Curriculum Development Centers Program

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

HEALTH IT WORKFORCE CURRICULUM
COMPONENT BLUEPRINT
Version 2.0/Spring 2011

Component Number: 13
Component Name: Public Health Information Technology

Component Description (from FOA):
For individuals specifically contemplating careers in public health agencies, an overview of specialized public health applications such as registries, epidemiological databases, biosurveillance, and situational awareness and emergency response. Includes information exchange issues specific to public health.

Assigned Institution: Columbia University

Team Lead(s):
Rita Kukafka, DrPH, Columbia University
Michael Buck, PhD, New York City Department of Health and Mental Hygiene (NYCDHMH)
Syncia Sabain, EdD (Project Manager)

Team Members:
Lynda Carlson, BMCC (Content Specialist)
Elizabeth Oliver, BCC (Content Specialist)
Winfred Wu, MD, NYCDHMH (Content Specialist)
Marlena Plagianos, NYCDHMH (Content Specialist)
Sarah Shih, NYCDHMH (content Specialist)
Sharib Khan, DBMI (Content Specialist)
Anna Ritko, PhD Candidate (Content Specialist)
Madhabi Chatterji, PhD (Curriculum Developer)
John Allegrante, PhD (Curriculum Developer)
John Zimmerman , DDS (Instructional Design Specialist)
Cindy Smalletz, (Instructional Design Specialist)

Workforce Roles:

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

Units 1, 2 and 5 primary for all workforce roles; Units 3,4,6-10 secondary for workforce roles other than those individuals contemplating careers in public health agencies

Component Objectives

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

1. Distinguish (draw distinctions) among core functions and essential services of 'public health' and 'clinical care'.
2. Synthesize key reasons and current contextual factors for providers in clinical practice to improve public health services and practices using EHRs
3. Apply health data definitions and standards, as well as privacy and confidentiality issues, in typical public health scenarios.
4. 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.
5. Describe the roles and functions of existing public health data and health databases and networks
6. Identify current needs and future directions for EHR biosurveillance, disaster-preparedness, and situational awareness in improving public health.
7. Summarize/describe the main role, functions and applications of public health reporting, alerts and decision support systems.
8. Summarize the role, functions and applications of public health IT for health promotion and chronic disease prevention
9. Delineate the critical role of advocacy in adoption/use of EHRs and Consumer functions for PHRs to improve public health.

Component Units with Objectives and Topics

Unit 1:
Overview & contribution to public health through Electronic Health Record use

Description:

Synthesize key reasons and current contextual factors for providers in clinical practice to improve public health practice using EHRs.

Objectives:

Students will be able to:

1.1 Explain what public health is, what distinguishes it from the other health sciences, and its unique contributions to the health of the public.

1.1a Identify the underlying reasons for the requirement that electronic health record systems (EHRs) be linked to essential public health functions

1.2 Describe the major formal organizational structures within the United States responsible for monitoring and improving the public's health

1.3Identify issues that call for government intervention in matters pertaining to the health

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

1.4 Identify the principal problems in the U.S. health care system in improving and sustaining public health on a large scale.
1.5 Explain the role of public health in medical care.
1.5a Explain the benefits of electronic health records and data exchange to clinical care and health care improvement from a public health perspective.
1.6 Identify the principal environmental, social and behavioral determinants of health and demonstrate how they come into influence the most important behavior-related health problems of the day
1.7 Identify the clinician's role in disease reporting and how it contributes to both public and patient health
1.8 Describe how patient-level data from an EHR is used for public health

Topics:
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 2:
Privacy, Confidentiality and Security of Public Health Information

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.]

Objectives:
Students will be able to:
2.1 Identify the exercise of principles of privacy, confidentiality, and security of public health information, in scenarios involving patients and health practitioners.
2.2 Identify the types of laws/Acts applicable to the treatment of public health information.
2.3 Locate resources for applicable state, local, and federal laws and/or Acts
2.4 Interpret the treatment of and apply applicable laws/Acts to public health information in given patient or practitioner scenarios.
2.5 Identify the functions of a "covered entity" and a "business associate" in relation to the treatment of public health information.
2.6 Describe the objectives and roles of the HIPAA Privacy Rule and exceptions to HIPAA as they apply to public health.
2.6a Identify patient rights under the Notice of Privacy Practices
2.6b Describe the potential civil and criminal penalties for a HIPAA violation
2.6c Identify and summarize each HIPAA security requirement (administrative, physical, and technical)

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

2.6d Discuss policy, procedures, contracts, and plans in administrative safeguards
2.6e Describe how the physical environment can impact security of information and develop solutions
2.6f Discuss technical strategies that can be implemented for security purposes
2.7 Identify the type of information that requires protection (e.g., diseases, demographics) and list examples
2.8 Demonstrate the application of principles for the appropriate release of required patient information in given scenarios.
2.9 Identify examples of circumstances when patient information may be used without patient authorization.
2.10 Summarize the ARRA/HITECH amendments to HIPAA.

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

Unit 3:
Data Standards in Public Health Information Technology

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.]

Objectives:
Students will be able to:
3.1 Identify the architecture categories for information systems and explain the differences
3.2 Summarize objectives of an enterprise architecture plan
3.3 Identify the objectives of data standards for public health
3.4 Describe the different types of standards required (e.g., information, clinical data representation, technical, medication terminology, and privacy and security)
3.5 Identify the factors involved in grammar data standards for communicating in public health informatics
3.6 Identify the principles of context regarding data standards for communicating public health informatics
3.7 Identify universal vocabularies and classification systems applicable to public health (CPT, ICD-0)

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

3.8 Identify and compare associations and/or organizations developing standards (e.g., CCHIT, HL7, American Society for Testing and Materials)

Topics:
A. Architecture of Information Systems
B. Data Standards
C. Information
D. Communication & Internet Technologies
E. Technical
F. Privacy & Security

Unit 4:
Public health enabled electronic health records and the role of public health in health information exchange

Description:
Summarize/describe the main role, functions and applications of public health-enabled Electronic Health Records (EHRs).

Objectives:
Students will be able to:
4.1 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.
4.2 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.
4.3 Describe the EHR "meaningful use" movement and how it could transform existing clinical/public health practices.
4.4 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.
4.5 Identify the essential features of four primary public health IT functions including syndromic surveillance, bi-directional immunization registries, public health alerts, ad-hoc reporting, etc.

Topics:
A. Primary Care Information Projects (PCIP)
B. Meaningful Use Goals
C. Improve Population Health
D. Syndromic Surveillance
E. Immunization Registries
F. Public Health Alerts & Ad-Hoc Reporting

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

Unit 5:
Epidemiological databases and registries – Public health information tools

Description:
Explain how varying types of information technologies have application in public health practice.

Objectives:
Students will be able to:
5.1 Identify the functions and key issues of epidemiology compared to clinical practice
5.2 Define and distinguish among the components that make up epidemiology
5.3 Identify the difference between environmental and mechanistic causes of disease
5.4 Describe the components of epidemiological reasoning
5.5 List the different types of epidemiology
5.6 Define clinical epidemiology and its relationship with evidence-based practice
5.7 Explain the current applications of epidemiology and how the results influence evidence-based practice
5.8 Identify different sources of epidemiological databases and how information is updated and exchanged with clinical entities
5.9 Describe the purpose of a registry, the types of information contained within a public health registries and how this information can be used
5.10 Identify the defining characteristics of epidemiological registries
5.11 Identify different entities that operate registries and how information from clinical practice gets imported into these registries
5.12 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.

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

Unit 6:
Biosurveillance, Situational awareness and disaster response

Description:
Identify current needs and future directions for EHR biosurveillance, disaster-preparedness, and situational awareness in improving public health.

Objectives:

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

Students will be able to:
6.1 Describe the traditional means used to monitor and report on disease spread within a community
6.2 Identify current data sources used to track disease
6.2a Describe the typical process of syndromic surveillance.
6.3 Identify strengths and weaknesses of using EHRs for biosurveillance
6.4 Describe process for monitoring, reporting, and analyzing EHR biosurveillance data
6.5 Identify how current and future findings from EHR biosurveillance improve public health operations and services

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

Unit 7:
Public health reporting, alerts and decision support

Description:
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

Objectives:
Students will be able to:
7.1 Describe the current role of public health in the context of the clinical care environment
7.2 Describe the following three essential public health services: Monitor Health; Diagnose/Investigate; Inform, Educate, Empower
7.3 Identify current public health practices challenges in the essential public health services of: Monitor Health; Diagnose/Investigate; and Inform, Educate, Empower
7.4 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)

Topics:
A. Define public health
B. Role of public health enabled Electronic Health Records (EHRs) & Health Information Exchange (HIE)
C. Monitor Health
D. Diagnosis and Investigate
E. Inform. Educate & Empower

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

Unit 8:
The potential of public health IT for health promotion and chronic disease prevention

Description:
Explain a novel approach to developing and implementing health promotion programs in public health practice.

Objectives:
Students will be able to:
8.1 Describe and categorize issues/questions, data sets and factors (variables) that are used in descriptive epidemiology.
8.2 Describe how evidence-based recommendations may be appropriately used in implementing and evaluating health promotion and disease prevention.
8.3 Describe different types of health promotion and disease prevention and different methods of enacting health promotion programs.
8.4 Identify the steps in the process of implementing and evaluating prevention programs and interventions.
8.5 Identify the clinical preventive services that are linked to health promotion and disease prevention.
8.6 Describe how informatics can be incorporated into clinical preventive services.
8.7 Describe the history and foundation of geographic information systems and explain its role in evidence-based practice.
8.8 Identify the barriers to incorporating public health IT into clinical practice and potential methods for resolving these limitations.
8.9 Identify the existing and innovative methods for communicating and sharing health information with the public.

Topics:
A. Descriptive Epidemiology
B. Health Research
C. Health Prevention
D. Intervention Methods
E. Innovation
F. Synthesis & Translation
G. Interactive Health Technologies

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

Unit 9:
Quality Reporting

Description:
Summarize/describe the main role, functions and applications of public health reporting, alerts and decision support systems.

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

Topics:
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 10:
Encouraging adoption/use of population health functions for EHRs and Consumer functions for PHRs

Description:
Delineate the critical role of advocacy in adoption/use of EHRs and Consumer functions for PHRs to improve public health.

Objectives:
Students will be able to:
10.1 Define/Identify components of a population health model provided in this component.
10.2 Identify and describe population health functions of EHRs.

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.

10.3 Describe the meaningful use criteria that are applicable to public health, population health, disease management and prevention.
10.4 Provide examples of common PHR systems (Google Health, Microsoft HealthVault, Vendor-specific PHRs) and identify embedded consumer functions.
10.5 Describe EHR adoption and use, with a focus on fidelity to public health goals.
10.6 Describe the challenges in and barriers to adoption and use of population health functions for EHRs and Consumer functions for PHR.
10.7 Explain and apply a rationale that would encourage adoption and use of public health functions for EHRs and Consumer functions for PHR.
10.8 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.

Topics:
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
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 Elements:
Instructors manual, self-assessment questions, and application activities

Format:
Slides with narration; video including screen shot simulations

Size/Contract Hours:
10 units; each with 20-25 minutes of lecture, 5-10 self-assessment questions and approximately ½ hour homework per unit

Local Resources Required for Implementation:
Computer; Internet connection (optional)

This material was developed by Columbia University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000003.