Meaningful Use
HL7 Version 2

HL7 Version 2 and Surveillance Reporting
HIMSS, 2012 Las Vegas, NV

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February 2012
Contributors to Today’s Presentation

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What we will cover

- Pre-Meaningful Use public health surveillance efforts
- Meaningful Use and public health surveillance
- How HL7 is essential to the story
Public Health Surveillance is the Key Activity of Health Departments to Protect the Public’s Health
Public Health Surveillance

Components:

1. Event **detection** based on the laboratory, clinical encounter data and non-clinical data
2. Event **investigation** (case investigation/assessment)
3. Event **monitoring**
4. Event **management** (outbreak management)
5. **Evaluation** of the event management intervention(s)
6. Event **mitigation** (prevention)
Public Health Surveillance Systems

**CDC Environmental Public Health Tracking Network** - health effects data with human exposure data and environmental hazard data.

**CDC National Notifiable Disease Surveillance System (NNDSS)** – laboratory and clinical data on nationally defined list of communicable diseases

**State Disease Surveillance Systems** - laboratory and clinical data on jurisdictionally-defined list of reportable diseases (conditions)

**Local and State Syndromic Surveillance Systems** – syndromic data from clinical and non-clinical sources to detect a public health threat event
Pre-ARRA / Meaningful Use Efforts on Public Health Surveillance

- **HITSP Electronic Lab Reporting Interoperability Specification (IS 01)** specifies HL7 2.5.1 message and CDA R2 for laboratory results reporting to public health agencies.

- **HITSP Biosurveillance Interoperability Specification (IS 02)** specifies HL7 2.5.1 for message-based and HL7 CDA R2 for structured document submission of syndromic data.

- **HITSP Public Health Reporting Interoperability Specification (IS 11)** specifies HL7 2.5.1 for message-based and HL7 CDA R2 for structured document submission of notifiable/reportable diseases data.
Pre-Meaningful Use Efforts on Public Health Surveillance

Public Health Partners:

- Council of State and Territorial Epidemiologists (CSTE)
- Association of Public Health Laboratories (APHL)
- Public Health Data Standards Consortium (PHDSC)
Meaningful Use of HIT and Public Health Surveillance

- Focus of MU Stage 1 requirement is Syndromic Surveillance

The Public Health Stakeholder
- International Society for Disease Surveillance (ISDS) (http://www.syndromic.org/)
Meaningful Use of Health IT and Syndromic Surveillance

- Applies to all healthcare providers (inpatient, outpatient and emergency care)
- Focuses on infectious diseases
- Focuses on local and state syndromic surveillance systems not reporting to federal agencies
- Focuses on:
  - Event detection based on the laboratory, clinical encounter data and non-clinical data
  - Event investigation (case investigation/assessment)
  - Event monitoring
  - Event management (outbreak management)
  - Evaluation of the event management intervention(s)
  - Event mitigation (prevention)

Synonym terms used in the past: biosurveillance and situational awareness
Meaningful Use of Health IT and Syndromic Surveillance

- Data Requirements:
  - Facility demographics including contact data for the report and sender data
  - Patient demographics
  - Laboratory and radiology orders and results
  - Vital signs (heart rate, respiratory, blood pressure, height and weight)
  - Observation, symptoms and clinical findings
  - Triage notes
  - Pregnancy status
  - Data elements on severity of illness (ventilated/intubated indicators)
  - ICU indicators
Meaningful Use of Health IT and Syndromic Surveillance

- MU Stage 1 specifies data submission using HL7 v2.3.1 and HL7 v2.5.1
- Data requirements are mostly the same as specified in the Biosurveillance Minimum dataset with additions of patient-identifiable data. As background this can be found in the following HITSP Documents:
  - HITSP Encounter Message Component (HITSP C39) – specifies Biosurveillance dataset for message-based data submission
  - HITSP EHR Lab Terminology (HITSP C35, 36, 37) URL – specified vocabularies and terminologies for Lab reports
  - HITSP Encounter Document (HITSP C48) - specifies Biosurveillance dataset for document-based data submission
  - HITSP Anonymize Component (HITSP C25) - specifies Biosurveillance identifiers to be anonymized

Source: HITSP Document Library
For now & the foreseeable future

Implementations are making use of interfaces based on HL7 V2.3.1 or V2.5.1 and will require \textit{(i.e., must have)} a specific implementation specification:

- From Segments and Trigger Event through wrapper detail;
- Removes all optionality and specifies (if needed) z-segments;
- Specifies specific data element allowable code-set mapping values;
- and more.
HL7 V2.5 Implementation Guide

A relevant balloted standard implementation guide exists for 2.5

- HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health (US Realm), Release 1;
- Leverages existing 2.5 implementation guides in use in many states and hence minimizes change as much as possible;
- Does not make use of several years of new work that has been done in HL7 since 2.5 was published in 2003.
- The current V2 standard is HL7 V2.7 published in 2011.

The HL7 2.5 Implementation Guide available from the CDC does addresses a part of the needed solution.
Surveillance is part of Public Health Reporting

The CDC is Harmonizing standards and creating implementation guides for communication between clinical care and public health. Examples include:

- Maternal Child Health, Early Hearing Detection and Intervention (EHDI), Vital Records
- Communicable Diseases, Case Reporting
- Chronic Disease, Immunization, Injury
- Occupational Safety, Adverse Events, Surveillance
- And More
Strictly speaking, the following are not ONC Standards and Interoperability (S&I) Framework Initiatives. They are CDC Initiatives. These include:

- Immunization
- ELR to Public Health
- Syndromic Surveillance
How HL7 is Essential to Public Health Surveillance Story

HL7 standards should enable submission of electronic surveillance data to public health agencies according to applicable law and practice.

Currently there is:

- HL7 2.3.1 format (no implementation guide specified), or
- HL7 2.5.1 format in conformance with the Public Health Information Network HL7 Version 2.5 Message Structure Specification for National Condition Reporting Final Version 1.0 and Errata and Clarifications National Notification Message Structural Specification:
  - Specifies the use of Case Notification Message Mapping;
  - Guides published by the CDC on their web site;
  - CDC is now supporting implementations.
Public Health Surveillance and Meaningful Use of HIT

- What/When/Who/Whom to report (varies by condition and by jurisdiction):
  - Impacts the Provider organization workflow which must be accommodated in the tool used to support fulfillment of reporting requirements;
  - Is dependent on Reporting tools options.
Public Health Case Reporting Workflow

Where is the decision to report?

- Human
- EHR
- HIE
- Auxiliary Decision Support Utility
- Interface Engine
Public Health Case Reporting Workflow (EHR)

- EHR Collects Case Reporting Data
  - EHR submits Case Report
    - Level of detail not generally in an EHR
    - Will require follow-up with patient for additional data
  - Workflow and products for case reporting
    - Dedicated Personnel
    - Service or specialty product (EHR Module, 3\textsuperscript{rd} Party)
  - EHR Surfacing Public Health Case Report Form
    - Retrieve Form for Data Capture (IHE, HITSP)
    - Allows pre-population of EHR data
    - Allows data entry for non-EHR managed data
    - Point of Care
Public Health Case Reporting Workflow (Health Information Exchange)

- HIE May Support Knowledge to Trigger Reporting on Behalf of EHR
- HIE May Offer Forms Data Capture
- HIE May Supply Subscription to Notifiable Content to Public Health
- HIE May Supply Query Access to Public Health
  - Support for Biosurveillance
  - Support for Anonymizing/Pseudonymizing for Data Minin
- However, each HIE (or groups of states working on a singular HIE) have different goals and adoption of standards within their HIE.
Public Health Case Reporting Workflow (Other Reporting Tools)

- Auxiliary Decision Support Platform/Utility
  - May support other reporting needs (e.g. Quality Reporting/Analysis)
  - Application
  - Service

- Interface Engine
  - Need to define triggers and content
Reportable Condition Processor


Source: Shaun Grannis. Lecture in Public Health in NHIN Course 309.860.11
Johns Hopkins School fo Public Health. 2007
Thank You
Questions?