Update on the BioSense Program Redesign

Building a Community-Based PH Collaborative Information Sharing Environment

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Objectives

- Brief History of BioSense Program
- Rationale & Scope of BioSense Program Redesign
- Status of BioSense Program Redesign and Timeline
History of BioSense

- Mandated in the Public Health Security and Bioterrorism (BT) Preparedness and Response Act of 2002
  - Nationwide “integrated system” for early detection and assessment of potential BT-related illness
- Funding provided by Congress to CDC in 2003
- Development of BioSense infrastructure started in 2003
  - Initially focused on collecting timely data directly from civilian hospital clinical information systems, VA and DoD
History of BioSense (cont’d)

- In 2004, BioSense began recruiting hospitals to provide in-depth clinical data directly to CDC.

- In 2006, BioSense started soliciting more limited data from health departments that had already established automated systems for ED-based syndromic surveillance.
Current Data Sources

Direct Reporting Hospitals [or Hospital Groups]
- Health Dept
- Hospital(s)
- Hospital(s)

Health Department SS Feed
- Health Dept

Federal Data Sources
- VA
- DoD

National Data Sources
- Other (e.g., Laboratory (LabCorp, Quest), Pharmacy Prescription, etc.)

Legend
- Direct Hospital (Bifurcated) Feed
- Direct Hospital Feed
- State or Local Health Department SS Feed
- Other National (Federal and Non-Federal) Feeds
Prior Stakeholder Input & Reviews: What We’ve Heard

- **Need to**
  - Strengthen state and local public health partner engagement
  - Promotion of a proactive, collaborative, and transparent “community of users”
  - Clarify strategic objectives
  - Extend interface with expanding use of EHRs and health information exchange

- **Move towards an open, distributed computing model**

- **Improve usability of the data**
Lessons Learned
Evaluations of BioSense & Syndromic Surveillance

- **BioSense concerns**
  - Insufficient integration of BioSense with other post-9/11 investments in surveillance, esp. syndromic surveillance
  - Informatics dimension emphasized at expense of surveillance capacity & roles
  - Current infrastructure / platform can not scale for surveillance-healthcare interface in era of expanding use of EHRs

- **Most useful when**
  - Local & state health departments involved & invested
  - When human surveillance capacity and PH-Healthcare links are strong
  - Used on an ongoing basis
  - Used for multiple conditions

- **BioSense assets**
  - Enabled Distribute
Scope of Redesign (1)

- Stakeholder engagement, esp. health depts
- Use resources more effectively
  - Internal contract management
  - Invest in state capacity (via ELC)
- Constraints of current technology
  - Server capacity/costs, prompting shift to “cloud” technology
  - “Bandwidth” limits: Need for more efficient data management procedures
- Improve integration of “stand-alone” state/local syndromic surveillance systems
  - Increase # of health departments connecting syndromic surveillance systems to BioSense
  - Improve BioSense coverage: regional & national situation awareness
- Enhance state/local use of data from “direct-reporting” hospitals
Scope of Redesign (2)

- Enhance state/local use of data from “direct-reporting” hospitals
- Improve utility of on-line BioSense resources
- Support preparedness & response situation awareness AND extend utility for broader spectrum of PH concerns
  - Detection, characterization, ongoing tracking
  - Align with advances in disease reporting
  - Align with advances in automation of healthcare records and surveillance systems
  - Influenza-ILI monitoring/Distribute
  - Chronic diseases/injuries
- Infrastructure and support for expansion of syndromic surveillance as “Meaningful Use” population health measure
The Opportunity in Meaningful Use (MUSe): EHRs and Health Information Exchange can Improve Public Health Surveillance

- Enhanced Situation Awareness
- Timely and More Complete Notifiable Disease Reporting
- Better Surveillance of Chronic Conditions

Consistency | Timeliness | Completeness
The Opportunity in MUse: Support Case- and Event-Based Surveillance
Many State or Community Health Agencies are not yet prepared to receive the new wave of EHR data

- According to TFAH, ASTHO and BioSense Program redesign

<table>
<thead>
<tr>
<th>Syndromic Surveillance System - Agency Will Be Ready To Receive Test Messages For Meaningful Use By</th>
<th>Cumulative % of States and Territories That Responded to the Survey That Will be Ready By</th>
<th>Cumulative % of All States and Territories That Will be Ready By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Now</td>
<td>31.43%</td>
<td>19.30%</td>
</tr>
<tr>
<td>Jan-11</td>
<td>37.14%</td>
<td>22.81%</td>
</tr>
<tr>
<td>Apr-11</td>
<td>51.43%</td>
<td>31.58%</td>
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<td>2012</td>
<td>57.14%</td>
<td>35.09%</td>
</tr>
<tr>
<td>2013</td>
<td>57.14%</td>
<td>35.09%</td>
</tr>
</tbody>
</table>

ASTHO's MUSE Readiness Survey, # of States and Territories Responding = 35
MUse Public Health Syndromic Surveillance Minimum Data Set

- 32 elements commonly used by public health authorities to conduct syndromic surveillance
  - Treatment Facility
  - Patient Demographics
  - Patient Health Indicators

Final Recommendation: Core Processes and EHR Requirements for Public Health Syndromic Surveillance

International Society for Disease Surveillance (ISDS)
Meaningful Use Workgroup

January 31, 2011

4.4 Minimum Data Set

The following data contains a minimum list of data elements commonly used by PHNs to conduct PHSS. This list does not represent the entire list of data elements needed to support the full spectrum of current practice. Therefore, the actual data elements and specifications are subject to change in accordance with applicable state and local laws and practices.

<table>
<thead>
<tr>
<th>#</th>
<th>Data Element Name</th>
<th>Description of Field</th>
<th>Usage</th>
<th>Cardinality</th>
<th>Value Set</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Facility Identifier (Main)</td>
<td>Unique facility identifier of facility where the patient originally presented (or source of data)</td>
<td>R</td>
<td>1..1</td>
<td>National Provider Identifier</td>
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<td>2</td>
<td>Facility Name (Main)</td>
<td>Name of the leading facility where the patient originally presented</td>
<td>Q</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For questions, contact:
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617-775-0065

ISDS Meaningful Use Workgroup: http://syndromic.org/projects/meaningful-use
BioSense Program Redesign: Recent Uses of BioSense

- Gulf Oil Spill-associated surveillance
  - AL, FL, LA, MS, TX, NCEH, CDC EOC+
- Dengue case detection
  - Dengue Branch, FL Dept of Health, VA
- State-based asthma surveillance
  - AL Dept of Health, VA, DoD
- Non-acute dental conditions
  - Division of Oral Health,
  - NC DoH, NCDetect
- Rabies post-exposure prophylaxis
  - Poxvirus & Rabies Branch
- Influenza-like illness surveillance
  - Influenza Division
  - Contribution to Distribute
- Falls in the Elderly
- Tsunami-related events in Japan from DoD facilities

https://sites.google.com/site/changepointanalysis
BioSense Program Redesign: Building a Community-Owned and Driven Surveillance Environment

- BioSense Redesign Goals
  - Nationwide and regional situation awareness for all hazards (health-related events beyond bioterrorism)
    - 86% of stakeholders feel that there is value in viewing a regional or national view to achieve public health situation awareness
  - Support national, state, and local responses to those events
  - Multiple uses to support your public health situation awareness; routine public health practice; and improved health outcomes and population and public health
BioSense Program Redesign: Building a Community-Owned and Driven Surveillance Environment

- BioSense Redesign Strategy
  - Improved and consolidated internal contract management and efficiency for the BioSense system, with funding (~40% of Program ceiling) being applied to
    - support local and state jurisdictions’ health monitoring infrastructure and workforce capacity
    - providing technical and program assistant to partners to take advantage of new opportunities such as Meaningful Use to help bring sites onboard and sustain their capacity
  - Increase BioSense Program participation and utility through a user-centered approach
BioSense Program Redesign:
Building a Community-Owned and Driven Surveillance Environment

- Working closely with PH partners to define procedures that would give departments the option to use this environment to collect, manage and analyze their syndromic surveillance data (ED, Outpatient, Pharmacy, etc) and other electronic sources.

- Application prototypes designed and updated routinely and tested with PH users in SLH agencies.

- By November 2011, develop a community-owned environment that stakeholders (starting with states)
Technical Expert Panel (TEP)

- David Buckeridge
  - McGill University
- Julia Gunn
  - National Association of County and City Health Officials
- Mark Holodniy
  - Department of Veterans Affairs
- Jim Kirkwood
  - Association of State and Territorial Health Officers
- Denise Love
  - National Association of Health Data Organizations
- Judy Murphy
  - Aurora Health System
- Marc Paladini
  - NYC Department of Health and Mental Hygiene
- Tom Safranek, Lisa Ferland, Richard Hopkins
  - Council of State and Territorial Epidemiologists
- Walter G. Suarez
  - Kaiser Permanente
- John Teeter
  - HHS Deputy CIO
Selected Stakeholders

Council of State and Territorial Epidemiologists

Leaders in Applied Public Health Epidemiology

International Society for Disease Surveillance

National Association of County & City Health Officials

The National Connection for Local Public Health

U.S. Department of Defense

United States Department of Veterans Affairs
Stakeholder Involvement

- Seeking individuals (S&L, CDC, and other partners) from professional organizations to participate in redesign effort
- Coordinating presence at national conferences
- Identifying individuals to update the map on the collaboration site
- Disseminating redesign project information through communication channels
Requirements Gathering

**BIOSENSE REDESIGN**

**USER REQUIREMENTS**

- BioSense program
- BioSense system

Canned vs. customized reports

Data sharing policies, memorandums of understanding, contracts, and/or formal agreements between jurisdictions

Data views within and across jurisdictions

Skilled workers: data analysis, interpretation and reporting, and technical support

Graphs and charts, maps, aggregate data, detailed-level data, and tabulated data

Data validation

Data for an event vs. routine surveillance

One-on-One User Sessions

Group User Sessions

Webinars

Collaboration Web Site

Feedback Forums

Forums
Environmental Scan

The purpose of the environmental scan is to assess current successful practices in surveillance and extract from them requirements to aid in the BioSense Redesign.

Note: The map has been initially populated with public health jurisdictions' self-reported data obtained through Distribute.
Design Prototypes

- Design prototypes evolved from 22 guiding principles
- These design principles emerged from various interactive sessions with stakeholders
- Prototype is constantly evolving based on iterative cycle of User-Centered Design (UCD)
- A small sample of features in prototypes
  - Collaboration between peers
  - Ability to download and save reports in a variety of formats
  - Easy accessibility to application with low barriers to entry

http://biosenseredesign.org
New Activities to Support Health Departments

- Program Technical Assistance
- Application Technical Assistance
- Challenge Grants
Thank You!

BioSense Redesign
http://biosenseredesign.org
biosense.redesign2010 AT gmail DOT com

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