Section B

Public Health and HIT Adoption
Public Health in an NHIN

- Use of health IT in public health: where we are now
Public Health Organization in the United States

- Public health nowadays is:
  - Agency
  - Health care provider
  - Laboratory
  - Purchaser
  - Payor
  - Pharmacy
  - Research

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Publicly delivered direct care

Public Health Agency: Core Functions

- Assessment
- Policy development
- Assurance

- There are local, state, and federal public health agencies
- Their activities are organized by disease-specific programs
Use of IT in Public Health: Where We Are Now

- All public health activities are supported by customized information systems (databases, registries) developed to address the programmatic needs.
On average, there are 23 programs in the Local Health Departments (HDs)

19 programs in the State Health Departments

There are 3,000 local HDs and 50 state HDs in the United States

23 x 3,000 (local HD) = 69,000 local programs/systems

19 x 50 (state HD) = 950 state programs/systems

So roughly, there are 70,000 public health information systems

All of them are customized, siloed systems
And ... our information systems do support our programmatic needs

But ... our information systems cannot exchange data between programs within and across public health agencies and with clinical information systems
Bi-Directional Data Exchanges

- From public health reporting to bi-directional data exchanges
Current health information exchanges between clinical care and public health: public health reporting
Local Health Agencies

- Provider 1
  - Health education/risk reduction
  - Communicable diseases
  - Immunization
  - EPSDT
  - Injury control
  - School health
  - Chronic care
  - Biosurveillance, BT, preparedness
  - WIC
  - Occupational safety and health

- Provider 2
- Provider 3
- Provider 4
- Provider X
State Health Agencies

Provider 1
- Genetic disorder
- Vital statistics
- Communicable diseases
- Immunization
- Lead and environmental epidemiology
- Injury control
- School health
- Chronic care
- Biosurveillance, BT, preparedness
- WIC
- Public health laboratory
- HEDIS
- Cancer

Provider 2

Provider 3

Provider 4

Provider X

Local/State/Federal Agencies

Provider 1
- Health education/risk reduction
- Communicable diseases
- Immunization
- EPSDT
- Injury control
- School health
- Chronic care
- Biosurveillance, BT, preparedness
- WIC
- Occupational safety and health
- Genetic disorder
- Vital statistics
- Communicable diseases
- Immunization
- Lead and environmental epidemiology
- Injury control
- School health
- Chronic care
- Biosurveillance, BT, preparedness
- WIC
- Public health laboratory
- HEDIS
- Cancer

Provider 2
- Communicable diseases
- Immunization
- EPSDT
- Injury control
- School health
- Chronic care
- Biosurveillance, BT, preparedness
- WIC
- Public health laboratory
- HEDIS
- Cancer

Provider 3
- Communicable diseases
- Immunization
- EPSDT
- Injury control
- School health
- Chronic care
- Biosurveillance, BT, preparedness
- WIC
- Public health laboratory
- HEDIS
- Cancer

Provider 4
- Communicable diseases
- Immunization
- EPSDT
- Injury control
- School health
- Chronic care
- Biosurveillance, BT, preparedness
- WIC
- Public health laboratory
- HEDIS
- Cancer

Provider X
- Communicable diseases
- Immunization
- EPSDT
- Injury control
- School health
- Chronic care
- Biosurveillance, BT, preparedness
- WIC
- Public health laboratory
- HEDIS
- Cancer

On average 49% of cases got reported (CDC, 2006)

Reasons for Underreporting to Public Health Agency

- Lack of knowledge of the reporting requirement
  - Unaware of responsibility to report
  - Assume that someone else (e.g., a laboratory) would report
  - Unaware of which disease must be reported
  - Unaware of how and whom to report

Reasons for Underreporting to Public Health Agency

- Negative attitude towards reporting
  - Time consuming
  - Too much hassle (e.g., unwieldy report form or procedure)
  - Lack of incentive
  - Lack of feedback
  - Distrust of government

Reasons for Underreporting to Public Health Agency

- Misconceptions that result from lack of knowledge or negative attitude
  - Compromises patient-physician relationship
  - Concern that report may result in a breach of confidentiality
  - Disagreement with need to report
  - Judgment that the disease is not that serious
  - Belief that no effective public health measures exist
  - Perception that health department does not act on the report

The Centers for Disease Control and Prevention (CDC) recognizes that sound public health information is the essential ingredient of all of its work and the key to effective public health decision making.

CDC needed to streamline and consolidate its public health surveillance and information systems into an integrated system.

- With integrated systems, a wide range of diverse individual information systems will continue to exist, but these systems must be coordinated, interconnected, comparable, and easy to use.

Integrating Public Health Information Systems

- 1950: MEDINFO

- 1992
  - National Electronic Disease Surveillance System (NEDSS)

- 2003: Public Health Information Network (PHIN)

- 2003: Environ. Public Health Tracking Network

- 2005: CDC Biosense System and others
National Electronic Disease Surveillance System

- CDC National Electronic Disease Surveillance System (NEDSS)

“The vision of NEDSS is to have integrated surveillance systems that can transfer appropriate public health, laboratory, and clinical data efficiently and securely over the Internet”

Source: http://www.cdc.gov/nedss
“To build a standards-based, coordinated, and integrated environmental public health tracking (surveillance) network at the state and national level that will allow linkage and reporting of health effects data with human exposure data and environmental hazard data.”

Vision for Utah Child Health Advanced Records Management System

FIGURE 1. The Missouri Health Strategic Architectures and Information Cooperative project (MOHSAIC).
From *Public Health Reporting* to bi-directional health information exchanges between Clinical Care and Public Health: **Clinical and public health systems interoperability**
EHR-PH System Prototype for Interoperability

Clinical Care

Hospital of Birth

- ADT-Birth Record
- Newborn Screening Test
- Hearing Screening Test
- Immunization Administration
- External Laboratory

Public Health Surveillance

State Health Department

- Newborn Screening Registry
- Hearing Screening Registry
- Immunization Registry
- Communicable Disease Registry

EHR-PH Info Exchange

- HL7 2.4
- HL7 3.0
- HTB—health transaction base

Clinical-Public Health Data Reporting

- On average 49% of cases got reported (CDC, 2006)

Provider 1
- Genetic disorders
- Communicable diseases

Provider 2
- Immunization
- Vital records

Provider 3
- Injury control
- School health

Provider 4
- Chronic care
- Biosurveillance, BT, preparedness

Provider X
- HEDIS
Clinical, PH Systems Interoperability and HIT Standards

Provider 1
- Communicable diseases

Provider 2
- Immunization
- Vital records

Provider 3
- Injury control
- School health

Provider 4
- Chronic diseases

Provider X
- Biosurveillance, BT, preparedness, syndromic surveillance
- HEDIS

EHR/ HIE
- HL7
- CDA2

X12
- LOINC

NCPDP
- SNOMED
Why Do We Need Standards?

- HIT standards are needed to enable interoperability between:
  - Clinical ↔ public health information systems
  - Public health ↔ public health information systems
Public Health in the US Health Information Network

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Public Health Surveillance under a NHIN

Percent of Children Tested for Lead with BLL>10 µg/dL in the USA

Blood Lead Testing, Volume and Percent Positive (n=1,495,374)

Source: Eileen Koski. Quest Diagnostics. PHIN-2004, May, Atlanta GA. Used with permission. All Rights Reserved.
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