2021 CSTE Roundtable

Developing Visualization Tools for CDC Disease Programs and Jurisdictions to Monitor Diseases Using the National Notifiable Diseases Surveillance System

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Key Objectives

Through the roundtable discussion, CDC will:

- better understand how jurisdictions currently visualize National Notifiable Diseases Surveillance System (NNDSS) data and
- obtain input that will assist in developing and refining interactive visualization tools.

Background

The public health data modernization initiatives have reinforced the importance of data visualizations for monitoring disease trends and guiding public health action. Currently, NNDSS data tables are available to the public on the WONDER (https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp) and Data.CDC.Gov (https://data.cdc.gov) platforms and through disease-specific atlases and reports. National cumulative year-to-date counts are updated each week and are displayed in interactive national maps (https://www.cdc.gov/widgets/diseaseandconditions/data-maps.html).

More robust NNDSS data visualizations for public health users, including the ability to compare NNDSS data with other data sources, would better inform public health decision-making. CDC is developing tools to provide robust, timely visualization of NNDSS data, allowing CDC programs and jurisdictions to monitor disease trends over time and by geographic area.
The following are examples of types of dashboard visualizations that may be useful for jurisdictions.

1) Visualizations using data from multiple sources on the same platform. The graph below is an example from the Electronic Surveillance System for Early Notification of Community-based Epidemics (ESSENCE) system that the National Syndromic Surveillance Program uses. Data from multiple sources available on the same platform can help you monitor the disease/condition from different angles. Although this example is at the national level, it can be done at the county level, jurisdiction level, or regional level for a given condition. Other potential data sources could include, but are not limited to, emergency department data, laboratory data, and mortality data.
2) Power BI interactive visualizations using NNDSS data: time series, geographic mapping, and case counts by demographics. 
   a. Overview of data for a national notifiable condition (condition A).
b. Power BI dashboard: Drill down by more demographic characteristics and jurisdictions. (Note: Jurisdictions would have access to their own data and to data that other jurisdictions give them access to.)
Of note, the focus of this discussion is on core data elements. Further collaboration is needed with CDC programs before discussing disease-specific data. In addition, this discussion is about the case-specific NNDSS data received from jurisdictions and not about the public datasets on the WONDER or data.CDC.gov platforms.

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<tr>
<th>Topic</th>
<th>Discussion Question</th>
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<tr>
<td>Current situation</td>
<td>How does your jurisdiction use/visualize reportable disease surveillance data?</td>
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<td>Tools</td>
<td>CDC can develop data analytics and visualization tools to assist jurisdictions with monitoring the NNDSS data submitted to CDC. The analyses can include time series, geographic mapping, and data quality reports at the regional and national levels. Would these tools be useful? How would they be useful to you?</td>
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1. CDC can make the programming code available so that you can apply them to your jurisdiction’s reportable disease surveillance data and other data sources available at the jurisdiction. For example, the R program for the ESSENCE dashboard example on page 2 can be made available to jurisdictions. Would these tools be useful? Why?

2. Would it be helpful if the platform allowed viewing of multiple data sources that the jurisdiction submitted to CDC? Examples of other data sources are mortality data and National Syndromic Surveillance Program’s emergency department data and laboratory data. What other data sources do you think might be useful? How would you use this information and how would these data be useful when you review reportable disease data?

3. Would it be useful if jurisdictions could use the platform to compare their NNDSS data to the national or regional trends? Aside from case numbers, what other information would be helpful in this comparison (demographics, time series, etc.)?

4. Would it be useful if jurisdictions could use the platform to share data? For example, neighboring states may wish to have data sharing agreements to view or access each other’s data on this platform.

| Challenges | 1. What data sharing challenges could both CDC and jurisdictions face? By default, each jurisdiction can only access their own data at the case level. For higher level aggregate (e.g., regional level) and state-to-state |
sharing, policies such as confidentiality agreements may need to be in place.

2. What challenges could a jurisdiction face in using the tools CDC provides (human and/or infrastructural resources)?

If you have additional ideas not shared in the session, please contact the presenters:

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