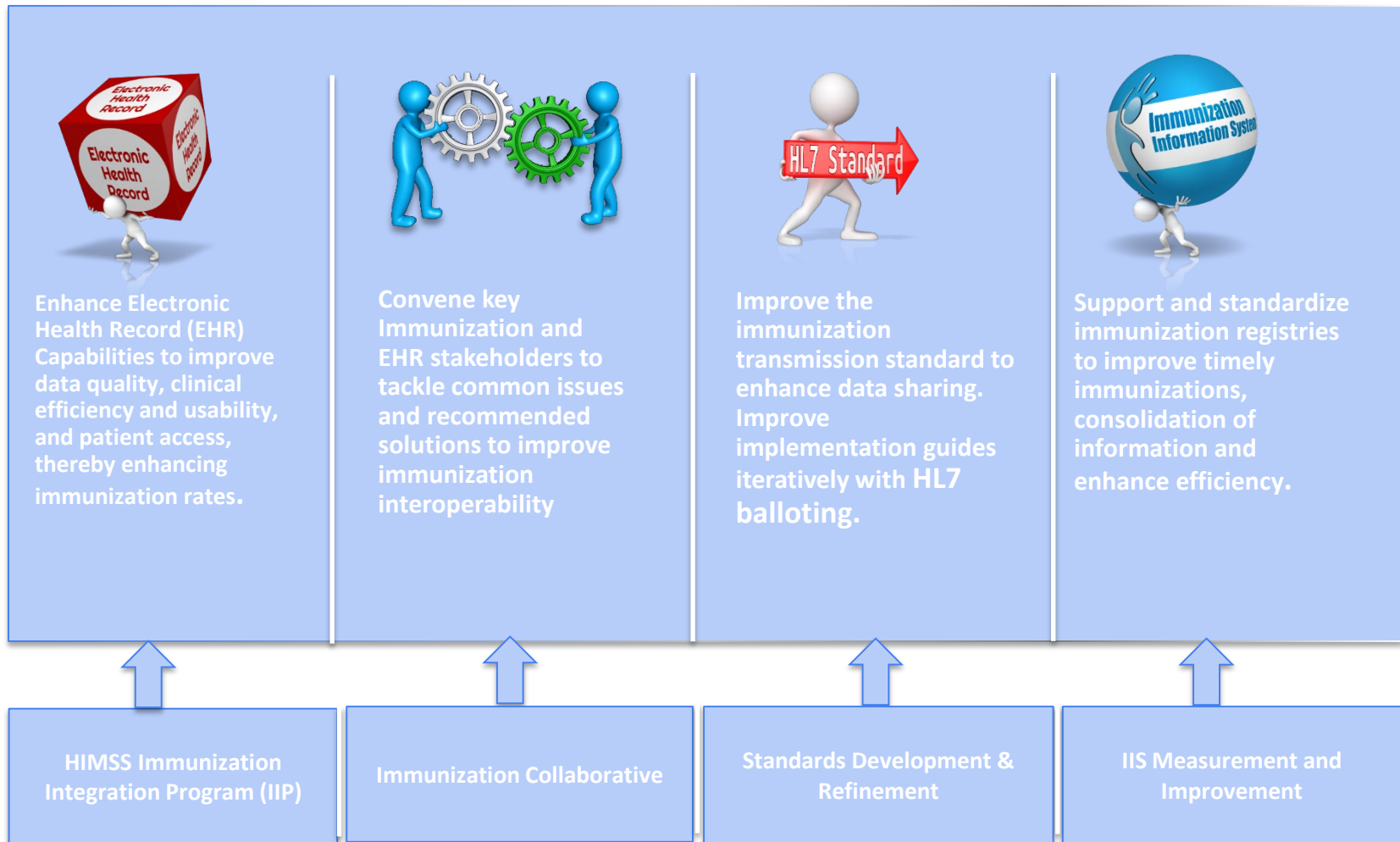# The Immunization Information System (IIS) Landscape

Stuart Myerburg

CDC NCIRD/ISD/IISSB

April 26, 2019

# Agenda

- How CDC and the immunization community are addressing the points raised by the task force:
  - Influencing the Health IT Space
    - HIMSS Immunization Integration Program (IIP)
    - Immunization Collaborative
  - Promoting Standardization to Reduce Variability
    - Standards Development and Refinement
    - IIS Measurement and Improvement
    - Onboarding
- Other Strategies:
  - Reports for Camp, School, or Child Care
  - The Future
- Questions and discussion

# Parallel Strategies to Improve Immunization-Related Data Quality for Providers and Public Health



Enhance Electronic Health Record (EHR) Capabilities to improve data quality, clinical efficiency and usability, and patient access, thereby enhancing immunization rates.

Convene key Immunization and EHR stakeholders to tackle common issues and recommended solutions to improve immunization interoperability

Improve the immunization transmission standard to enhance data sharing. Improve implementation guides iteratively with **HL7** balloting.

Support and standardize immunization registries to improve timely immunizations, consolidation of information and enhance efficiency.

| HIMSS Immunization Integration Program (IIP) | Immunization Collaborative | Standards Development & Refinement | IIS Measurement and Improvement |

3

# Influencing the Health IT Space

# HIMSS Immunization Integration Program

- In 2013, Gartner, by direction of CDC, conducted a feasibility study:
  - Investigated using a certification process to ensure immunization providers' EHR systems integrate with immunization information systems (IIS)
  - Wanted to ensure IIS-EHR integration
- CDC brought experts and stakeholders together to identify software capabilities that would improve usability and support clinical workflows related to immunizations and also enhance information sharing between clinicians and IIS
- Resulted in the Immunization Integration Program (IIP)

# HIMSS Immunization Integration Program

- Immunization Integration Program (IIP) is operated by HIMSS and the Drummond Group in collaboration with Chickasaw under a contract with CDC

- Goals:
  - Improve clinical workflow related to immunizations
  - Improve information sharing between IISs and provider EHRs

- Two ways of doing this:
  - Voluntary testing and recognition program for EHRs and other clinical software
  - The Immunization Collaborative convened by HIMSS and the American Immunization Registry Association (AIRA)

- This work complements and aligns with CDC's parallel efforts working directly with IISs to improve information sharing and onboarding

# IIP Testing and Recognition Program

25 EHR Capabilities are Tested in the Program, a Subset of Which Address Issues Identified by the Task Force:
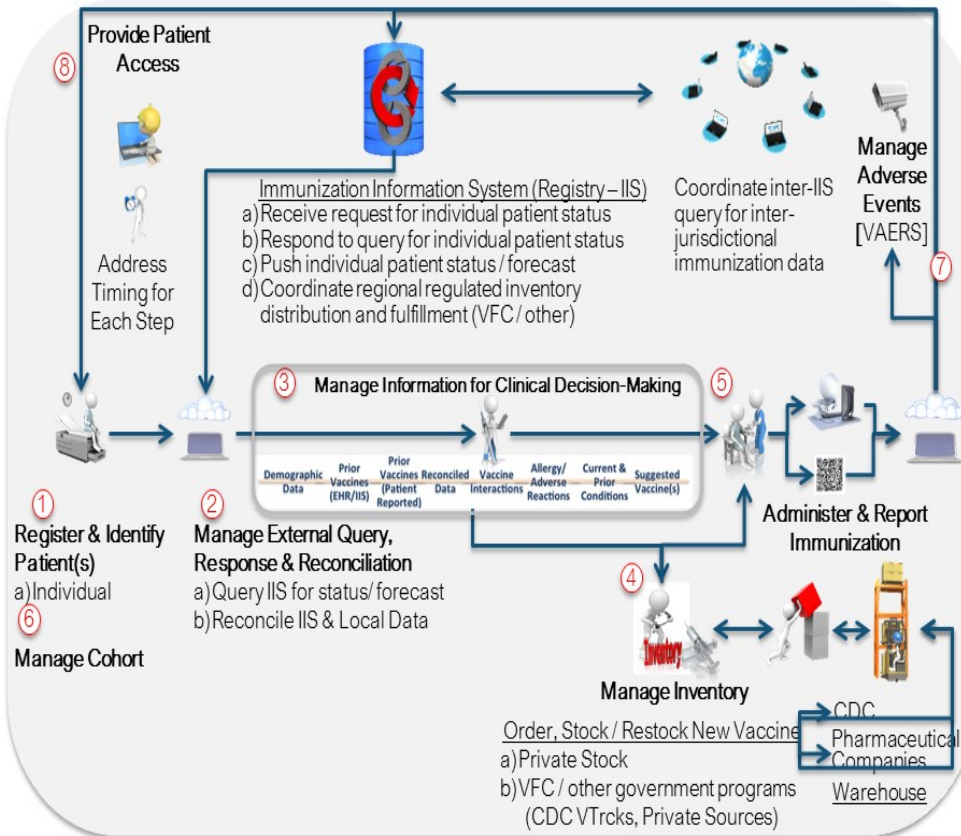


- **Manage External Query, Response, and Reconciliation**
  - 2.2: Real Time Request/Receive Patient Immunization History
  - 2.3: Compare IIS Immunization History to EHR Immunization History
  - 2.4: Request/Receive Patient Immunization Data and Identify Source
  - IIP currently assesses HL7 2.5 capability, with flexibility to transition to different exchange standards

- **Manage Information for Clinical Decision-making**
  - 3.1: View Immunization Forecast
  - 3.2: Review Reconciled Immunization Forecast

- **Administer and Report Immunization**
  - 5.1: Produce Standard Patient Immunization History Report
  - 5.11: Transmit Standard Patient Immunization History Report
  - 5.14: Produce Immunization Forecast Report

# IIP Testing and Recognition Program

- Six products developed by five software vendors have achieved recognition to date, including Cerner

- A number of software developers/products are in the queue

- IIP is recognized by ONC as a Testing Partner for 2015 Certification for the (f)(1) module, Transmission to Immunization Registries

ONC Approved
Testing Partner

## Immunization Collaborative

- The need to operationalize IIP surfaced the following issues:
  - Vendor-specific connection issues with IISs
  - Common interoperability challenges across EHRs and IISs
- Informal mitigation of these issues led to formalizing the process with EHRs and IISs identifying a common solution
- Convened the Collaborative between HIMSS and AIRA
- Goals:
  - Identify and prioritize challenges related to immunization workflow, interoperability, data sharing, and usability
  - Develop and support the implementation of actions to address challenges

# Promoting Standardization to Reduce Variability

# Standards Development & Refinement

- Broad adoption of IIS standards have improved and streamlined interoperability for both EHRs and IISs
  - **HL7 2.5.1 Release 1.5**
  - **Common transport method**
  - **CDSi**
- Development and refinement of these standards occurs collaboratively amongst CDC, the IIS community, EHRs, and standards organizations

# Standards Development & Refinement

- Requirement of use of 2015 CEHRT and "Promoting Interoperability" inclusion of query/response have brought further adoption of the standards.

## EHRs

**Drivers**

Adoption of 2015 CEHRT

HIMSS Immunization Integration Program (IIP)

## IIS

**Drivers**

End User Incentive Program Need

IIS Measurement and Improvement (M&I) Initiative
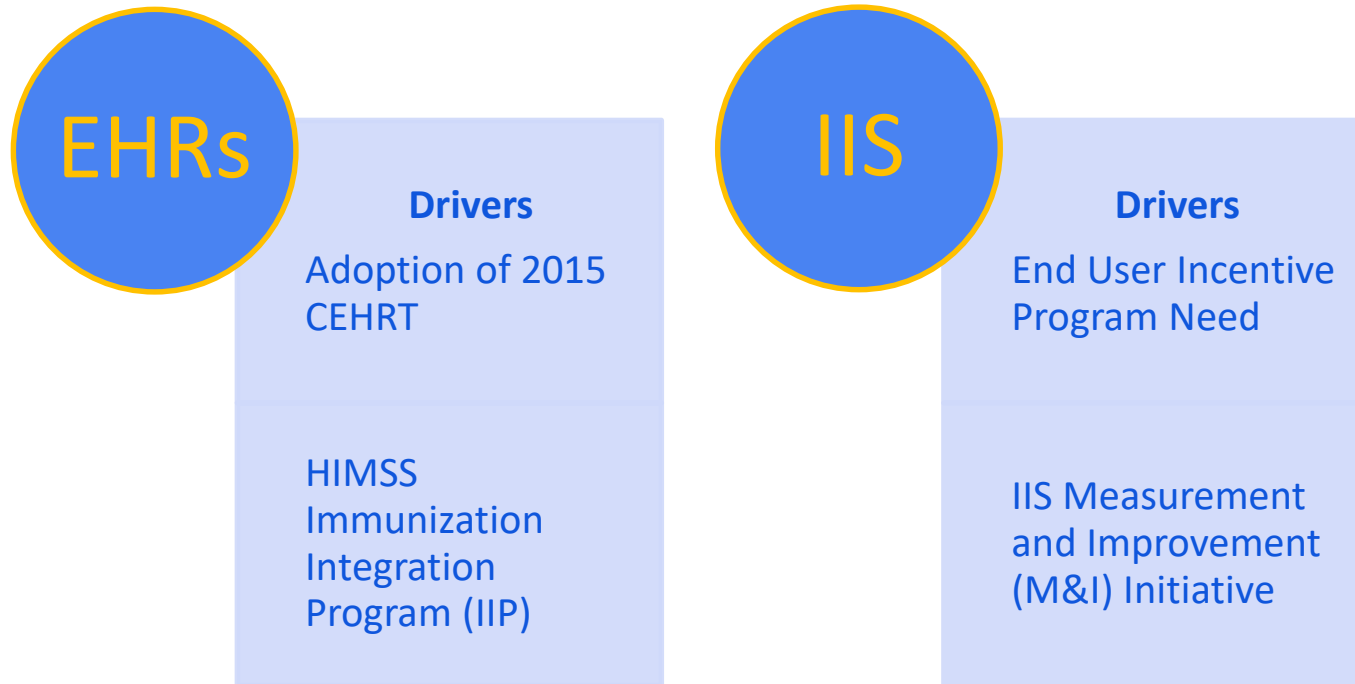
# IIS Measurement & Improvement

# Measurement & Improvement

- Initiative by AIRA and CDC to independently validate selected functionality and interoperability with IISs
- Leveraging testing tools developed by the National Institute of Standards and Technology (NIST)
  - Immunization Testing Suite to validate messaging, transport, evaluation and forecast, and data quality
  - Includes:
    - Test Case Authoring and Management Tool (TCAMT)
    - Forecasting for Immunization Test Suite (FITS)
    - Data Quality Testing Tool

# The Measurement and Improvement Initiative is a Sequenced, Rolling Process

Stages

| Content Area | Testing and Discovery Stage | Assessment Stage | Validation Stage |
|---|---|---|---|
| Transport | ████████████████████████████████▶ | | |
| Submission/ACK | ██████████████████████████████▶ | | |
| Query/Response | ██████████████████████████████▶ | | |
| CDS | █████████████████████▶ | | |
| Data Quality (6) | ████████▶ | | |
| Functions | | | |
| Policy | | | |
| Security | | | |
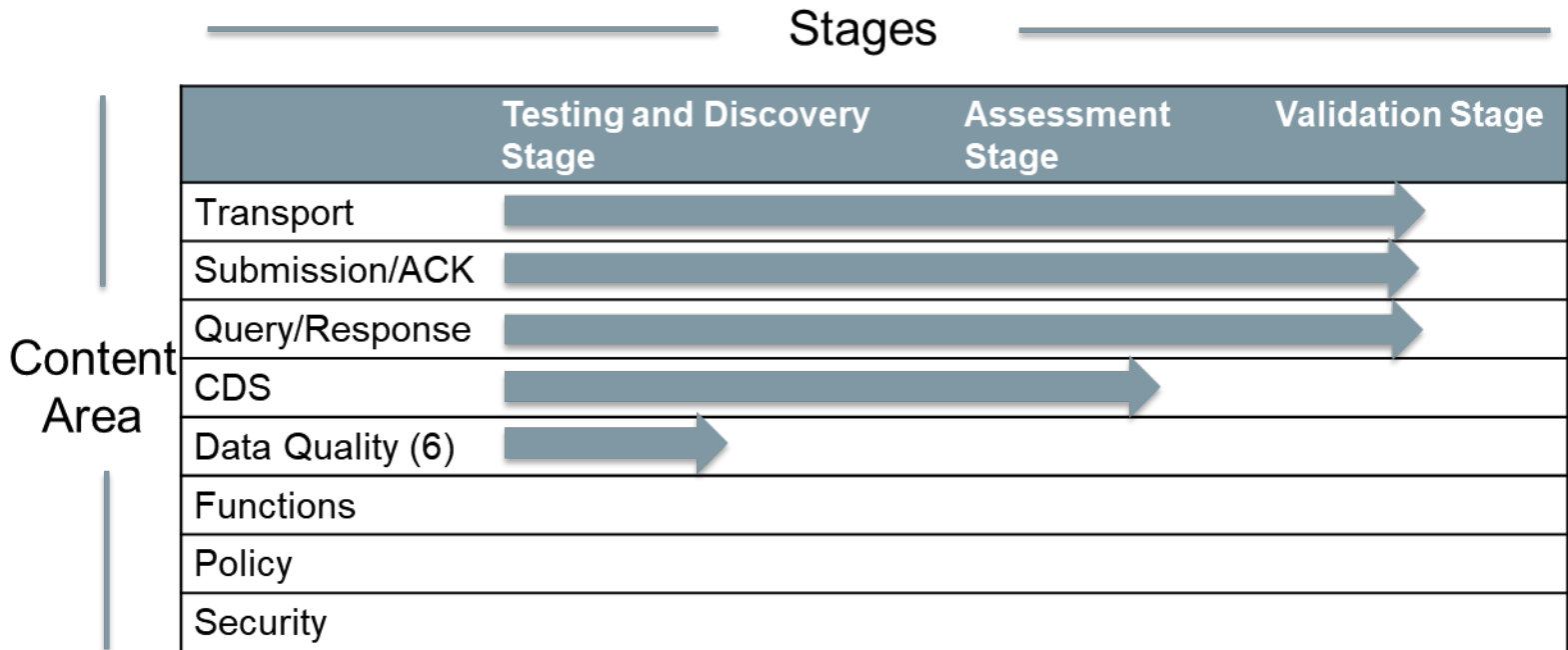
# Progress in IIS Standardization

- Over 80% of IISs are being tested via AIRA's Measurement and Improvement testing process

- IISs are demonstrating solid gains in standards adoption for transport and HL7 messaging

  – Clinical Decision Support coming next



Connected
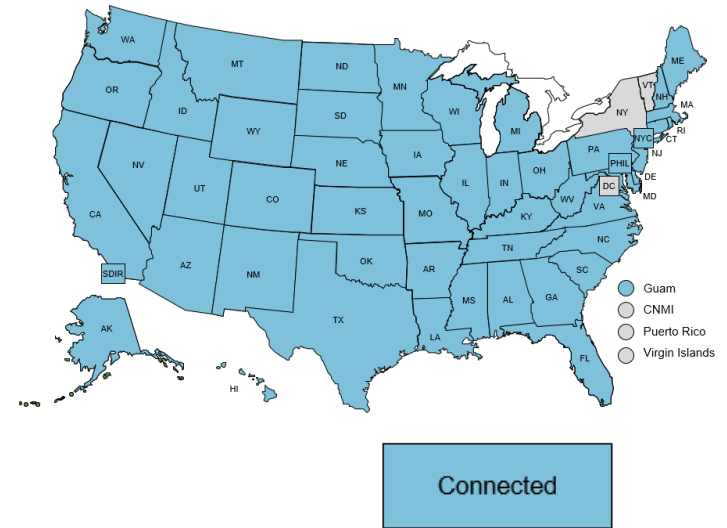
## TRANSPORT

■ Baseline  ■ Q1 2019

17
37

PASS AVERAGE
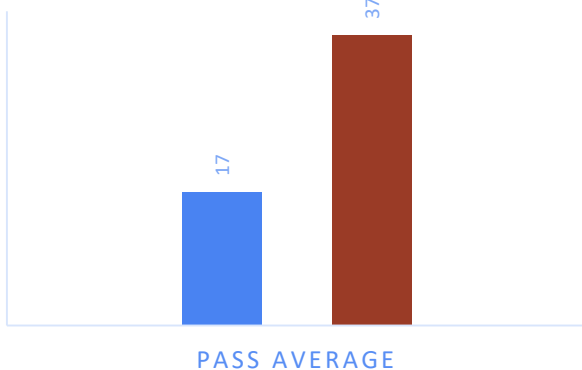
## HL7 SUBMISSION

■ Baseline  ■ Q1 2019

16
36

PASS AVERAGE
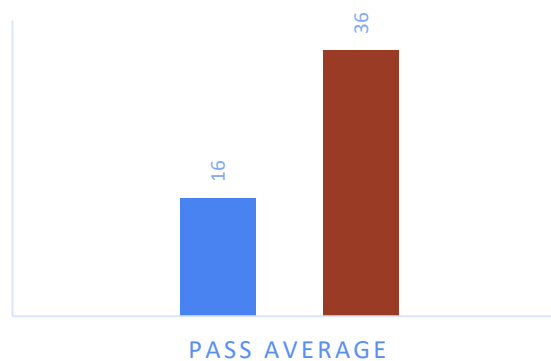
## HL7 QUERY/RESPONSE

■ Baseline  ■ Q1 2019

10
28

PASS AVERAGE

16
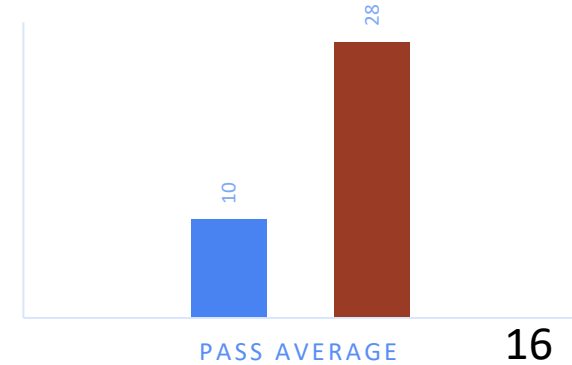
# EHR-IIS Query: Access at the Point of Care
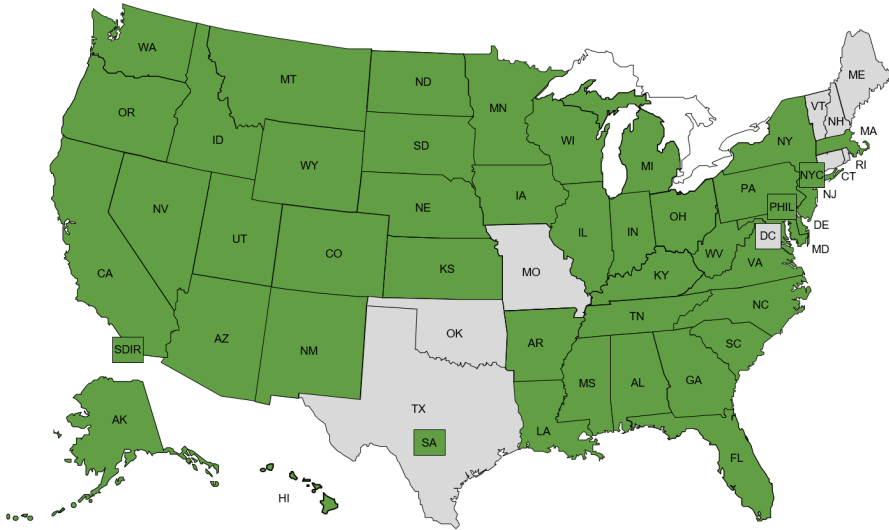


IIS Capable of Query/Response

- The vast majority of IIS have query/response capabilities
- In New York City alone (population 8.5 million):
  - 1,314 clinic sites querying
  - NYC Citywide Immunization Registry receives **>2.2 million queries/month**
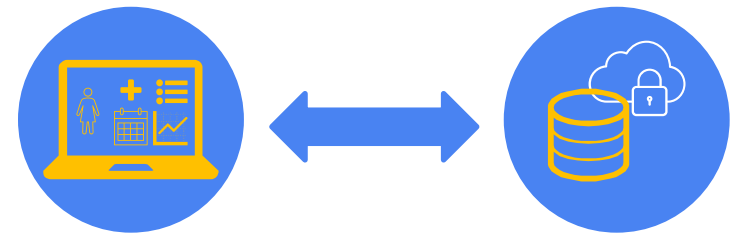


IIS Annual Report Data, 2017; NYC CIR Data, April, 2018
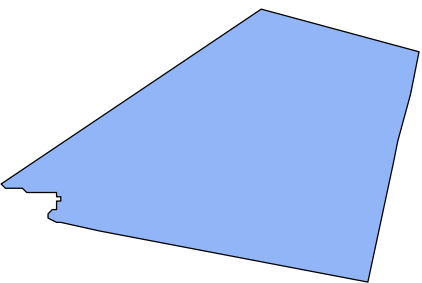
Nevada documented improved timeliness of reporting, fueled by interoperability supported by incentive programs.
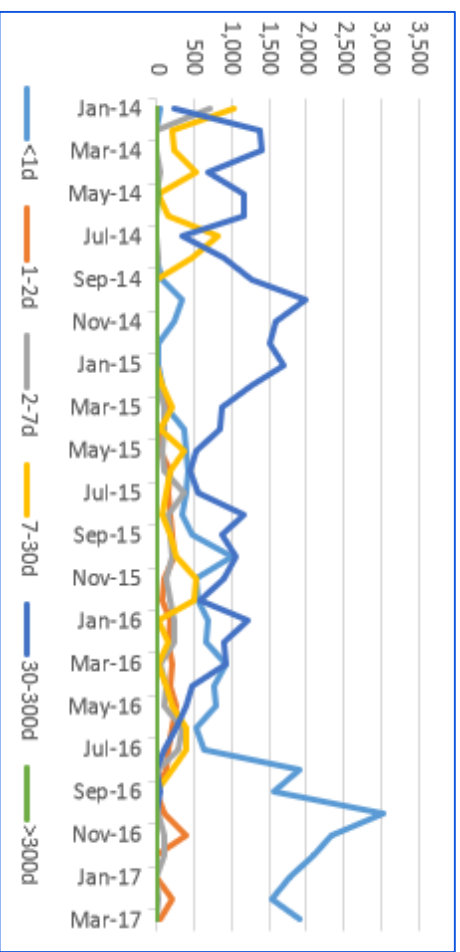


Improved timeliness in Nevada, increase in < 1 day between administration of dose and reporting to IIS

In Rhode Island, as data became more complete, the school nurses now use the IIS almost exclusively to monitor compliance with school immunization requirements – reducing the frequency of contacts with provider offices for the information.
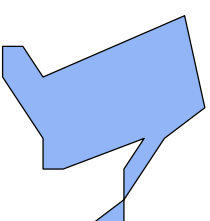
# EHR/Provider Success Stories

### Providers & Staff in Their Own Words
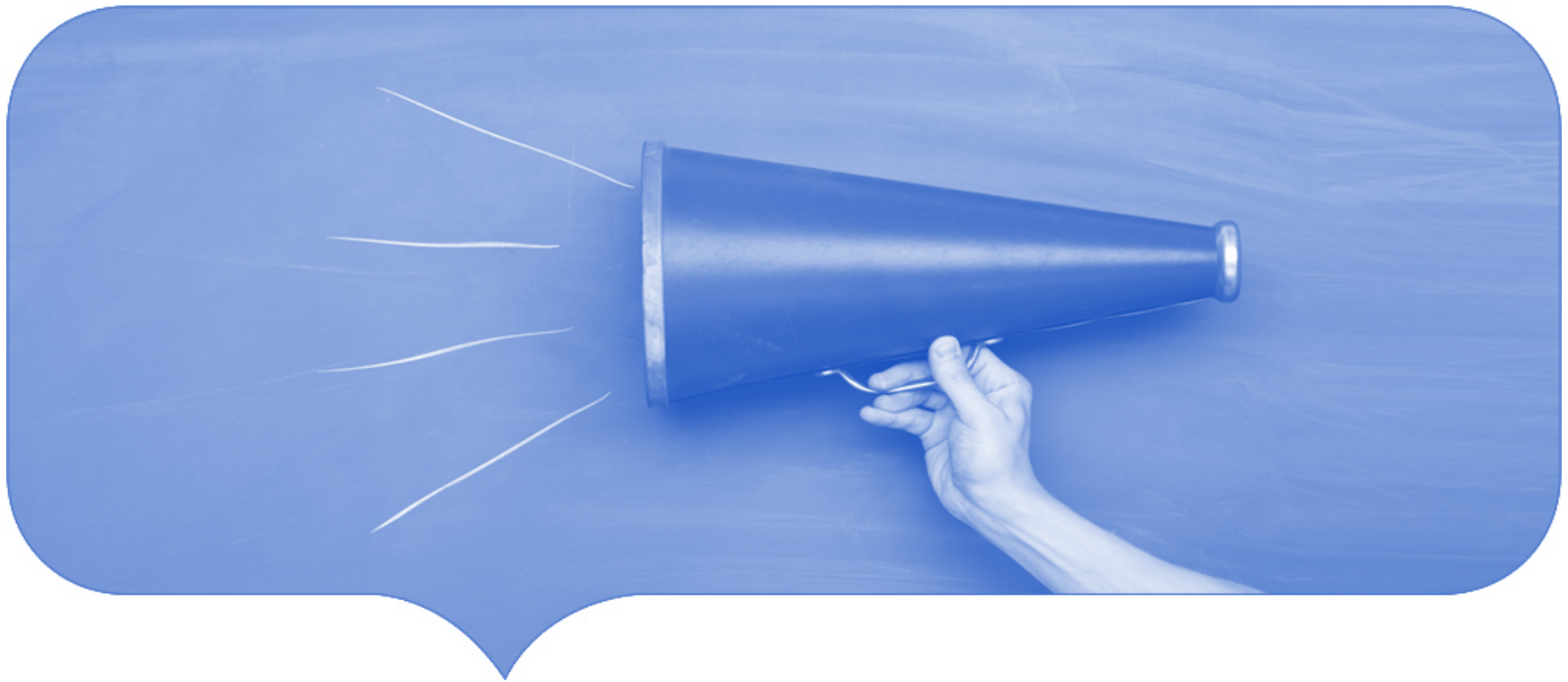
# Providers & Staff: In Their Own Words
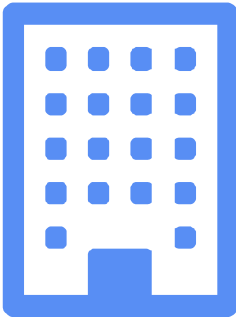


"The Minnesota IIS saves us time. With the click of a button, we can compare the EHR and IIS records. We rely on the Minnesota IIS to make sure that our immunizations are given correctly."

Health Outreach Coordinator, Essentia Health, Minneapolis, Minnesota

# Providers & Staff: In Their Own Words
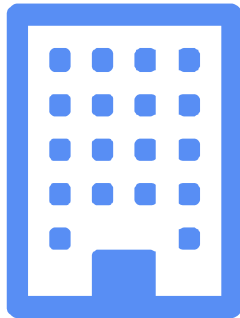
"From my perspective, the interface into EPIC seems to be working great. This functionality has definitely improved content of the patient record as well as the time to enter in outside vaccine information."

Provider | Portland, Oregon

# Providers & Staff: In Their Own Words

"Our best defense against missed immunization opportunities is the ability to conduct an Immunization Query. Our bi-directional interface with our state immunization database has put accurate immunization history and the current CDC recommendations based on that history at our clinicians fingertips."
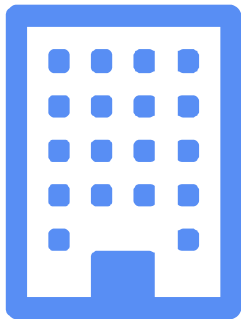
Nurse, EHR Analyst | Las Vegas, Nevada

# Onboarding

# Support for Consistent Onboarding

- IIS have often very particular requirements around onboarding to assure
  - Quality
  - Workflow management
- Onboarding Consensus-Based Recommendations were developed in 2018 with input from the IIS and EHR communities
  - Aligns steps for onboarding for implementation across IISs
- Future Onboarding Shared Services
  - Focus is on EHRs being better prepared for onboarding.
    - IIS central document and resource library
    - Multi-Record Message Data Quality Testing Tool for EHRs

**ONBOARDING CONSENSUS-BASED RECOMMENDATIONS**

NOVEMBER 2018

AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

# In Conclusion

Standardization activities have directly improved interoperability with EHRs and IISs, as well as improved the quality of data within IISs
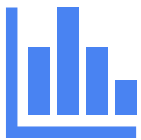
This has strengthened IISs as important analytic tools that support a wealth of population health needs

Providers can access these data through EHR query at the point of care, supporting clinical decisions, ensuring appropriate immunization, and lowering burden

While progress to improve interoperability and data quality has been made, collaboration between the EHR and IIS communities is key for continued improvement

# Other Strategies

# School Certificates

- All states require immunizations for school entry
    - Not all states require the same types of vaccines or number of doses because of variability in law
    - Not all states require an official certificate of immunization status (state-developed form)



Hepatitis B Prevention Mandates for Children in Day Care and Schools
October 2018

Type of Requirements
- Day care & school
- School only
- Day care only
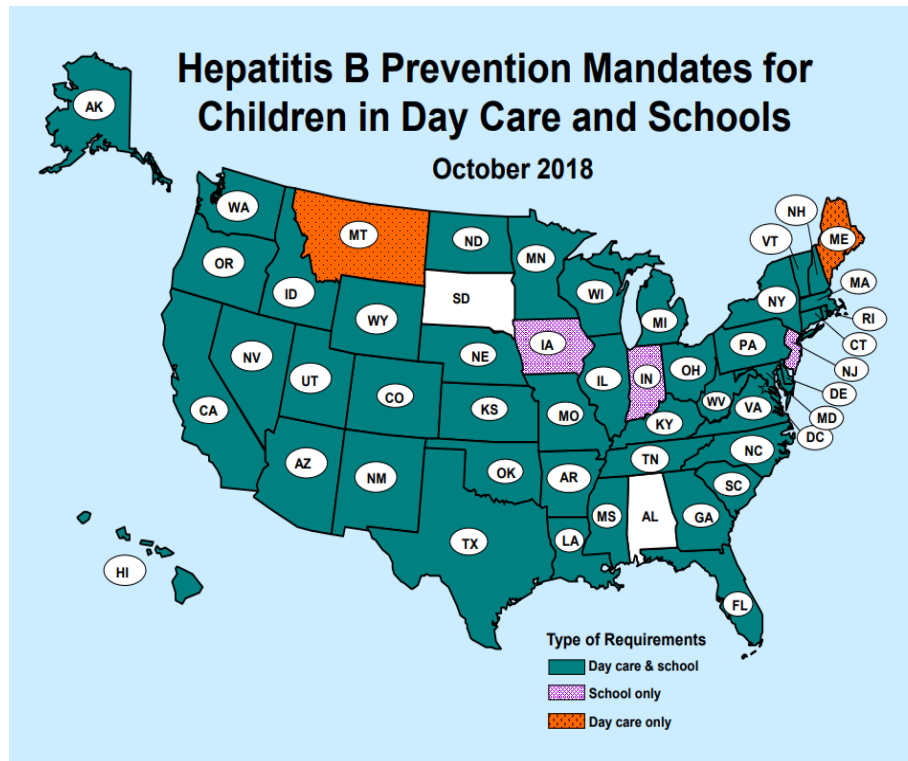
# School Certificates

- **EHRs** should be able to produce reports (e.g., for camp, school, or child care)

- **EHRs** should not be required to generate state-specific certificates (e.g., for school or child care)

# The Future



- IZ Gateway
  - Pilot project with HHS CTO
  - Lower barriers to connectivity and improve onboarding
  - Initial focus was interstate data exchange
  - Broadened to include
    - Federal agencies (DoD, VA, IHS)
    - Independent pharmacies
    - Small adult-focused provider organizations
- Implementation Guide Authoring and Management Tool (IGAMT)
  - Under development by NIST
  - Will provide consistency in creation and maintenance of state HL7 implementation guides
  - Will allow for a clear, easy to reference catalog of the delta between states

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY:  1-888-232-6348    www.cdc.gov