PRELIMINARY FINDINGS FROM THE DMI ASSESSMENT

State, local, and territorial public health capabilities and needs assessment

August 24, 2022

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Acknowledgements: Chickasaw Nation Industries Inc. and Guidehouse Inc.

Disclaimer: The findings and conclusions in this presentation are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry.
DMI Priorities

**Build the right foundation**
- Decreased burden on reporters
- Free up staff time to focus on prevention and control
- Faster data for detecting emerging threats at all levels of public health

**Accelerate data into action**
- Better data integration, visualization
- Robust forecasting / modeling
- Response-ready platform

**Develop a state-of-the-art workforce**
- Identify, recruit, and retain experts to generate meaningful public health insights

**Support + extend partnerships**
- Better / more timely access to data within and across ecosystem
- Common tools to support STLT partners

**Manage change + governance**
- Adaptive, agile approaches
- Collaboration
- Improved acquisition

DMI Strategic Implementation Plan (cdc.gov)
How is CDC supporting jurisdictions’ data modernization efforts?

**Providing direct funding** to build foundational DMI capacity and implement core data and surveillance modernization activities.

**Offering technical assistance** that provides experts and resources to support STLT data modernization activities.

**Collaborating with national partners** to facilitate learning networks and opportunities for knowledge and skill development.
Represents the status of 64 funded recipients as of May 2, 2022.

Assessments were completed on a rolling basis between November 2021 and May 2022.

Three categories summarizing the quantitative responses:

- **General Current State**: current state of activities and systems related to data modernization efforts (including data exchange processes and systems)
- **Workforce**: workforce capacity and capability related to data modernization efforts
- **Challenges & Opportunities**: qualitative data that highlights key challenges and opportunities identified throughout jurisdictional Assessment responses
SECTION 1: OVERVIEW OF DMI EFFORTS
The majority of public health respondents have identified a DMI lead though few had completed a DM plan.
SECTION 2: ASSESSMENT OF HEALTH INFORMATION SYSTEMS
Current State: Assessment of Health Information Systems

Over half of all respondents are in the process of identifying systems or applications for modernization.

- Identified need for new core critical systems
  - Yes - fully implemented: 55%
  - In progress - implementation ongoing or partial: 27%
  - No: 18%
  - Don't Know: 0%
  - N = 56

- Identified need for application modernization
  - Yes - fully implemented: 51%
  - In progress - implementation ongoing or partial: 22%
  - No: 24%
  - Don't Know: 3%
  - N = 55

- Conducted an environmental scan
  - Yes - fully implemented across systems: 68%
  - In progress - implementation ongoing or partial: 25%
  - No: 25%
  - Don't Know: 2%
  - N = 56

Visual illustrates multiple Assessment questions and excludes varying “N/A” and “No Response” responses.
A majority of respondents are in the process of identifying legacy and siloed systems.
A quarter of respondents have not yet evaluated the use case for **cloud** or **open-source applications**.
SECTION 3:
DATA EXCHANGE & SYSTEMS INTEROPERABILITY
Although some jurisdictions’ data exchange mechanisms are considered highly mature, many remain in the low/medium maturity levels.

Visual summarizes Assessment responses across six data exchange systems.
Data exchange mechanisms for **syndromic surveillance** are leading in maturity, followed by data exchange mechanisms for **immunizations**.
Current State: Data Exchange & Systems Interoperability

Most respondents have completed or are in the process of completing activities to enhance data exchange and system interoperability across the technical spectrum.
Most respondents have implemented or are in the process of implementing activities to **enhance data exchange and data quality**.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes (%)</th>
<th>In progress (%)</th>
<th>No (%)</th>
<th>Don't Know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use cloud to support shared services</td>
<td>36%</td>
<td>13%</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td>Integrate domains</td>
<td>70%</td>
<td>14%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>Enhance continuous data streaming</td>
<td>73%</td>
<td>16%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Use data lake</td>
<td>70%</td>
<td>23%</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>Employ semantic layer</td>
<td>44%</td>
<td>39%</td>
<td>6%</td>
<td>11%</td>
</tr>
<tr>
<td>Employ API Gateway or ESB</td>
<td>60%</td>
<td>27%</td>
<td>9%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*Visual illustrates multiple Assessment questions and excludes varying “N/A” and “No Response” responses*
Respondents are making great strides toward receiving electronic lab results

**Laboratory Results**

- Yes 39 (70%)
- In Progress 15 (27%)
- No 2 (3%)

*Visual illustrates multiple Assessment questions and excludes varying “N/A” and “No Response” responses*
A majority of respondents are moving away from manual data entry and towards electronic data transmission.

**ETOR via Web Portal**
- Yes: 14 (26%)
- In Progress: 27 (49%)
- No: 10 (18%)
- Don't Know: 4 (7%)

**ETOR via LIMS**
- Yes: 23 (41%)
- In Progress: 27 (48%)
- No: 4 (7%)
- Don't Know: 2 (4%)

Visual illustrates multiple Assessment questions and excludes varying “N/A” and “No Response” responses.
A majority of respondents have implemented or are in the process of implementing HL7 Standards for ETOR.

ETOR via HL7 Standards: Lab Orders
- Yes 11 (20%)
- In Progress 25 (45%)
- No 18 (32%)
- Don't Know 2 (3%)

ETOR via HL7 Standards: Lab Results Interface
- Yes 11 (20%)
- In Progress 26 (48%)
- No 15 (28%)
- Don't Know 2 (4%)

Visual illustrates multiple Assessment questions and excludes varying “N/A” and “No Response” responses.
Over half of all respondents are in the process of or have fully implemented the ability to receive and consume eICR data from AIMS for disease surveillance.

**Visual illustrates multiple Assessment questions and excludes varying “N/A” and “No Response” responses**
SECTION 4:
DATA & IT GOVERNANCE
Most respondents have fully implemented or are in the process of implementing **data governance** strategies that impact how data is utilized within a jurisdiction and between collaborator groups.
Most respondents are in the process of implementing **IT governance policies**, however, close to half of respondents have not implemented **API strategies or API management plans**.
Engagement in Continuous Monitoring Activities

Implementation of continuous monitoring activities is quite variable across the jurisdictions.

Visual excludes varying “N/A” and “No Response” responses
SECTION 5: DATA ANALYTICS, VISUALIZATION, & REPORTING
The majority of respondents are in the process of implementing data analytics, visualization and reporting activities; however, most respondents have not implemented the use of artificial intelligence.
Respondents are utilizing a variety of staff types for their overall DMI efforts. However, most respondents believe the **numbers and proficiency levels of staff are insufficient** to meet the agency’s needs.

Each visual summarizes Assessment responses across four workforce questions:

- **Data Analytics, Visualization, & Reporting**
- **Data & IT Governance**
- **Data Exchange & Interoperability**
- **Assessment of HIS**
Jurisdictions reporting having SUFFICIENT numbers and proficiency levels of staff by functional area:

- **15%** Data & IT Governance
- **14%** Data Analytics, Visualization, & Reporting
- **11%** Assessment of Health Information Systems
- **5%** Data Exchange & Systems Interoperability
CHALLENGES & OPPORTUNITIES
Key Challenges

We are facing a **challenging market** and finding it difficult to attract skilled workers. **Funding limitations** have impacted the ability to match national market salary requirements for professional staff.

Our DMI efforts require an in-depth knowledge of **state-specific systems** and processes; our limited staff with that knowledge are overburdened and fully extended with the **COVID response**.

**Staff losses** prior to and throughout the pandemic have created gaps in both staffing capacity and capabilities.

Prior **DMI efforts have been significantly siloed**. Historically, there has not been a balanced representation of staff that includes the business, program area, and IT point of view.
Key Opportunities

With additional funding, enough time, and appropriate staffing, we look forward to moving away from manual and **towards electronic data processing**.

We are focused on **exploring FHIR server options** for data submitted outside of the health department’s systems.

Working internally and with vendors to **develop and maintain ETOR capacity**. Working with key submitters to assist them with adopting ETOR for submitting specimens and receiving results.

Addressing opportunities to **improve data sent from providers** to our jurisdiction will also create improvements in the data quality sent to NSSP.
NEXT STEPS
“We somewhat had a roadmap but after looking at this [assessment] it really shed light on how we need to enhance our roadmap. You know after this, I thought to myself we need to build out a very detailed extensive roadmap. And we need to cover all of these things. And a lot of them were things I would've never thought about before. So in that regard it was very helpful.”

- State Heath Department