Component 13: Public Health IT

Instructor Manual

Version 3.0/Spring 2012

Notes to Instructors

This Instructor Manual is a resource for instructors using this component. Each component is broken down into units, which include the following elements:

- Learning objectives
- Suggested student readings, texts, reference links to supplement the narrated PowerPoint slides
- Lectures (voiceover PowerPoint in Flash format); PowerPoint slides (Microsoft PowerPoint format), lecture transcripts (Microsoft Word format); and audio files (MP3 format) for each lecture
- Self-assessment questions reflecting Unit Objectives with answer keys and/or expected outcomes
- Application Activities (e.g., discussion questions, assignments, projects) with instructor guidelines, answer keys and/or expected outcomes

Contents

Component Overview

This component is specifically for individuals interested in a career in public health. This component will provide an overview of specialized public health applications such as registries, epidemiological databases, biosurvelliance, public health reporting alerts, quality reporting, and how to adopt/use of population health functions for electronic health records and consumer functions for personal health records. In addition, this component will address the potential of public health information technology for health promotion and chronic disease prevention.

Component Objectives

At the completion of this component, the student will be able to:

- Distinguish (draw distinctions) among core functions and essential services of 'public health' and 'clinical care'.
- Synthesize key reasons and current contextual factors for providers in clinical practice to improve public health services and practices using EHRs.
- Apply health data definitions and standards, as well as privacy and confidentiality issues, in typical public health scenarios.
- Summarize the strategies, features, and systems needed for public health agencies to define and build the necessary connections to EHRs as identified by meaningful use legislation.
- Describe the roles and functions of existing public health data and health databases and networks.
- Identify current needs and future directions for EHR biosurveillance, disaster-preparedness, and situational awareness in improving public health.
- Summarize/describe the main role, functions and applications of public health reporting, alerts and decision support systems.
- Summarize the role, functions and applications of public health IT for health promotion and chronic disease prevention.
- Delineate the critical role of advocacy in adoption/use of EHRs and Consumer functions for PHRs to improve public health.

Component Authors

Assigned Institution
Columbia University, New York, NY

Team Lead
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Associate Professor, Department of Biomedical Informatics (DBMI) and the Mailman School of Public Health (Sociomedical Sciences), and Director of the Health Communication and Informatics Laboratory at DBMI, Columbia University
Dr. Kukafka maintains an active, funded program of research and publication in public health informatics while being engaged in major leadership roles in the field. Her research is at the crossroads of Biomedical Informatics and Public Health and focuses on the use of Web 2.0 technologies (social software) to develop and strengthen communities and people-networks, and use of participatory action methods for re-engineering, system design and evaluation. One area of research is computer interventions for chronic disease self-management, health promotion and informed decision-making, patient-focused electronic health records and personal health records, tailoring health communication, and interactive computer graphics for communicating health risk probabilities to patients. Another area of her research focuses on how theory from the behavioral sciences can be applied to advance our understanding and to improve our capacity to implement information technology systems into health care organizations. She is a member of the American Medical Informatics Association (AMIA) Board of Directors and she is a past chair of that organization's Working Group on Consumer Health Informatics.

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Likewise, the above also applies to the Curriculum Development Centers (including Columbia University, Duke University, Johns Hopkins University, Oregon Health & Science University, University of Alabama at Birmingham, and their affiliated entities).

Component 13/Unit 1

Unit Title
Overview & Contribution to Public Health Through Electronic Health Record Use

Unit Description
This unit will synthesize key reasons and current contextual factors for providers in clinical practice to improve public health practice using Electronic Health Records (EHRs).

Unit Objectives
By the end of this unit, the student will be able to:
1. Explain what is public health?
2. Discuss what distinguishes public health from the other health sciences
3. Explain public health's unique contributions to the health of the public
4. To define Public Health (PH) Information Technology and PH Informatics
5. To illustrate how innovative IT solutions are being applied to PH practice
6. To explain the role of electronic health records and data exchange to clinical care and health care improvement
7. Describe PH organizational structure

Unit Topics / Lecture Titles
A. Introduction to Public Health
B. Historical Context of Public Health
C. Opportunities for Public Health enabled electronic health records
D. Public Health + Health Information Technology (PHIT)
E. Public Health Informatics

Unit References
(All links accessible as of 1/1/2014)

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Lecture 1a

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2. Action model to achieve healthy people 2020 overarching goals. Retrieved on June 10th 2010 from http://healthypeople.gov/2020/#_Toc212885445*

3. Healthy People 2020 Threats to Public Health facts. Retrieved on June 10th, 2010 from http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=41*

4. Screening for obesity in adults. (2003). U.S Preventive Services Task Force. Retrieved on June 10th, 2010 from http://www.uspreventiveservicestaskforce.org/uspstf/uspsobes.htm.

5. Whitlock, E.P., O'Connor, E.A., Williams, S.B., Beil, T.L., Lutz, K.W. (2009).

6. Effectiveness of weight management interventions in children: a targeted systematic review for the USPSTF. Retrieved on June 10th, 2010 from http://www.uspreventiveservicestaskforce.org/uspstf10/childobes/chobesart.pdf.

7. Threats to the public's health: infectious diseases. Retrieved on June 10th 2010 from http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=23.

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9. Health People 2010 Infectious Diseases. Retrieved on June 10th 2010 from http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=23.

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15. The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. Department of Health and Human Services. Retrieved June 10th, 2010 from http://www.surgeongeneral.gov/library/secondhandsmoke/report/fullreport.pdf.

16. Self-created map of London water pumps using Epi Map Generated using CDC Epi Map Module in Epi Info 2000 for Windows, a public domain package that can be downloaded from: http://www.cdc.gov/epiinfo/EI2000.htm

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Lecture 1a Images
Slide 23: Retrieved June 10th, 2010 from http://www.nap.edu/openbook.php?record_id=10548&page=49
Slide 24: Retrieved June 10th, 2010 http://www.nap.edu/openbook.php?record_id=10548&page=49

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Slide 27: Action model to achieve healthy people 2020 overaching goals. Retrieved June 10th, 2010 from http://www.healthypeople.gov/hp2020/advisory/PhaseI/sec4.htm#_Toc212885445*
Slide 29: The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. Department of Health and Human Services. Retrieved June 10th, 2010 from http://www.surgeongeneral.gov/library/secondhandsmoke/report/fullreport.pdf

Lecture 1b
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2. Kukafka, R., Ancker, J.S., Chan, C., et al. (2007). Redesigning electronic health record systems to support public health. *Journal of Biomedical Informatics, vol.40*(special issues), p. 398-409.
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5. Mostashari, F. (2002). Syndromic surveillance in New York City. New York City Department of Health. New York State Sanitary Code, 10 NYCRR Chapter 1, Section 2.16(a). Retrieved June 10th, 2010 from http://www.syndromic.org/syndromicconference/2002/presentationpdf/farzad_mostashari.pdf.

Lecture 1b Charts, Tables and Figures
1.1 Table: Mokdad, A.H., Marks, J.S., Stroup, D.F., and Gerberding, J.L. (2004). Actual causes of death in the United States, 2000. JAMA, vol,291(110), p. 1238-1245.

Lecture 1b Images
Slide 6: Self-created map of London water pumps using Epi Map Generated using CDC Epi Map Module in Epi Info 2000 for Windows, a public domain package that can be downloaded from: http://www.cdc.gov/epiinfo/EI2000.htm

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Slide 7: Retrieved June 10th, 2010 from
http://www.flickr.com/photos/lwr/4346005957/sizes/l/#cc_license
Slide 8: Retrieved June 10th, 2010 from
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www.syndromic.org/syndromicconference/2002/presentationpdf/farzad_
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Slide 20: Tobacco cessation aids sold at large pharmacy chains. Retrieved
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Slide 21: New York City Department of Health Triennial report (2006).
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Suggested Readings
None

Student Application Activities
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comp13_unit1_self_assess.doc
comp13_unit1_self_assess_key.doc

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Component 13/Unit 2

Unit Title
Privacy, Confidentiality and Security of Public Health Information

Unit Description
Apply health data definitions and standards, as well as privacy and
confidentiality issues, in typical public health scenarios.
[Note: This outcome applies jointly to units 2 and 3, which are related.]

Unit Objectives
By the end of this unit, the student will be able to:

1. Identify the exercise of principles of privacy, confidentiality,
   and security of public health information, in scenarios
   involving patients and health practitioners.
2. Identify the types of laws/Acts applicable to the treatment of
   public health information.
3. Locate resources for applicable state, local, and federal laws
   and/or Acts
4. Interpret the treatment of and apply applicable laws/Acts
   to public health information in given patient or practitioner
   scenarios.
5. Identify the functions of a "covered entity" and a "business
   associate" in relation to the treatment of public health
   information.
6. Describe the objectives and roles of the HIPAA Privacy Rule
   and exceptions to HIPAA as they apply to public health.
7. Identify patient rights under the Notice of Privacy Practices
8. Describe the potential civil and criminal penalties for a HIPAA
   violation
9. Identify and summarize each HIPAA security requirement
   (administrative, physical, and technical)
10. Discuss policy, procedures, contracts, and plans in
    administrative safeguards
11. Describe how the physical environment can impact security
    of information and develop solutions
12. Discuss technical strategies that can be implemented for
    security purposes
13. Identify the type of information that requires protection (e.g.,
    diseases, demographics) and list examples

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14. Demonstrate the application of principles for the appropriate release of required patient information in given scenarios.
15. Identify examples of circumstances when patient information may be used without patient authorization.
16. Summarize the ARRA/HITECH amendments to HIPAA.

Unit Topics / Lecture Titles
A. Privacy
B. Confidentiality
C. Security
D. Laws, Acts & Public Health
E. Statutory & Regulatory
F. Health Insurance portability and Accountability Act

Unit References
(All links accessible as of 1/1/2014)

Lecture
1. Disclosures for Public Health Agencies. Retrieved on June 10, 2010 from http://www.hhs.gov/ocr/privacy/hipaa/understanding/special/publichealth/publichealth.pdf
2. HIPAA Privacy Rule and Public Health. Retrieved on June 10, 2010 from http://www.cdc.gov/mmwr/preview/mmwrhtml/m2e411a1.htm
3. Retrieved on June 10, 2010 from HIPAA: http://www.hhs.gov/ocr/privacy
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13. The American Health Information Management Association (AHIMA). Retrieved on June 10, 2010 from http://www.ahima.org
14. Breaches and Resources. Retrieved on June 10, 2010 from http://www.phiprivacy.net/
15. Government Security. Retrieved on June 10, 2010 from http://www.govinfosecurity.com/index.php
16. Health Data Management. Retrieved on June 10, 2010 from http://www.healthdatamanagement.com/
17. HIPAA Proposed Rule for Accounting of Disclosures. Retrieved on June 10, 2010 from http://www.gpo.gov/fdsys/pkg/FR-2011-05-31/pdf/2011-13297.pdf

Suggested Readings
None

Student Application Activities
comp13_unit2_discuss.doc
comp13_unit2_discuss_key.doc
comp13_unit2_self_assess.doc
comp13_unit2_self_assess_key.doc

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Component 13/Unit 3

Unit Title
Data Standards in Public Health Information Technology

Unit Description
Apply health data definitions and standards, as well as privacy and confidentiality issues, in typical public health scenarios.
[Note: This outcome applies jointly to units 2 and 3, which are related.]

Unit Objectives
By the end of this unit, the student will be able to:

1. Discuss the New York City Department of Health and Mental Hygiene partnership with a commercial EHR vendor and how it created a public health-enabled EHR.
2. Demonstrate knowledge of public health-oriented clinical decision support including an integrated strategy using multiple tools such as alerts, order sets, smart forms, and quality reporting.
3. Describe the EHR "meaningful use" movement and how it could transform existing clinical/public health practices.
4. Describe the strategies, features, and systems needed for public health agencies to define and build the necessary connections to EHRs as identified by the "meaningful use" legislation.
5. Identify the essential features of four primary public health IT functions, including syndromic surveillance, bi-directional immunization registries, public health alerts, ad-hoc reporting, and more.

Unit Topics / Lecture Titles

A. Identify the architecture categories for information systems and explain the differences
B. Summarize objectives of an enterprise architecture plan
C. Identify the objectives of data standards for public health
D. Describe the different types of standards required (e.g., information, clinical data representation, technical, medication terminology, and privacy and security)
E. Identify the factors involved in grammar data standards for communicating in public health informatics

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F. Identify the principles of context regarding data standards for communicating public health informatics
G. Identify universal vocabularies and classification systems applicable to public health (CPT, ICD-0)
H. Identify and compare associations and/or organizations developing standards (e.g., CCHIT, HL7, American Society for Testing and Materials)

Unit References
(All links accessible as of 1/1/2014)

Lecture
1. Public Health Informatics and Information Systems edited by Patrick W. O'Carroll, William A. Yasnoff, M. Elizabeth Ward, Laura H. Ripp, & Ernest L. Martin, 2003 ISBN 0-387-95474-0
2. Accredited Standards Committee X12. Retrieved on July 10th, 2010 from http://www.x12.org/
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11. Agency for Toxic Substances & Disease Registry. Retrieved on July 10th, 2010 from http://www.atsdr.cdc.gov/
12. Office of Surveillance, Epidemiology, and Laboratory Services. Retrieved on July 10th, 2010 from http://www.cdc.gov/osels/
13. National Institute of Standards and Technology. Retrieved on July 10th, 2010 from http://www.nist.gov/index.html
14. Computer Security Division Community Security Resource Center. Retrieved on July 10th, 2010 from http://csrc.nist.gov/index.html

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22. National Uniform Billing Committee (NUBC). Retrieved on July 10th, 2010 from http://www.nubc.org/
23. Analysis of Unique Patient Identifier Options Final report. Retrieved on July 10th, 2010 from http://ncvhs.hhs.gov/app0.htm*
24. Reliable Patient Identification Project. Retrieved on July 10th, 2010 from http://whinit.org/reliable-patient-identification-project/*
25. Global Patient Identifiers. Retrieved on July 10th, 2010 from http://gpii.info/
26. Sample Universal Healthcare Identifier. Retrieved on July 10th, 2010 from http://ncvhs.hhs.gov/app7-2.htm*
27. Gartner Healthcare Presentation. Retrieved on July 10th, 2010 from http://www.gartner.com/it/content/530400/530411/ks_hc_nov.pdf
28. White Paper Unique Health Identifier for Individuals. Retrieved on July 10th, 2010 from http://epic.org/privacy/medical/hhs-id-798.html
29. AHIMA Industry Standards and Activities. Retrieved on July 10th, 2010 from http://www.ahima.org/advocacy/healthinformationexchange.aspx
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31. Institute of Medicine Recommendation for a National Chronic Disease Surveillance System http://www.iom.edu/Reports/2011/A-Nationwide-Framework-for-Surveillance-of-Cardiovascular-and-Chronic-Lung-Diseases.aspx
32. Shapiro, J. S. Evaluating Public health uses of health information exchange. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2137930/

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Lecture Images
Slide 14: Public Domain, 2011.

Suggested Readings
1. Accredited Standards Committee X12: http://www.x12.org/
2. American College of Radiology national Electrical Manufactures Association (ACR-NEMA): http://www.nema.org/media/pr/20061101a.cfm*
3. HL7: http://www.hl7.org/
4. CCHIT:http://www.cchit.org/
5. Institute of Electrical and Electronics Engineers: http://www.ieee.org/index.html
6. American Society for Testing & Materials: http://www.astm.org/
7. National Council for Prescription Drug Programs: http://www.ncpdp.org/standards.aspx
8. Public Health Informatics Institute: http://www.phii.org/
9. Mapping and Public Health: http://gamapserver.who.int/mapLibrary/
10. Agency for Toxic Substances & Disease Registry: http://www.atsdr.cdc.gov/
11. Office of Surveillance, Epidemiology, and Laboratory Services: http://www.cdc.gov/osels/
12. National Institute of Standards and Technology: http://www.nist.gov/index.html
13. Computer Security Division Community Security Resource Center: http://csrc.nist.gov/index.html
14. Nationally Notifiable Diseases Surveillance System: http://www.cdc.gov/osels/ph_surveillance/nndss/nndsshis.htm
15. Association for Information and Image Management: http://www.aiim.org/
16. American Dental Association: http://www.ada.org/

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17. Clinical and Laboratory Standards Institute (CLSI):
    http://www.clsi.org/
18. Clinical Data Interchange Standards Consortium:
    http://www.cdisc.org/
19. Designated Standard Maintenance Organization (DSMO):
    http://www.cdisc.org/
20. Health Industry Business Communications Council (HIBCC):
    http://www.hibcc.org/
21. International Organization for Standardization (ISO):
    http://www.iso.org/iso/home.htm
22. National Information Standards Organization (NISO):
    http://www.niso.org/home/
23. National Uniform Billing Committee (NUBC): http://www.nubc.org/
24. Analysis of Unique Patient Identifier Options Final report
    http://ncvhs.hhs.gov/app0.htm*
25. Reliable Patient Identification Project
    http://whinit.org/reliable-patient-identification-project/*
26. Global Patient Identifiers http://gpii.info/
27. Sample Universal Healthcare Identifier
    http://ncvhs.hhs.gov/app7-2.htm*
28. Gartner Healthcare Presentation
    http://www.gartner.com/it/content/530400/530411/ks_hc_nov.pdf
29. White Paper Unique Health Identifier for Individuals:
    http://epic.org/privacy/medical/hhs-id-798.html
30. AHIMA Industry Standards and Activities http://www.ahima.org/
    advocacy/healthinformationexchange.aspx
31. HIMSS Overview of HIE & RHIOs http://www.himss.org/content/
    files/RHIO/RHIO_HIE_11_10_07.pdf*
32. HIMSS Health Information Exchange
    http://www.himss.org/ASP/topics_rhio.asp
33. Institute of Medicine Recommendation for a National Chronic
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    Chronic-Lung-Diseases.aspx
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    exchange. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2137930/
35. The Nationwide Privacy and Security Framework for Electronic
    Exchange of Individually Identifiable Health Information
    http://www.hhs.gov/healthit/privacy/framework.html*

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36. Privacy and Security and Health Information Technology (Health IT)
http://www.hhs.gov/healthit/privacy/*
37. Healthcare Information Technology Standards Panel
http://www.hitsp.org/default.aspx

Student Application Activities
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Component 13/Unit 4

Unit Title
Public Health Enabled Electronic Health Records and the Role of Public Health in Health Information Exchange

Unit Description
This unit will summarize/describe the main role, functions and applications of public health-enabled Electronic Health Records (EHRs).

Unit Objectives
By the end of this unit, the student will be able to:

1. Discuss the New York City Department of Health and Mental Hygiene partnership with a commercial EHR vendor and how it created a public health-enabled EHR.
2. Demonstrate knowledge of public health-oriented clinical decision support including an integrated strategy using multiple tools such as alerts, order sets, smart forms, and quality reporting.
3. Describe the EHR "meaningful use" movement and how it could transform existing clinical/public health practices.
4. Describe the strategies, features, and systems needed for public health agencies to define and build the necessary connections to EHRs as identified by the "meaningful use" legislation.
5. Identify the essential features of four primary public health IT functions, including syndromic surveillance, bi-directional immunization registries, public health alerts, ad-hoc reporting, and more.

Unit Topics / Lecture Titles
A. Public health enabled electronic health records and the role of public health in health information exchange.
B. New York City Public Health Goals
C. Syndromic Surveillance
D. Immunization Registries
E. Public Health Alerts & Ad-Hoc Reporting

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1. Singh MP. Project Management: Lessons from the Primary Care Information Project. In Medical Informatics. An Executive Primer. Editor Ong K. 2011 Healthcare Information and Management Systems Society (HIMSS), Chicago Ill. Second Edition Chapter 11. 199-214.
2. Dr. Farzad Mostashari is currently serving as Deputy National Coordinator for Programs and Policy http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&objID=1249&PageID=18220*
3. Mostashari F, Tripathi M, Kendall M. A tale of two large community electronic health record extension projects. Health Aff (Millwood). 2009 Mar-Apr;28(2):345-56.
4. Primary Care Information Project. Accessed: October 1, 2010 from http://www.nyc.gov/pcip

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1.1 Table: DeLeon S, Shih SC. Tracking the delivery of prevention-oriented care among primary care providers who have adopted electronic health records. J Am Med Inform Assoc. (2011), ahead of print. August 19, 2011.

Lecture 4a Image

Slide 5: Primary Care Information Project. Accessed: October 1, 2010 from http://www.nyc.gov/pcip.

Lecture 4b

1. Plagianos M, Buck MD, et al. Syndromic Surveillance during Pandemic (H1N1) 2009 Outbreak. Emerging Infectious Diseases. 2011 Sept;17(9).1724-6.
2. Amirfar S, Taverna J, Anane S, Singer J. Developing Public Health Clinical Decision Support Systems (CDSS) for the Outpatient Community in New York City: Our Experience. BMC Public Health. (Accepted for publication)

Lecture 4b Charts, Tables, Figures

1.1 Table: Buck, M. (2010). Syndromic data. New York Department of Health and Mental Hygiene, Primary Care Information Center.

Lecture 4b Images

Slide 6-14 & 18: Buck, M. (2010). Example images of eclinicalworks: personal desktop. New York Department of Health and Mental Hygiene, Primary Care Information Center.

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Slide 20: Buck, M. (2010). 7 Day average percent of ILI visits by age group. New York Department of Health and Mental Hygiene, Primary Care Information Center.
Slide 21: Buck, M. (2010). All ages percent of visits related to ILI. New York Department of Health and Mental Hygiene, Primary Care Information Center.

Lecture 4c

1. Buck MD, Anane S, Taverna J, Amirfar S, Singer J. The Hub Population Health System: Distributed Ad-Hoc Queries and Alerts. J Am Med Inform Assoc.
2. Standards & Interoperability (S&I) Framework – Query Health. Retrieved on October 3rd, 2010 from http://wiki.siframework.org/Query+Health
3. Diamond CC, Mostashari F, Shirky C. Collecting and sharing data for population health: a new paradigm. Health Aff (Millwood). 2009 Mar-Apr;28(2):454-66.
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5. Lurio J, Morrison FP, Pichardo M, Berg R, Buck MD, Wu W, Kitson K, Mostashari F, Calman N. Using electronic health record alerts to provide public health situational awareness to providers. J Am Med Inform Assoc. 2010 Mar 1;17(2):217-9.
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Lecture 4c Images
Slide 8: Web file repository. Retrieved on September 8, 2010 from www.nyc.gov/html/doh/downloads/pdf/cir/wfr106-07302008.pdf
Slide 9: Buck, M. (2010). EHR immunization data- screen shot. New York Department of Health and Mental Hygiene, Primary Care Information Center.
Slide 10: Buck, M. (2010). EHR-CIR bi-directional web-services. New York Department of Health and Mental Hygiene, Primary Care Information Center.

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Slide 12: Buck, M. (2010). EHRs using the service. Retrieved on September 8th, 2010 from http://www.childrenshospitals.net/Content/ContentFolders34/EducationMeetings2/SpringConference/2010/Posters/PHIT/UsinganElectronic-PHIT_poster.pdf
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Slide 18-21: Buck, M. (2010). Images of desktop- systems of eclinicalworks system. New York Department of Health and Mental Hygiene, Primary Care Information Center.

Suggested Readings

1. Mostashari F, Tripathi M, Kendall M. A tale of two large community electronic health record extension projects. Health Aff (Millwood). 2009 Mar-Apr;28(2):345-56.
2. Diamond CC, Mostashari F, Shirky C. Collecting and sharing data for population health: a new paradigm. Health Aff (Millwood). 2009 Mar-Apr;28(2):454-66.
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4. Dr. Farzad Mostashari is currently serving as Deputy National Coordinator for Programs and Policy http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&objID=1249&PageID=18220*
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Student Application Activities

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Component 13/Unit 5

Unit Title
Epidemiology Databases and Registries-Public Health Information Tools

Unit Description
This unit will explain how varying types of information technologies have application in public health practice.

Unit Objectives
By the end of this unit the student will be able to:

1. Identify the functions and key issues of epidemiology compared to clinical practice
2. Define and distinguish among the components that make up epidemiology
3. Identify the difference between environmental and mechanistic causes of disease
4. Describe the components of epidemiological reasoning
5. List the different types of epidemiology
6. Define clinical epidemiology and its relationship with evidence-based practice
7. Explain the current applications of epidemiology and how the results influence evidence-based practice
8. Identify different sources of epidemiological databases and how information is updated and exchanged with clinical entities
9. Describe the purpose of a registry, the types of information contained within a public health registries and how this information can be used
10. Identify the defining characteristics of epidemiological registries
11. Identify different entities that operate registries and how information from clinical practice gets imported into these registries
12. Identify security and access issues in the information exchange between communities, clinical institutions, public health departments and federal agencies involved in public health prevention and control.

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Unit Topics
A. Epidemiology- Introduction
B. Epidemiology Databases & Registries
C. Information Exchange

Unit References
(All links accessible as of 1/1/2014)

Lecture 5a
1. Improving the Effectiveness of Health Care and Public Health: A Multiscale Complex Systems Analysis
2. Yaneer Bar-Yam, PhD, March 2006, Vol 96, No. 3 | American Journal of Public Health 459-466
3. Editorial: Clinical Epidemiology – a fast new way to publish important research, Henrik Toft Sørensen. Published Date February 2009 , Volume 2009:1 Pages 17 – 18
4. Causation and Causal Inference in Epidemiology. Kenneth J. Rothman, DrPH and Sander Greenland, MA, MS, DrPH, C Stat. July 2005, Vol 95, No. S1 | American Journal of Public Health S144-S150
5. Fletcher, H. R., & Fletcher, S. W. (2005). Clinical Epidemiology: The Essentials chapter 1. Retrieved on September 8th, 2011 from www.uwo.ca/epidem/.../Outlines/.../Epidemiology%209562A.pdf*
6. Rizk, S., & Dimitropoulos, L. (2007). A State-Based Approach To Privacy And Security For Interoperable Health Information Exchange. Retrieved on September 8th, 2011 from healthit.ahrq. gov/portal/server.pt/gateway/.../Nationwide.pdf*
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Lecture 5b
1. Data & Statistics. Retrieved on October 3rd, 2011 from www.cdc.gov/datastatistics
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3. Resources for Creating PH Maps. Retrieved on October 3rd, 2011 from www.cdc.gov/epiinfo/maps.htm
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5. Behavioral Risk Factor Surveillance System. Retrieved on October 3rd, 2011 from www.cdc.gov/brfss
6. Combined Health Information Database. Retrieved on October 3rd, 2011 from pathmicro.med.sc.edu/chidmic.htm*
7. National Institute of Environmental Health Services. Retrieved on October 3rd, 2011 from www.niehs.nih.gov/research/resources/databases
8. DOE Comprehensive Epidemiologic Data Resource. Retrieved on October 3rd, 2011 from https://www.orau.gov/cedr/
9. Exposure Assessment Tools & Data. Retrieved on October 3rd, 2011 from www.epa.gov/ceampubl/tools*
10. FedStats. Retrieved on October 3rd, 2011 from www.fedstats.gov
11. Agency for Toxic Substances and Disease Registry. Retrieved on October 3rd, 2011 from
12. www.atsdr.cdc.gov/
13. Surveillance Epidemiology and End Results. Retrieved on October 3rd, 2011 from seer.cancer.gov/
14. US Census Bureau Data Ferret. Retrieved on October 3rd, 2011 from dataferrett.census.gov/
15. University of California, Berkeley- Human Mortality Database. Retrieved on October 3rd, 2011 from www.mortality.org/
16. American College of Surgeons- National Cancer Database. Retrieved on October 3rd, 2011 from www.facs.org/cancer/ncdb
17. North American Association of Central Cancer Registries. Retrieved on October 3rd, 2011 from www.naaccr.org/
18. March of Dimes- National Perinatal Statistics. Retrieved on October 3rd, 2011 from www.marchofdimes.com/professionals/680_1239.asp
19. Population Reference Bureau- Data Finder. Retrieved on October 3rd, 2011 from www.prb.org/datafinder.aspx
20. Global Health Observatory. Retrieved on October 3rd, 2011 from www.who.int/gho/en/
21. Retrieved on October 3rd, 2011 from www.epidata.dk/
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23. National Trauma Data Bank. Retrieved on October 3rd, 2011 from http://www.facs.org/trauma/ntdb/index.html
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25. MEDPAR Limited Data Set. Retrieved on October 3rd, 2011 from http://www.cms.gov/LimitedDataSets/02_ MEDPARLDSHospitalNational.asp
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Slides 9-13: Retrieved on October 3rd, 2011 from
http://www.facs.org/cancer/ncdb/index.html
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Unit Required Readings
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2. Editorial: Clinical Epidemiology – a fast new way to publish important research Henrik Toft Sørensen. Published Date February 2009 , Volume 2009:1 Pages 17 18
3. Rothman, J.K., & Greenland, S. (2005). Causation and causal inference in epidemiology. American Journal of Public Health, V.95(S1), S144-S150.
4. Dimitropoulus, L., & Rizk, S. (2009). A state-based approach to privacy and security for interoperable health information exchange. Health Affairs

Unit Suggested Readings
1. Improving the Effectiveness of Health Care and Public Health: A Multiscale Complex Systems Analysis.Yaneer Bar-Yam, PhD March 2006, Vol 96, No. 3 | American Journal of Public Health 459-466
2. Editorial: Clinical Epidemiology – a fast new way to publish important research Henrik Toft Sørensen. Published Date February 2009 , Volume 2009:1 Pages 17 18
3. Causation and Causal Inference in Epidemiology J. Rothman, DrPH and Sander Greenland, MA, MS, DrPH, C Stat July 2005, Vol 95, No. S1 | American Journal of Public Health S144-S150
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Component 13/Unit 6

Unit Title
Biosurvelliance, Situational Awareness and Disaster Response

Unit Description
This unit will focus on identifying current needs and future directions for EHR biosurveillance, disaster-preparedness, and situational awareness in improving public health.

Unit Objectives
By the end of this unit the student will be able to:
1. Describe the traditional means used to monitor and report on disease spread within a community
2. Identify current data sources used to track disease
3. Describe the typical process of syndromic surveillance.
4. Identify strengths and weaknesses of using EHRs for biosurveillance
5. Describe process for monitoring, reporting, and analyzing EHR biosurveillance data
6. Identify how current and future findings from EHR biosurveillance improve public health operations and services

Unit Topics
A. Syndromic Surveillance Overview
B. Electronic Health Record Syndromic Surveillance during 2009-Pandemic H1N1 in NYC

Unit References
(All links accessible as of 1/1/2014)

Lecture
1. Plagianos M, Buck MD, et al. Syndromic Surveillance during Pandemic (H1N1) 2009 Outbreak. Emerging Infectious Diseases. 2011 Sept;17(9).1724-6.
2. Hripcsak G, Soulakis ND, Li L, Morrison FP, Lai AM, Friedman C, Calman NS, Mostashari F. Syndromic Surveillance Using Ambulatory Electronic Health Records. J Am Med Inform Assoc. 2009 Mar 4. [Epub ahead of print]

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1.1 Table: Buck, M. (2010). New and exciting data types. New York Department of Health and Mental Hygiene, Primary Care Information Center.

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1.4 Table: Buck, M. (2010). A table of results from the first phase of the ILI outbreak- April-May. New York Department of Health and Mental Hygiene, Primary Care Information Center.

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Lecture Images

Slide 5: Case Definitions for Infectious Conditions under Public Health Surveillance. Retrieved October 1, 2010 from http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/legionellosis_current.htm

Slide 7-8: NYC Department of Health & Mental Hygiene Universal Reporting Form. Retrieved on October 1, 2010 from http://www.nyc.gov/html/doh/downloads/pdf/hcp/urf-0803.pdf

Slide 12: eClincalWorks System Screenshot used by permission.

Slide 17: Buck, M. (2010). Analysis: test observed vs. expected. New York Department of Health and Mental Hygiene.

Slides 20-31: Buck, M. (2010). Map of the distribution of ILI in NYC. New York Department of Health and Mental Hygiene, Primary Care Information Center.

Slide 34: Buck, M. (2010). A graph of the level of ILI at the emergency departments in red, the PCIP primary care practices in green and the IFH primary care practices in blue. New York Department of Health and Mental Hygiene, Primary Care Information Center.

Unit Suggested Readings

1. International Society of Disease Surveillance: http://www.syndromic.org/
2. HHS Biosurveillance Use Case http://www.hhs.gov/healthit/documents/BiosurveillanceUseCase.pdf*

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5. Hripcsak G, Soulakis ND, Li L, Morrison FP, Lai AM, Friedman C, Calman NS,

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9. Greenko J, Mostashari F, Fine A, Layton M. Clinical evaluation of the Emergency Medical Services (EMS) ambulance dispatch-based syndromic surveillance system, New York City. J Urban Health. 2003 Jun;80(2 Suppl 1):i50-6.

Student Application Activities
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Component 13/Unit 7

Unit Title
Public Health Reporting, Alerts and Decision Support

Unit Description
This unit will summarize the essential public health services and methods by which they can be improved through the use of EHRs in the context of the clinical care environment.

Unit Objectives
By the end of this unit the student will be able to:
1. Describe the current role of public health in the context of the clinical care environment
2. Identity and describe three essential to public health services: Monitor Health; Diagnose/Investigate; Inform, Educate, Empower
3. Identify current public health practices challenges in the essential public health services of: Monitor Health; Diagnose/Investigate; and Inform, Educate, Empower
4. Identify the opportunities and limitations for EHRs to address these challenges in three primary areas (syndromic surveillance, notifiable disease reporting, and public health case investigation)
5. Describe challenges & limitations of EHRs to address these service areas

Unit Topics / Lecture Titles
A. Public health reporting, alerts, and decision support
B. Monitoring Health
C. Pre-Population
D. Syndromic Challenges
E. Diagnose & Investigate Health Issues
F. Translating Public Health Information
G. Integration of Public Health Information via Electronic Health Records
H. Testing Performed at Visits
I. E.Coli Alerts, Legionella Alerts, and Measles Alerts

Unit References
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Lecture

1. Lurio J, Morrison FP, Pichardo M, Berg R, Buck MD, Wu W, Kitson K, Mostashari F, Calman N. Using electronic health record alerts to provide public health situational awareness to providers. J Am Med Inform Assoc. 2010 Mar 1;17(2):217-9.
2. Hripcsak G, Soulakis ND, Li L, Morrison FP, Lai AM, Friedman C, Calman NS, Mostashari F. Syndromic surveillance using ambulatory electronic health records. J Am Med Inform Assoc. 2009 May-Jun;16(3):354-61.
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4. Shapiro JS. Evaluating public health uses of health information exchange. J Biomed Inform. 2007 Dec;40(6 Suppl):S46-9.
5. The future of public health. Ten Essential Services. (1988). Institute of Medicine report. Retrieved on October 1st, 2010 from http://www.iom.edu/~/media/Files/Report%20Files/2002/The-Future-of-the-Publics-Health-in-the-21st-Century/Future%20of%20Publics%20Health%202002%20Report%20Brief.pdf

Lecture Images

Slide 8: Retrieved October 1st, 2010 from http://www.nyc.gov/html/doh/downloads/pdf/hcp/hcp-reporting.pdf*
Slide 9: Retrieved October 1st, 2010 from http://www.cdc.gov/ncphi/disss/nndss/phs/infdis2010.htm*
Slide 11: Retrieved October 1st, 2010 from Image is Microsoft office clip art.
Slide 12: Wu, W. (2010). Personal image of EHR- pre-population reporting. Primary Care Information Center, New York Department of Health and Mental Hygiene.
Slide 14: Sample image of syndromic surveillance compares with WHO viral isolate data during a recent influenza season.
Slide 20: Wu, W. (2010). Personal image of Bronx RHIO . Primary Care Information Center, New York Department of Health and Mental Hygiene.
Slide 23: Public domain images of cells, European landscape, and pills. Retrieved on October 2st, 2010
Slide 24: E-coli alert. (2007). New York City Department of Health and Mental Hygiene.

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Slide 25: Lurio, J., Morrison, F., Pichardo, M., Berg, R., et al. (2008). Using automated EHR alerts to improve physician reporting. PowerPoint Presentation-Slide 5 at the International Society for Disease Surveillance Annual Conference.

Slide 26: Image of two computers sharing information exchange. Public domain image.

Slide 27, 28, 29 & 31: Lurio, J., Morrison, F., Pichardo, M., Berg, R., et al. (2008). Using automated EHR alerts to improve physician reporting. PowerPoint Presentation at the International Society for Disease Surveillance Annual Conference.

Lecture Charts, Tables, Figures

1.1 Table: Lurio, J., Morrison, F., Pichardo, M., Berg, R., et al. (2008). Using automated EHR alerts to improve physician reporting. PowerPoint Presentation-Slide 15 at the International Society for Disease Surveillance Annual Conference.

Unit Suggested Readings

1. Lurio J, Morrison FP, Pichardo M, Berg R, Buck MD, Wu W, Kitson K, Mostashari
2. F, Calman N. Using electronic health record alerts to provide public health situational awareness to providers. J Am Med Inform Assoc. 2010 Mar 1;17(2):217-9.
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Component 13/Unit 8

Unit Title
The potential of public health IT for health promotion and chronic disease prevention

Unit Description
This unit will explain a novel approach to developing and implementing health promotion programs in public health practice.

Unit Objectives
By the end of this unit the student will be able to:

1. Describe and categorize issues/questions, data sets and factors (variables) that are used in descriptive epidemiology.
2. Describe how evidence-based recommendations may be appropriately used in implementing and evaluating health promotion and disease prevention.
3. Describe different types of health promotion and disease prevention and different methods of enacting health promotion programs.
4. Identify the steps in the process of implementing and evaluating prevention programs and interventions.
5. Identify the clinical preventive services that are linked to health promotion and disease prevention.
6. Describe how informatics can be incorporated into clinical preventive services.
7. Describe the history and foundation of geographic information systems and explain its role in evidence-based practice.
8. Identify the barriers to incorporating public health IT into clinical practice and potential methods for resolving these limitations.
9. Identify the existing and innovative methods for communicating and sharing health information with the public.

Unit Topics / Lecture Titles
A. Descriptive Epidemiology
B. Health Research
C. Health Prevention

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D. Intervention Methods
E. Innovation
F. Synthesis & Translation
G. Interactive Health Technologies

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14. Retrieved on October 1st, 2010 from Global Health Observatory Map Gallery http://gamapserver.who.int/mapLibrary/
15. Retrieved on October 1st, 2010 from Georgia Department of Health OASIS http://oasis.state.ga.us/
16. Retrieved on October 1st, 2010 from General Use of GIS in Public Health http://gis.cancer.gov/examples/general.html*
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19. Retrieved on October 1st, 2010 from California Environmental Health Tracking Program http://www.ehib.org/project.jsp?project_key=EHSS01
20. Retrieved on October 1st, 2010 from California Department of Public Health http://www.cnngis.org/
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22. Retrieved on October 1st, 2010 from Personal Health Records http://www.myphr.com/
23. Retrieved on October 1st, 2010 from Centers for Medicare and Medicaid https://www.cms.gov/PerHealthRecords/01_Overview. asp#TopOfPage
24. Retrieved on October 1st, 2010 from CMS EHR Meaningful Use Overview https://www.cms.gov/ehrincentiveprograms/30_ Meaningful_Use.asp#BOOKMARK1
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Student Application Activities
Comp13_unit8_discuss.doc
Comp13_unit8_discuss_key.doc
Comp13_unit8_self_assess.doc
Comp13_unit8_self_assess_key.doc

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Component 13/Unit 9

Unit Title
Quality Reporting

Unit Description
This unit will summarize/describe the main role, functions and applications of public health reporting, alerts and decision support systems.

Unit Objectives
By the end of this unit the student will be able to:

1. Identify/describe important characteristics and components of useful health care quality measurement systems
2. Identify the past and present efforts to transform medical practice through pay-for-performance initiatives.
3. Identify national group efforts involved in the establishment of quality standards/metrics (NCQA, NQF, etc.) based upon claims and EHR data.
4. Describe how quality metrics are integrated, tracked, and used in EHRs and describe real-world implementations in eClinicalWorks, EPIC, NextGen.
5. Describe the use of EHR-based quality metrics in pay-for-performance incentive projects.
6. Summarize the preliminary findings/conclusions from the EHR pay-for-performance project and possible future directions.

Unit Topics / Lecture Titles
A. Health Systems and Quality Care (Principles)
B. Data Sources
C. Pay for Performance Design Quality Measures for Rewards
D. using Quality Measures to Achieve Meaningful Use

Unit References
(All links accessible as of 1/1/2014)

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9. Retrieved on October 1st, 2010 from www.aqaalliance.org

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Lecture Charts, Tables, Figures

1.1 Table: Shih, S. (2010). Health care quality measurement in use by the health care industry. Primary Care Information Center, New York Department of Health and Mental Hygiene.

1.1 Chart: Shih, S. (2010). Distribution of documentation smoking cessation status & cessation intervention. Primary Care Information Center, New York Department of Health and Mental Hygiene.

1.2 Table: Shih, S. (2010). Pay for performance design considerations: avoiding unintended consequences. Primary Care Information Center, New York Department of Health and Mental Hygiene.

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1.3 Table: Shih, S. (2010). Pay for performance design considerations: What Should a Program Pay For? Primary Care Information Center, New York Department of Health and Mental Hygiene.

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1.5 Table: Retrieved on October 1st, 2010 from http://www.cms.gov/EHRIncentivePrograms/Downloads/EHR_Incentive_ Program_Agency_Training_v8-20.pdf

1.6 Table: NQF Measures Evaluation Criteria. Retrieved on October 1st, 2010 from http://www.qualityforum.org/Measuring_Performance/ Submitting_Standards/Measure_Evaluation_Criteria*

Lecture Images
Slide 8 : Shih, S. (2010). Using EHRs for automated quality reporting. Primary Care Information Center, New York Department of Health and Mental Hygiene.

Slide 9: Shih, S. (2010). Quality measures in data warehouse. Primary Care Information Center, New York Department of Health and Mental Hygiene.

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Unit Suggested Readings
None

Student Application Activities
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Component 13/Unit 10

Unit Title
Encouraging Adoption/Use of Population Health Functions for Electronic Health Records (EHRs) and Consumer Functions for Personal Health Records (PHRs)

Unit Description
This unit will delineate the critical role of advocacy in adoption/use of EHRs and consumer functions for PHRs to improve public health.

Unit Objectives
By the end of this unit the student will be able to:
1. Identify and describe population health functions of EHRs.
2. Describe the meaningful use criteria that are applicable to public health, population health, disease management and prevention.
3. Provide examples of common PHR systems (Microsoft HealthVault, Vendor-specific PHRs) and identify embedded consumer functions.
4. Describe EHR adoption and use, with a focus on fidelity to public health goals.
5. Describe the challenges in and barriers to adoption and use of population health functions for EHRs and Consumer functions for PHR.
6. Explain and apply a rationale that would encourage adoption and use of public health functions for EHRs and Consumer functions for PHR.
7. Demonstrate the ability to formulate a plan to encourage adoption and use of population health functions for EHRs and Consumer functions for PHR, given a setting, population and workflow environment.

Unit Topics / Lecture Titles
A. Population Health Functions of Electronic Health Records (Introduction)
B. Meaningful Use Criteria for Public Health, Population Health, Disease Management & Prevention
C. Common Personal Health Record Systems (PHRs)
D. Electronic Health Record Adoption and Use

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E. Barriers to Adoption and Use of Population Health Functions for Electronic Health Records and Personal Health Records
F. Encourage Adoption and Use of Population Health functions for EHRs and PHRs

Unit References
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Slide 12& 13: Buck, M. (2010). Images of desktop- systems of eclinicalworks system. New York Department of Health and Mental Hygiene, Primary Care Information Center.
Slide 16: Retrieved on October 1st, 2010 from https://www.cms.gov/MLNProducts/downloads/CMS_eHR_Tip_Sheet.pdf
Slide 27: Image of Microsoft HealthVault. Retrieved on October 1st, 2010 from http://healthvault.com
Slide 30-35: Images Retrieved on October 1st, 2010 from http://healthvault.com

Lecture Charts, Tables, Figures
1.1 & 1.2 Table: Khan, S. Population health meaningful use measures- list. Department of Biomedical Informatics. Columbia University Medical Center.

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Unit Suggested Readings
None

Student Application Activities
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comp13_unit10_self_assess.doc
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Component Acronym Glossary

ABCS- Aspirin therapy, blood pressure control, cholesterol control and smoking cessation interventions
ACR-NEMA- American College of Radiology National Electrical Manufactures Association
AHRQ- The Agency for Health Care Research and Quality
AIDS- Acquired Immune Deficiency Syndrome
ANSI- American National Standards Institute
APHA- American Public Health Association
AQA- Ambulatory Quality Alliance
ARRA- American Reinvestment and Recovery Act
ASP- Application Service Provider
ASPH- Association of Schools of Public Health
ASTHO- Association of State and Territorial Health Officials
ASTM- American Society for Testing and Materials
BMI- Body Mass Index
BP- Blood pressure
BRFSS- Behavioral Risk Factors Surveillance System
CAHPS- Consumer Assessment of Health Providers Survey
CCHIT- Certification Commission for Health Information Technology
CCR-Community of Care Record
CDC- Centers for Disease Control
CDER- FDA Center for Drug Evaluation and Research Data Standards Manual
CDSS- Clinical Decision Support Systems
CE- Covered Entity
CHCs- Community Health Centers
CHFC- California Healthcare Foundation
CIR- Citywide Immunization Registry
CMS- Centers for Medicaid and Medicare Services
COC- Commission on Cancer
CPOE- Computerized Physician Order Entry
CSTE- Council of State and Territorial Epidemiologists
CT Scan- Computerized Tomography Scan
CUSUM- Cumulative Sum Control Chart
DNA- Deoxyribose Nucleic Acid
DOHMH- Department of health and Mental Hygiene
ECW- eClinicalWorks
ED- Emergency Department

EHEC Infection- Enterohaemorrhagic Escherichia Coli Infection
EHR- Electronic Health Record
EMS- Emergency Medical Services
EPA- Environmental Protection Agency
f/u- Follow up
FDA- Food and Drug Administration
FTE- Full Time Employee
GDP- Gross Domestic Product
GI- Gastrointestinal Illness
GIS- Geographical Information Systems
HALE- Health Adjusted Life Expectancy
HAN- Health Alert Network
HbA1c- Hemoglobin A1c
HCPCS- Healthcare Common Procedure Coding System
HEDIS- Health Care Effectiveness Data and Information Set
HHS- Health and Human Services
HIE- Health Information Exchange
HIPAA- Health Insurance Portability and Accountability Act
HIT- Health Information Technology
HITECH- Health Information Technology for Economic and Clinical Health
Act
HIV- Human Immunodeficiency Virus
HL7- Health Level 7
HMO- Health Maintenance Organization
HQIN-Healthcare Quality Information Network
HTML- Hypertext Markup Language
ICD-CM/PCS- International Classification of Diseases- Clinical
Modification/ Procedural Coding system
ICD-O- International Classification of Diseases for Oncology
ICU- Intensive Care Unit
IEEE- Institute of Electrical and Electronics Engineers
IFH- Institute of Family Health
IHT- Interactive Health Technologies
IIHI- Individually Identifiable Health Information
ILI- Influenza like illness
ILINET- Influenza –like Illness Network
IOM- Institute of Medicine
ISDS- International Society for Disease Surveillance
IUFH-Institute for Urban Family Health
IVD-Ischemic Vascular Disease

JCAHO- Joint Commission on the Accreditation of Hospital Organizations
LDl- (Low Density Lipoprotein)—marker for cholesterol level
LOINC- Logical Observation Identifiers Names and Codes
MCO-Managed Care Organizations
MMWR- Morbidity and Mortality Weekly Report
MySQL-My Structure Query Language
NAACCR- North American Association of Central Cancer Registries
NACCHO- National Association of Country and City Health Officials
NCDB- National Cancer Database
NCI- National Cancer Institute
NCPDP- National Council for Prescription Drug Programs
NCPDP- National Council on Prescription Drug Programs
NCQA- National Committee for Quality Assurance
NEJM- New England Journal of Medicine
NIH- National Institutes of Health
NPI- National Provider Identifier
NQF- National Quality Forum
NRT – Nicotine Replacement Therapy
NYC REACH- NYC Regional Electronic Adoption Center for Health
NYP- New York Presbyterian
OCR- Office of Civil rights
P4P- Pay for performance
P4Q- Pay for quality
PBR- Population Reference Bureau
PCIP- The Primary Care Information Project
PCMH- Patient Centered Medical Home
PCP- Primary Care Provider
PDF- Portable Document Format
PH HIT- Public Health Information technology
PHI- Protected Health Information
PHR- Personal Health Record
QALE*- Quality Adjusted Life Expectancy
QALY- Quality adjusted life years
QI- quality Improvement
RCB- Recognized Certification Body
RHIO- Regional Health Information Organizations
SCD- Semantic Clinical Drug of RxNorm
SDOs- Standard Development Organizations
SFTP-Secure File Transfer Protocol
SNOMED-CT- Systematized Nomenclature of Medicine Clinical Terms

SPL- Special Product Labeling
SQL code-Structured Query language
TCNY- Take Care New York
URI- Upper Respiratory Infection
USB- Universal Serial Bus
VGI- Voluntary Geographic Information
WFR- Web File Repository
WHO- World Health Organization
XML- Extensible Markup Language