – Overview: Basic Concepts and Underlying Realities
- Part 2 – Privacy of Health Information
  - Framework
  - Current practices
- Part 3 – Health Information Security
  - Framework
  - Current Practices

Lecturer: Dr. Walter Suarez, Ph.D., Director, Health IT Strategy, Kaiser Permanente

Objectives:

- To learn about Privacy and Security Standards.
- To understand the basic concepts, requirements and principles of health information privacy in the US
- To understand about the basic concepts, requirements and principles of health information security in the US
- To learn about the new and emerging issues related to health information privacy and security

Suggested Resources:

Public Health Data Standards Consortium (PHDSC). Web Resource Center. Health Information Technology Standards. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Office of the National Coordinator for Health Information Technology (ONC), HHS. Privacy and Security Whitepaper Series. URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1147&parentname=CommunityPage&parentid=8&mode=2&in_hi_userid=11673&cached=true

Office of the National Coordinator for Health Information Technology (ONC), HHS. The Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health information. URL: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1173&parentname=CommunityPage&parentid=34&mode=2&in_hi_userid=10732&cached=true

Office for Civil Rights, HHS. Understanding Health Information Privacy. URL: http://www.hhs.gov/ocr/privacy/hipaa/understanding/index.html

Office for Civil Rights, HHS. Summary of HIPAA Privacy Rule. URL: http://www.hhs.gov/ocr/privacy/hipaa/understanding/summary/index.html

Office for Civil Rights, HHS. Summary of HIPAA Security Rule. URL: http://www.hhs.gov/ocr/privacy/hipaa/understanding/srsummary.html

Discussion Questions:

1. (General): Name three underlying realities that make our health care system complex for privacy and security purposes.
2. (Privacy): Name five core principles established in the Nationwide Privacy and Security Framework for the US.
3. (Privacy): HIPAA Privacy is generally considered the base/underlying framework for privacy in the US. Name the four core areas covered by the HIPAA Privacy Rule and provide an example of each.
4. (Security): What is the definition of Information Security?
5. (Security): Name five areas where security standards exist.

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Lecture #11

HIT Standards Harmonization

Topics:

- Standards Harmonization: Interoperability Requirements
- Standards Harmonization: Standards Selection
- Testing
- Examples, Participation, and Leveraging Standards Harmonization Products

Lecturer: Lori Reed-Fourquet, eHealthSign

Objectives:

- To learn about harmonization of HIT standards.
- To learn about public health activities at HITSP and IHE.
- To understand the role of users in HIT standards harmonization.

Suggested Resources:
Health Information Technology Standards Panel (HITSP). URL: http://www.hitsp.org

Integrating the Healthcare Enterprise (IHE). URL: http://www.ihe.net

Discussion Question:

1. What are the steps involved to establish harmonized standards for an interoperable implementation?

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Lecture #12

HIT Standards Testing and Product Certification

Topics:

- Testing HIT Interoperability Standards
  - IHE Connectathon
- Certifying Interoperable Clinical EHR-S and Public Health Information Systems
  - Developing certification criteria for interoperable information systems
  - National Certification Entities, e.g., Certification Commission for Health Information Technology (CCHIT)

Lecturer: William Majursky, National Institute of Standards (NIST)

Objectives:

- To learn about testing of HIT interoperability standards.
- To learn about certification of public health HIT products.
- To understand the role of users in HIT products testing and certification.

Suggested Resources:

Integrating the Healthcare Enterprise (IHE). IHE Connectathon.
URL: http://www.ihe.net/Connectathon/index.cfm

Certification Commission for Health Information Technology (CCHIT). URL: http://www.cchit.org/

Discussion Question:

1. Define the following:
   a. Conformance testing
   b. Interoperability testing
   c. Certification
2. Explain how they differ
3. How are standards, if necessary, constrained to provide for interoperability?
4. Where might you volunteer to learn more about interoperability testing?

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Lecture #13

HIT Standards: International Perspectives

Topics:

- Why Participate in International Standards Activities?
- Overview of International Standards Organizations and Activities
  - ISO, HL7, IHE
- International Classification and Terminology Standards
- Challenges

Lecturer: Marjorie Greenberg, Chief, Classifications and Public Health Data Standards, National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC)

Objectives:

- To know international HIT standardization entities.
- To understand the role of users in HIT standardization at the international level.

Suggested Resources:

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

World Health Organization (WHO). Forum on Health Data Standards and Interoperability. URL: http://www.who.int/mediacentre/events/meetings/2012/data_standardization_interoperability/en/index.html

World Health Organization Family of International Classifications. URL: http://www.who.int/classifications/en/

Discussion Questions:

1. How does the U.S. benefit from participation in international standardization activities?

2. What are barriers to U.S. participation in international standardization activities?

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Lecture #14

Student Presentations

Functional Requirements Specification
for
Clinical and Public Health Information Exchanges

Presentation Outline

Slide 1 – Title, List of Group Members with Roles in the Project
Slide 2 – Public Health (Clinical) Problem Overview
Slide 3 – Information Systems Overview and Scope
Slide 4 – Information Systems Goals (WHAT)
Slide 5 – Actors (Perspectives) (WHO)
Slide 6 – Functions that System will Support (HOW)
Slide 7 – Non-functional Requirements
Slides 8 & 9 – Use Case(s); Use Case Diagram(s); Work Flow and Data Flow Diagram(s)
Slide 10 – Proposed System Architecture
Slide 11 – Selected Standards Table
Slide 12 – Hardware and Software Requirements
Slide 13 – Evaluation Plan
Slide 14 – System Development Timeline and Deliverables

Presentations are due by midnight on Sunday, March 3.

Lecture #15 (Extra Credit)

Deployment of Standards-based HIT Solution in Public Health Practice: Case Studies

CASE STUDY 1

Integration of Current Procedural Terminology (CPT) Codes into Breast and Cervical Cancer Project (BCCP) System in Cuyahoga County Board of Health

Topics:

- Background information
  - Cuyahoga County Board of Health
  - Breast and Cervical Cancer Program
- Overview of Enterprise System used to implement data standards
  - Database structure
  - System-generated reports

Lecturers: James Coates and Christopher Bauer**,** Cuyahoga County Board of Health

CASE STUDY 2

Integration of different interoperability standards for Clinical Document Architecture (CDA) for Public Health Pilot Project New York State

Topics:

- Current State of Public Health Reporting in the State of New York
- Towards Standards-based Public Health Reporting: CDA for Public Health Pilot Project
  - Using Interoperability Standards
  - Lessons Learned
  - Next Steps

Lecturers: Nitin Kunte, Oz Systems and Kathleen Brousseau, New York State Department of Health

Objectives:

- To learn real-life deployment of HIT standards in Public Health.

Suggested Resources:

American Medical Association (AMA), Current Procedural Terminology (CPT). URL: http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billing-insurance/cpt.page

Public Health Data Standards Consortium (PHDSC). Assure Health IT Standards for Public Health. Clinical Document Architecture for Public Health. Pilot Project Report. URL: http://phdsc.org/standards/health-information-tech-standards.asp

Integrating the Healthcare Enterprise. Technical Frameworks. URL http://www.ihe.net/technical_framework/

Discussion Questions:

Case Study 1: Name 3 advantages of integrating a data standard such as CPT codes to meet both agency's and program's data needs?

Case Study 2: Describe issues that may arise while integrating interoperability standards.