Joint Public Health Forum & CDC Nationwide

Community Profile

The Office of the National Coordinator for Health IT (ONC) and the Centers for Disease Control & Prevention (CDC) jointly sponsor this initiative, which features monthly webinars to foster collaboration amongst the public health jurisdictions across the nation, in response to the widespread adoption of electronic health records (EHRs) for Meaningful Use.

The objectives for this initiative include:

- Identify common questions and concerns around meaningful use
- Provide updates on federal partner activities in preparing for meaningful use
- Allow public health jurisdictions to share useful practices and current progress
- Identify technical assistance needs and priorities

Note: Webinar pre-registration is required and the instructions to register are provided in the Monthly Webinar Registration section below.

Please send in your feedback, questions, and/or suggestions for those Joint Public Health Forum & CDC Nationwide Webinars to the Meaningful Use Mailbox (meaningfuluse@cdc.gov).

Meeting Schedule and Webinar Information

Meeting Schedule:
Question and Answer Session

How to submit or ask questions for the panel members?

• **Submit or Ask Questions**
• Submit your text question and comments using the Question Panel
• Please raise your hand to be unmuted for verbal questions.
Exploring Travel History Data Harmonization: Findings from a CDC/CSTE Workshop

Joint Public Health Forum & CDC Nationwide Call
Thursday, February 15, 2018

Presenters:
Nedra Garrett, CDC
Meredith Lichtenstein Cone, CSTE
Who is CSTE?

- Member organization of states and territories representing public health epidemiologists
- Professional association for applied epidemiologists
- 1905 members (as of 2/12/18)
  - Active: 1368 (72%)
  - Associate: 379 (20%)
  - Student: 144 (8%)
- 6 Steering Committees, 30+ Subcommittees
  - Surveillance/Informatics Steering Committee: 444 members
    - Epis, informaticians, ELR coordinators, IT, surveillance system and program managers, HL7 specialists, fellows
Who is CSTE?

- CSTE National Office
  - Atlanta, GA
  - 50 employees

- Funded by CDC cooperative agreement number 5U38OT000143 (2013-2018)
  - Base award covers surveillance/informatics capacity building
  - E.g., harmonization and standardization work
Agenda
Agenda

• Summary of CDC Travel History Harmonization Efforts (Nedra Garrett)
• Approach to CDC/CSTE Travel History Workshop (Meredith Lichtenstein Cone)
• Highlights from Workshop Discussions
• Workshop Takeaways and Next Steps
• Questions
CDC Travel History
Harmonization Efforts
CDC Standards Management & Harmonization: Travel History Data Project

• **Who?** Travel History Data Harmonization Tiger Team convened to improve Travel History information

• **Why?**
  - Data harmonization across programs is very difficult at best
  - Travel History domain is widely used across many programs
  - Extra burden on State, Tribal, Local and Territorial (STLT) partners to submit similar data in different formats to different CDC programs and systems
  - Reduced ability to share surveillance data across programs

• **Outcome:**
  - The harmonization approach seen as highly promising (reduced the variability of Travel History questions from 171 to 42)
  - Validated the use of SDP Vocabulary Service
  - Transparent, open and inclusive process employed with cross-discipline, cross-program team members
Travel History Data Harmonization

Tiger Team

• Purpose
  o Propose opportunities and recommendation to reduce diversity of Travel History questions

• Objectives
  o Analyze subset of Travel History questions, responses, value sets and data elements
  o Consider processes for sharing Travel History information
  o Document lessons learned and implications for subsequent data harmonization efforts
  o Propose opportunities to reduce diversity of Travel History

• Scope
  o Leverage existing NNDSS DEHP Travel History analysis and other information from SMH subgroup members

NNDSS: National Notifiable Disease Surveillance System
DEHP: Data Element Harmonization Project
Approach for Preliminary Data Analysis

- Identify problem space: questions to be harmonized
  - Began with travel-related data elements
- Identify patterns in questions and candidate structured fields
- Propose question template with parameters (i.e., structured fields)
- Manually populate structured fields for each question
- Analysis: How many questions are covered by template?
- Analysis: How many unique values are there for each structured field in the template (e.g., how many ways to describe time period of interest)?
  - Identify redundant values ("onset" vs. "illness onset" vs. "symptom onset")
  - Suggest harmonization for them
Diversity of Values for Template Parameters*

Template: Did the <person> [travel( to), live( in)] <location> [during the <time-period>] [before <event>]

<table>
<thead>
<tr>
<th>Person</th>
<th># occurrences</th>
<th>Where</th>
<th>#</th>
<th>Event</th>
<th># occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>14</td>
<td>outside the US</td>
<td>5</td>
<td>illness onset</td>
<td>6</td>
</tr>
<tr>
<td>case patient</td>
<td>6</td>
<td>outside the USA</td>
<td>1</td>
<td>symptom onset</td>
<td>6</td>
</tr>
<tr>
<td>Subject</td>
<td>6</td>
<td>internationally</td>
<td>6</td>
<td>onset</td>
<td>5</td>
</tr>
<tr>
<td>You</td>
<td>2</td>
<td>foreign</td>
<td>1</td>
<td>illness</td>
<td>1</td>
</tr>
<tr>
<td>household member</td>
<td>3</td>
<td>out of US or Canada</td>
<td>2</td>
<td>now</td>
<td>4</td>
</tr>
<tr>
<td>mother</td>
<td>1</td>
<td>outside state of residence</td>
<td>3</td>
<td>entering US</td>
<td>1</td>
</tr>
<tr>
<td>time period</td>
<td></td>
<td>outside home state</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interstate</td>
<td></td>
<td>interstate</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>county, state,</td>
<td></td>
<td>out of county, state, or country</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>any travel</td>
<td></td>
<td>any travel</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to endemic/epidemic case area</td>
<td></td>
<td>to endemic/epidemic case area</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Harmonization opportunities are highlighted in yellow

There was tremendous variability in the time period of interest across different conditions of interest.

Most are free text; a few use FIPS or other codes.
Data Harmonization

Template: Did the <person> [travel(to), live(in)] <location> [during the <time-period>] [before <event>]

Travel History Questions

- Traveled out of county, state, or country?
- In the 6 months prior to illness onset did the subject travel outside of the state of residence?
- Exposure to travel outside home state in previous 7 days?
- Did the patient travel prior to onset of illness?
- Did the subject travel out of the county, state, or country in the 30 days prior to symptom onset?
- In the 10 days prior to illness onset, did the patient travel?
- Did the patient have a recent (prior 12 months) history of travel?
- In the 10 days prior to symptom onset did the patient have travel to foreign or domestic area with documented or suspected recent local transmission of SARS cases?

85% of overall travel history questions can be represented by harmonized template

171 questions simplified to 42
(8 standard + 34 non standard)
## Impact Analysis - Applying the template & harmonized parameters: Snapshot with Before and After Views

**Template:** Did the *<person>* [travel(to), live(in)] *<location>* [during the *<time-period>*] [before *<event>*]

<table>
<thead>
<tr>
<th>Condition</th>
<th>Label / Name</th>
<th>Description (Before)</th>
<th>Template Applied (After)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthrax</td>
<td>Travel</td>
<td>Traveled out of county, state, or country?</td>
<td>Did patient travel out of county, state or country before symptom onset?</td>
</tr>
<tr>
<td>Brucellosis</td>
<td>Travel</td>
<td>In the 6 months prior to illness onset did the subject travel outside of the state of residence?</td>
<td>Did patient travel out of county, state or country in the 6 months before symptom onset?</td>
</tr>
<tr>
<td>Cholera</td>
<td>TRAVEL</td>
<td>Exposure to travel outside home state in previous 7 days?</td>
<td>Did patient travel out of state in the 7 days before symptom onset?</td>
</tr>
<tr>
<td>Cryptosporidiosis</td>
<td>Travel Prior To Onset</td>
<td>Did the patient travel prior to onset of illness?</td>
<td>Did patient travel out of county, state or country before symptom onset?</td>
</tr>
<tr>
<td>Giardia</td>
<td>Travel Prior To Onset</td>
<td>Did the patient travel prior to onset of illness?</td>
<td>Did patient travel out of county, state or country before symptom onset?</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>Travel</td>
<td>Did the subject travel out of the county, state, or country in the 30 days prior to symptom onset?</td>
<td>Did patient travel out of county, state or country in the 30 days before symptom onset?</td>
</tr>
<tr>
<td>Novel Influenza A</td>
<td>Epi Risk – Travel</td>
<td>In the 10 days prior to illness onset, did the patient travel?</td>
<td>Did patient travel out of county, state or country in the 10 days before symptom onset?</td>
</tr>
<tr>
<td>Rabies, Human</td>
<td>Travel</td>
<td>Did the patient have a recent (prior 12 months) history of travel?</td>
<td>Did patient travel out of county, state or country in the 12 months before symptom onset?</td>
</tr>
<tr>
<td>SARS</td>
<td>Travel to SARS area</td>
<td>Did the patient have travel to foreign or domestic area with documented or suspected recent local transmission of SARS cases?</td>
<td>Did patient travel to a location with documented or suspected recent local transmission of SARS cases in the 10 days before symptom onset?</td>
</tr>
<tr>
<td>Theme</td>
<td>Question Template</td>
<td>Question Parameters &amp; Values</td>
<td>Response Sets</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1 Any travel</td>
<td>Did the &lt;person&gt; [travel( to), live( in)]&lt;location&gt;[during the &lt;time-period&gt;]0,1 [before &lt;event&gt;]0,1?</td>
<td>Person: Patient, Case Patient, Subject, You; Location: Outside the US, Out of State of Residence, Out of County, Endemic/ Epidemic Case Area; Time-Period: &lt;Number&gt; Days/Weeks/Months/Years; Event: Illness onset, Symptom onset</td>
<td>PHVS,YesNo_HL7_2x</td>
</tr>
<tr>
<td>2 Foreign travel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Domestic Travel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Travel Destinations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 International Destinations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Domestic Destinations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Reason for Travel</td>
<td>List travel destinations and reason for travel during the last &lt;time-period&gt;.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theme</td>
<td>Question Template or Question</td>
<td>Parameters and Values</td>
<td>Response Sets</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Immigration Did subject immigrate to U.S. within &lt;time-period&gt; of illness onset?</td>
<td>Time-Period: &lt;Number&gt; Days/Weeks/Months/Years</td>
<td>PHVS_YesNo_HL7_2x</td>
</tr>
<tr>
<td></td>
<td>Length of time subject has been living in U.S.</td>
<td></td>
<td>&lt;Number&gt; Days/Weeks/Months/Years</td>
</tr>
<tr>
<td>9</td>
<td>Destination Type Destination Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Dates of Travel Dates of Travel</td>
<td></td>
<td>MMDDYYYY, MMYYYY, YYYY</td>
</tr>
<tr>
<td>11</td>
<td>Duration of Travel Duration of Travel</td>
<td></td>
<td>&lt;Number&gt; Days/Weeks/Months/Years</td>
</tr>
<tr>
<td>12</td>
<td>Mode of Travel Mode of Travel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Miscellaneous</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What next?

Near term
• Work with SDP Vocabulary Service and publish 8 questions
• Incorporate recommendations from CSTE workshop
• Identify execution plan for mid term & long term actions

Mid term
• Develop question templates for rest of DEHP analysis and add to SDP Vocabulary Service
• Tie questions to data elements and revisit aligning with standards and message guides
• Promote use of standardized questions and get program adoption in new data collection instruments

Long term
• Evaluate use of templated questions and ROI of harmonization proposal
• Align with external standards
Approach to CDC/CSTE Travel History Workshop
CSTE/CDC Harmonization Workshop: Travel History

- October 3-4, 2017 in Atlanta, GA
- 42 attendees
  - Alabama
  - Arizona
  - Florida
  - Idaho
  - Maryland
  - Maricopa County
  - Massachusetts
  - Michigan
  - New York City
  - North Dakota
  - Ohio
  - Tennessee
  - Utah
  - Virginia
  - CDC, MITRE
  - CSTE
CSTE/CDC Harmonization Workshop: Travel History

• **Purpose**: To gain a better understanding of CDC’s harmonization efforts and how jurisdictions collect travel history data and identify strategies for future collaboration.

• **Objectives**:
  - Learn about CDC/MITRE’s approach to harmonize travel history data
  - Share jurisdictional experiences and examples of collecting travel history data to help clarify travel history data supply chain
  - Gather jurisdictional feedback on harmonization approach
  - Identify potential strategies to address variability in travel history data
  - Identify barriers and challenges to travel history data harmonization
  - Identify next steps that CDC and CSTE can take individually and collaboratively to further travel history data harmonization and harmonization of other surveillance data
Highlights from Workshop Discussions
Importance of cross-program coordination

- When CDC programs ask for similar data in different ways:
  - Reduces efficiency when same STLT staff are doing all the work to report to different systems, resulting in less time spent on day jobs (e.g., case investigations)
  - Forces lack of harmonization at state level, adds burden
  - Reduces efficiency to adapt systems and reporting tools to meet program needs
  - Lessens data quality at state level
  - Especially difficult for emerging diseases
Addressing variability

• Currently a lot of variability in STLT travel history data collection
  o Despite variability, themes are similar
  o Some variability/diversity is needed at jurisdiction level

• Reducing number of questions is helpful if it helps increase consistency, but some variation is valid/useful

• Harmonization doesn’t affect case investigation, but would change way questions are asked and recorded

• Important: focus on horizontal harmonization (across programs), not vertical harmonization (from local to state to CDC)
Discussion Highlights

Data submission

- Submitting data in standardized [electronic] way is the ideal
  - MMGs = great start, more work needed
    - E.g., Gen v2 allows for limited travel history info (one state and one country of exposure, but there are frequent cases that travel to multiple states/countries)
- CDC programs need to understand how data are collected at STLT level
  - Workshop is great start to better understanding
- Which travel history data elements are essential for CDC research/analysis vs. which are needed only for local/state case investigations?
  - Sometimes data requests are unclear; confusing with level of granularity requested
Discussion Highlights

Success factors
• The harmonization approach would be useful if:
  o CDC programs agree data elements are sufficient and won’t ask for additional supplemental data
    ▪ Need program buy-in
    ▪ Need STLT input, and early
  o Decisions are final before STLT implementation
    ▪ Pilots are acceptable, so “close to final”
    ▪ Re-adjusting STLT systems when decisions change is burdensome and risky
  o Harmonization buy-in must span across leadership, centers AND programs and be ongoing
Discussion Highlights

Barriers and challenges

• Need to have some flexibility
  o Travel vs. residency
  o Broader questions from CDC would allow for states to better map to their data (allows for STLT variability)
• Buy-in/support/adoption at CDC
• Buy-in/support/adoption at STLT
• Lack of consistent STLT input
• New surveillance systems for emerging threats
• Lack of standardized travel history questions in EHRs
Takeaways

- Harmonization approach could be reused
- Cross-program collaboration is integral
- Commitment must be turned into action
- STLT involvement in harmonization, SDP/data collection conversations
  - STLT ready and willing
  - CDC willing
- “One message, one way, one time”
  - AKA “one message, one vocabulary, one portal” from CSTE Position Statement 15-EB-01
  - Would increase efficiencies, decrease burden and redundancies
Takeaways

• CSTE attendees would like to continue to work on harmonization efforts, at federal and STLT levels
  o Conversations, updates on progress should be highlighted on CSTE Subcommittee calls
  o Willing to join harmonization-focused working group
  o Interested in providing periodic feedback to CDC harmonization workgroup
  o Would sign up for a harmonization-focused newsletter
  o Would attend future harmonization workshops

• Future priority data elements for harmonization included:
  o Pregnancy status (listed as top priority for 50% attendees)
  o Onset date, report dates
  o Vaccination history, symptoms, food history, treatment, occupation/industry, exposure and contacts
CSTE Next Steps

1. Support creation of harmonization-focused, cross-program workgroup/steering committee at CDC
   - Share STLT perspectives, participate when possible

2. Create Data Standardization Workgroup
   - Launches March 2018
   - Co-chaired by CSTE members, managed by CSTE consultant
   - Workgroup charge: To convene epidemiologists and informaticians to develop consensus on common definitions for core surveillance data elements to address jurisdictional variation.

3. Follow-up workshop Spring 2018
   - SDP Vocab Service
CDC Next Steps

- Continue to work with CSTE Data Harmonization workgroup to get input/feedback on data harmonization activities
- Continue to work with SDP Vocabulary Service and publish 8 questions
- Develop question templates for rest of DEHP analysis and add to SDP Voc Svc
- Tie questions to data elements and revisit aligning with standards and message guides
- Promote use of standardized questions and get program adoption in new data collection instruments
- Evaluate use of template questions and data elements and ROI of harmonization proposal
- Align with external standards
- Leverage harmonization process for other priority data elements (e.g. pregnancy)
Questions?