Public Health Information Network

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Some Public Health IT Initiatives

Specific initiatives have shown the potential of public health information technology:

- Health Alert Network (HAN) – Internet connectivity, alerting and distance learning
- National Electronic Disease Surveillance System (NEDSS) – disease surveillance, electronic laboratory reporting
- Laboratory Response Network (LRN) – diagnostic capacity and information delivery
- Epidemiology Information Exchange (EPI-X) – Secure, interactive communications
- CDC and other web sites – Public information access
- National Health Care Safety Network (NHSN) – Patient safety data

Now that public health is being tested by new needs for preparedness and response, it is time to advance a public health information network that brings together the functions and organizations that are public health.
Public Health – Problem Statement

• Public health and terrorism preparedness involve many organizations working together and exchanging information

• The fragmented and heterogeneous technologies in the U.S. healthcare system do not readily share consistent data with public health

• The current public health information cycle (clinical event to response) is too long and frequently involves the manual exchange of information

• The new realities of terrorism and disease trends require a new level of operation
Public Health Information Network – Vision

To transform public health by coordinating its functions and organizations to enable:

- real-time data flow
- computer assisted analysis
- decision support
- professional collaboration
- rapid dissemination of information to public health, the clinical care community and the public
Public Health Information Network – Functions

- **Detection and monitoring** – support of disease and threat surveillance, national health status indicators
- **Analysis** – facilitating real-time evaluation of live data feeds, turning data into information for people at all levels of public health
- **Information resources and knowledge management** – reference information, distance learning, decision support
- **Alerting and communications** – transmission of emergency alerts, routine professional discussions, collaborative activities
- **Response** – management support of recommendations, prophylaxis, vaccination, etc.
Public Health Information Network – Characteristics

- **An interoperable network** – A common framework to integrate public health systems and functions while using industry standards to work with other networks / systems

- **Dual use** – Directly enhance homeland security and transform routine public health practice

- **Reduce Reporting Burden** – use existing electronic clinical data

- **Live data** – continuous monitoring of nations health, continuous detection and evaluation of threats

- **Support users** – provides information and decision support to the public and public health professionals at all levels
Public Health Information Network – Process

1. Identify relevant **industry standards** – technical and data (e.g. HL7)

2. Develop **specifications** based on standards that are concrete enough to do work (e.g. implementation guide for lab result)

3. **Fund** through the specifications (e.g. IT functions and specifications for > 1 billion in 2002)

4. Develop “**transitional software**” that implements the standards now (e.g. the messaging system)

5. Encourage **partners and private sector** to implement the specifications (e.g. NEDSS compatible state systems)

6. Support **conformance testing**
Public Health Information Network – Needs

1. Standard identification and specification development for all PHIN functional areas

2. Development of PHIN foundational elements at public health partners and CDC that support integrated, interoperable systems
   a. Shared directories
   b. Shared data brokering and exchange capabilities
   c. Standardized data stores
   d. Shared analysis and reporting (including GIS)
   e. Shared knowledge management and collaboration systems
   f. Integrated response systems

3. “Transitional software components” that implement the standards now

4. Conformance testing and integration assurance
Public Health Information Network Interoperability Strategies

- Systems architecture
- Live network for the exchange of specific data
- Shared data model and vocabularies
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Health Department

Integratable Data Repositories

Unified Person (Patient) Registry

PH Logical Data Model (Derivative of HL7 RIM)

Integratable Data Repositories

Integration Services

Strong Security
PKI or VPN

Data Reporting

Content Delivery

Reporting, GIS and Analysis

Directory of PH Involved Personnel

Communications and alerting

Data Exchange Messages

Web Services

CDC
SAFER • HEALTHIER • PEOPLE
Public Health Information Network Interoperability Strategies

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Public Health Information Network – “Live Network”

“Live” Exchange of and Access to Specific Data for Interoperable Systems – Messages and Storage

Specific Data Content – Vocabulary and Implementation Guides (LOINC, SNOMED, etc.)

Data Structure – Data Models (PHLDM, HL7 etc.)

Transport / “Handshake Between Information Systems” – ebXML

Encryption / Security – HTTPS, PKI

Connectivity – Continuous Internet Connectivity
For public health participants:
  • Require the use of industry standard data model, vocabularies and messages
  • Use technology standards to ensure that software can be used in many settings

For clinical data coming to public health:
  • Public Health Information Network standards conform with federal e-Gov directions and related standards:
    • National Committee on Vital and Health Statistics (NCVHS)
    • Consolidated Health Informatics (CHI)
Public Health Information Network Messages

Routine Public Health and Investigation of BT Detection Messages

Clinical
- Microbiology results
- Orders
- Chief complaints
- Lab results
- Discharge diagnosis

Public Health
- Nationally Notifiable Diseases
- Hepatitis
- Meningitis
- Electronic Lab Reporting

Response Messages
- Lab test request
- Lab result
- Case report
- Test result available notification
- Specimen container shipment
- Specimen context
- Intervention request
- Intervention result report
- Contact list report
- LDIF directory exchange
- Alerts and public health information dissemination
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Public Health Information Network – Status

Public Health and Social Services Emergency Fund
- $1 billion for state and local public health capacity (estimate that 30% of funding is going to IT)
- CDC and HRSA stipulate use of standards for IT investments

CDC information council (CDC, ASTHO and NACCHO) approved naming of IT Functions and Specifications as version 1 of the Public Health Information Network Standards

Build on and coordinate ongoing activities of HAN, NEDSS and others

Conformance testing initiated around the Smallpox vaccination process