Public Health Information Network and the National Electronic Disease Surveillance System (NEDSS): Use of information system standards to improve public health surveillance

Claire Broome, MD
Centers for Disease Control and Prevention
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Limitations of current surveillance systems

- Multiplicity of categorical systems
- Data incomplete, not timely
- Burden on respondents in health care sector increasingly unacceptable
- Systems do not utilize state of the art information technology
NEDSS “at-a-glance”

- NEDSS is a broad initiative using national data and information system standards for development of efficient, integrated, and interoperable surveillance systems at the state and local levels
  - Data standards—Conceptual data model, [http://www.cdc.gov/cic](http://www.cdc.gov/cic)
  - Harmonizing with HL7 Reference Information Model

- Includes tools for electronic data transfer to health department from health care system:
  - Eg from multi-jurisdictional clinical labs
  - single “pipeline”: single format, receiving point, security

- Security standards (HIPAA compliant) to maintain public health track record in protecting sensitive data

- Starts with focus—infectious disease—but keeps big picture in mind
Integrated State / Local Data Repository

Security

Surveillance system architecture at state or local health department

- Electronic Laboratory Messages
- Clinical Database
- XML Data Exchange
- HL7

CDC and Other Health Depts.

Local Health Department or Clinical Site

State Health Department

Reporting, GIS and Analysis

Shareable Directory of PH Personnel
Funding history for PHIN/NEDSS

- 50 states, 6 cities, and 1 territory funded for NEDSS: 43 started with Assessment & Planning phase in 2000
- September 2001: 35 states and 1 city receiving funds for development of NEDSS compatible systems
  - 16 implementing NEDSS compatible state developed system
  - 20 proposed use of NEDSS Base System (NBS)
- January 2002: Public Health and Social Services Emergency Fund provides >$1 billion for state and local public health capacity, including guidance from CDC and HRSA to use standards for IT investments
  - Initial estimate-30% of funding going to IT
NEDSS Base System

A NEDSS compatible system for state and local use developed by an experienced web software developer (Computer Sciences Corporation)

- “Base system” includes Core Demographics; person based system; HL-7 messaging
- Also useful as a specific implementation of NEDSS e.g. standard messages, database model
- Base System now in production in NE; deployment to other 20 states in progress
- Version 1.0 includes 93 notifiable diseases, and modules for vaccine preventable diseases, hepatitis, bacterial meningitis and pneumonia
NBS Security Overview

The data and functions a user can access are defined in 4 dimensions. An audit trail of user actions is in the database.

What program areas is the user allowed to access?
- General Communicable Immunization
- STD

For what geographic areas can the user access data?
- Metro Area
- Region
- County

What forms can the user work with?
- Person
- Investigation
- Morbidity Report

What can the user do?
- View
- Edit
- Delete
NEDSS Base System – what is behind the screens?

- Open architecture/J2EE: easier incorporation of new technology. Avoids getting locked into non-standard, inflexible systems.
- Messaging: Can handle HL 7 standard messages from labs, other clinical partners, immunization registry, BT related messages.
- Person based system: permits longitudinal follow-up—eg tb.
NEDSS continued

- FY2003 NEDSS grants offer NEDSS Base System to any interested state; awards in progress
- Systematic change management process is tracking requested enhancements to NBS, planning versions 1.1 (out 7/31/03), 1.2, and 2.0
- Conformance testing options for NEDSS compatible state systems to be discussed with partners at PHIN conference 5/2003
Public Health Information Network
Approach to Data Standards

For clinical data coming to public health:

- specific implementations of National Committee on Vital and Health Statistics (NCVHS) and Consolidated Health Informatics (CHI) endorsed industry standards
- Work with partners to encourage use of standards in clinical care services eg if industry standard messages are used for clinical data

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
How can Public Health Information Network and NEDSS help encourage progress toward NHII?

- Understanding of need for preparedness high among providers, public
- Public private partnership--eHealth Initiative public health, Standards Development Organizations, clinical systems vendors supporting 80% of US health care systems, providers
  - use data already in electronic format
  - practical solutions to implement standard messages
- Standards based electronic data reporting eases burden of reporting, whether to public health, or other entities
Background
What does Public Health Information Network have to do with HIPAA?

- HIPAA mandates national health care data standards and policies in four areas:
  - Transaction content; unique identifiers for providers, health plans; security; privacy

- Public Health Information Network architecture standards are HIPAA compliant:
  - supports “dual use” for security, messaging elements

- Approach to Public Health Information Network data standards is HIPAA compliant:
  - Adopting HIPAA standards where relevant eg electronic laboratory reporting in NEDSS uses proposed HIPAA claims attachment
  - Advocating inclusion of data elements relevant to public health with SDO’s
### Public Health Related 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