



# Meaningful Use - HL7 Version 2

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HL7 Version 2 and Surveillance Reporting

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# Contributors to Today's Presentation

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# What we will cover

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- 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

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

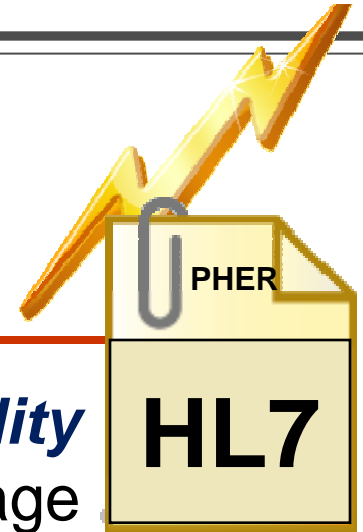
***CDC National Notifiable Disease Surveillance System (NNDSS)*** – laboratory and clinical data on nationally defined list of communicable diseases

***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-Meaningful Use Efforts on Public Health Surveillance

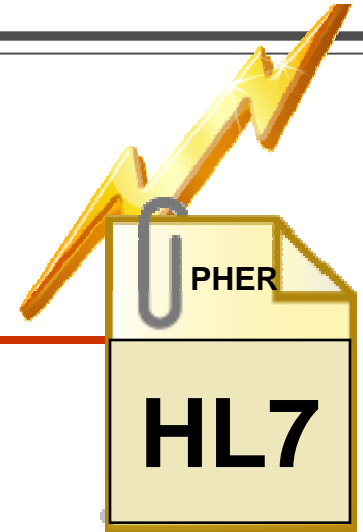


- ***HITSP Electronic Lab Reporting Interoperability Specification (IS 01)*** specifies HL7 2.5.1 message and CDA R2 for laboratory results reporting to public health agencies
- ***HITSP Biosurveillance Interoperability Specification (IS 02)*** specifies HL7 2.5.1 for message-based and HL7 CDA R2 for 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

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## 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

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- ❑ Focus of MU Stage 1 requirement is: Syndromic Surveillance

## Public Health Stakeholder

- ❑ International Society for Disease Surveillance (ISDS) (<http://www.syndromic.org/>)



# Meaningful Use of Health IT and Syndromic Surveillance

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- 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

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## ■ 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

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- 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 can be found:
  - 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. URL <http://www.hitsp.org/#tp>



# Ultimately...

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- Implementation and use of interfaces based on HL7 V2.3.1 or V2.5.1 will require 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
- ***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

***This addresses a part of the needed solution.***



# Public Health Surveillance and Meaningful Use of HIT

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- Traditional Public Health Surveillance (Case Reporting )
  - Specific Case Notification Messages
- Syndromic Surveillance (Biosurveillance)
  - Monitor routine clinical data for public health concerns



# How HL7 is Essential to Public Health Surveillance Story

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

- 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 at:  
<http://www.cdc.gov/phn/resources/guides/mmghomepagecasenotification.html>



# Public Health Surveillance and Meaningful Use of HIT

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- 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
  - Reporting tool options



# Public Health Case Reporting Workflow

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- Where is the decision to report?
  - Human
  - EHR
  - HIE
  - Auxiliary Decision Support Utility
  - Interface Engine



# Public Health Case Reporting Workflow (EHR)

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- 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<sup>rd</sup> 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)

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- 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 Mining



# Public Health Case Reporting Workflow (Other Reporting Tools)

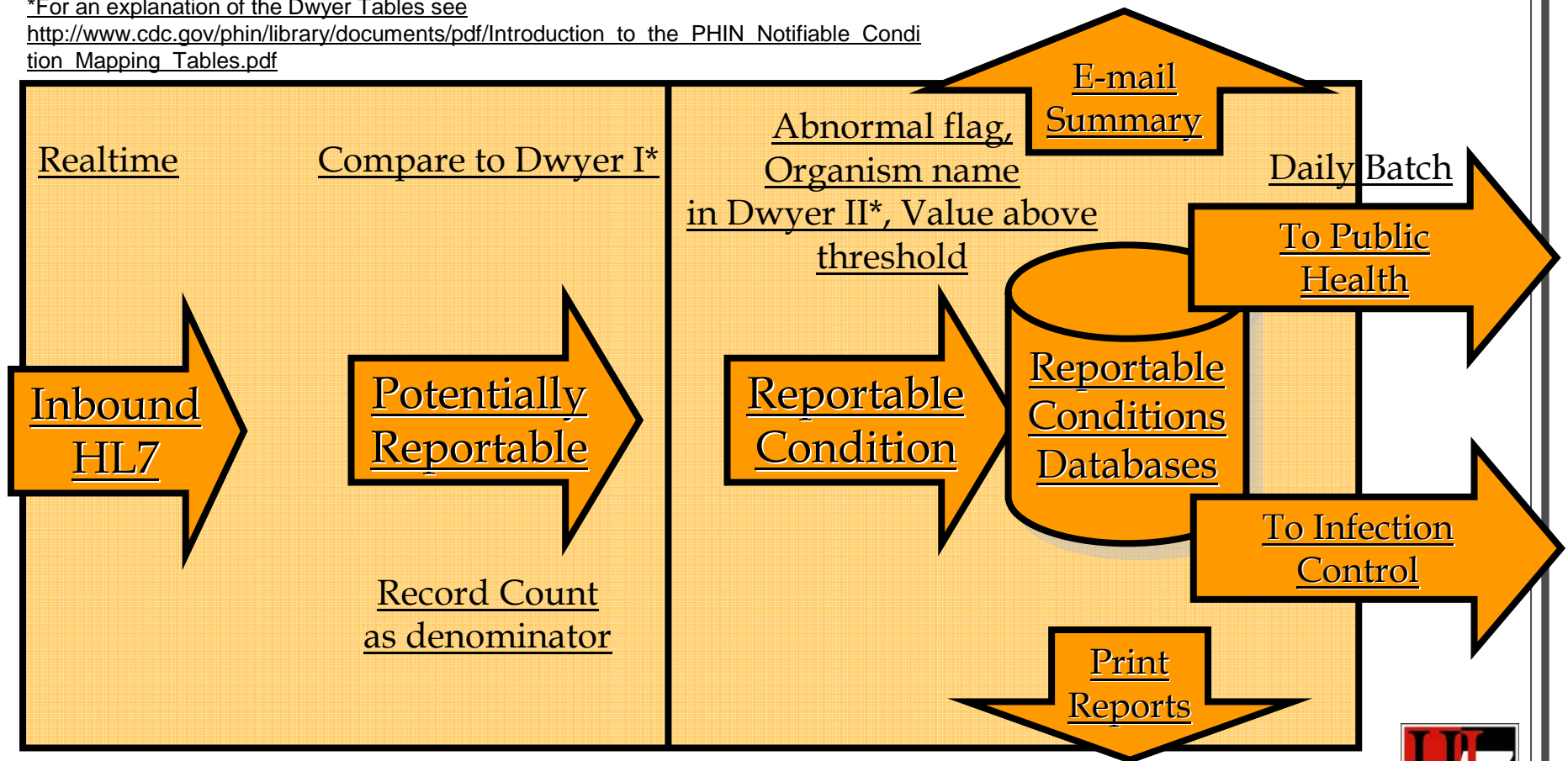
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- **Auxiliary Decision Support Utility**
  - May support other reporting needs (e.g. Quality Reporting/Analysis)
  - Application
  - Service
- **Interface Engine**
  - Need to define triggers and content



# Reportable Condition Processor

\*For an explanation of the Dwyer Tables see  
[http://www.cdc.gov/phn/library/documents/pdf/Introduction\\_to\\_the\\_PHIN\\_Notifiable\\_Condition\\_Mapping\\_Tables.pdf](http://www.cdc.gov/phn/library/documents/pdf/Introduction_to_the_PHIN_Notifiable_Condition_Mapping_Tables.pdf)



Source: Shaun Grannis. Lecture in Public Health in NHIN Course 309.860.11  
Johns Hopkins School of Public Health. 2007



# Links To More Information

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CDC Public Health Information Network  
(PHIN) Resources:

URL:

[http://www.cdc.gov/phn/resources/guides/  
mmghomepagecasenotification.html](http://www.cdc.gov/phn/resources/guides/mmghomepagecasenotification.html)



*Questions?*