# CDC and the IIS Community

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# Learning Objectives

- Understand what an Immunization Information System (IIS) is and the purpose of an IIS

- Understand how the IIS supports the Immunization Program through 317/VFC CoAg activities

- Learn how to use the following CDC tools to improve IIS data quality:

    - IIS Blueprint

    - IIS Dashboard

    - Routine Vaccination Submission Data Quality Report

    - IIS Functional Standards

- Understand the Immunization Services Division (ISD) structure

- Understand how ISD communicates and engages with jurisdictions
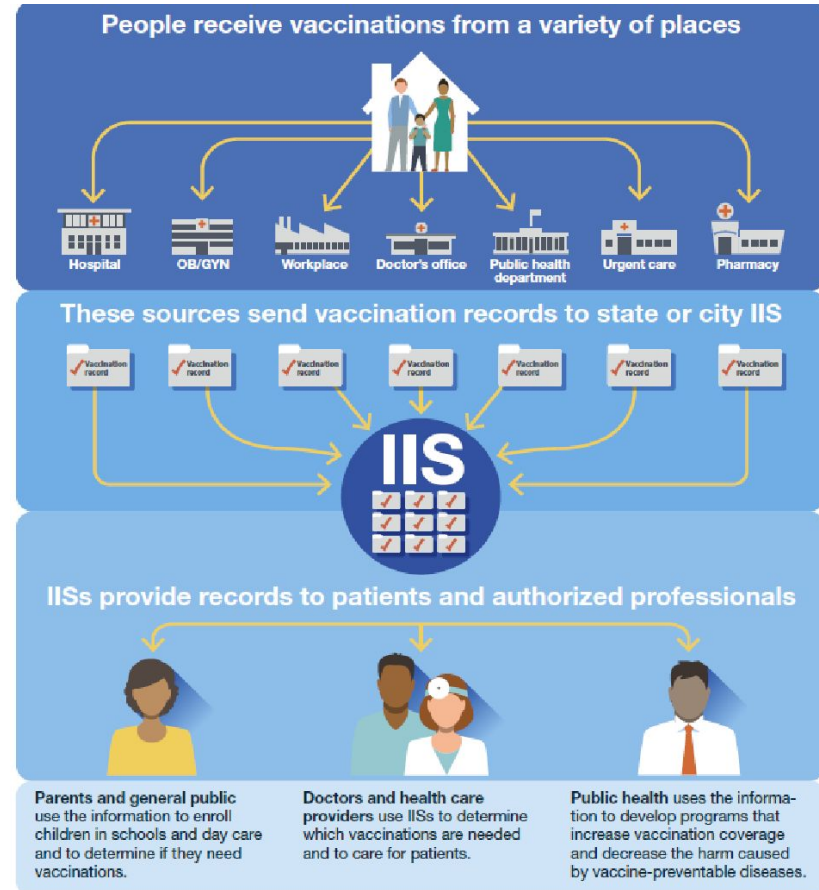
# What is an IIS and its Purpose?

# IIS Overview

*IIS are confidential, population-based databases that record all vaccine doses administered by participating providers in a specific geographic area.*

# IIS Overview

IIS data enables public health to:

- Identify **populations at risk** for vaccine-preventable diseases

- Analyze **vaccination coverage** and work to address gaps

- Respond to **public health emergencies**



People receive vaccinations from a variety of places

Hospital | OB/GYN | Workplace | Doctor's office | Public health department | Urgent care | Pharmacy

These sources send vaccination records to state or city IIS

IIS

IISs provide records to patients and authorized professionals

Parents and general public use the information to enroll children in schools and day care and to determine if they need vaccinations.

Doctors and health care providers use IISs to determine which vaccinations are needed and to care for patients.

Public health uses the information to develop programs that increase vaccination coverage and decrease the harm caused by vaccine-preventable diseases.

# Immunization Information System (IIS) Functional Model

The IIS Functional Model presents a framework and terminology for conveying and communicating the core functions, capabilities and attributes of IIS. These systems, whether monolithic or an integrated system of component modules, support public health immunization programs in achieving the **CDC IIS Functional Standards\*** and in providing trusted data and information to improve clinical immunization practice, increase vaccination and reduce vaccine-preventable disease.

The model also serves as a companion and index to the **IIS Baseline Requirements Traceability Matrix (RTM)**, which detail functional requirements across the functions and capabilities and non-functional requirements for each of the core attributes.

## IIS Core Functions and Capabilities

These functions and capabilities represent core functionality of IIS. Refer to the **IIS Baseline RTM** for descriptions and functional requirements associated with each.

### Administer System
- Hierarchy configuration
- System configuration
- User roles & permissions
- System alerts

### Manage Organizations & Facilities
- Organization/facility search
- Add, edit, inactivate organization/facility
- VFC/vaccine program enrollment
- Organization/facility outreach

### Manage Users
- User search
- Add, edit, inactivate user
- Authentication & authorization
- Password management

### Support Interoperability
- Onboarding
- Interfaces
- Data exchange

### Ensure Data Quality
- Patient matching & deduplication
- Vaccination event matching & deduplication

### Evaluate & Forecast
- Clinical decision support
- Reminder/recall
- Coverage reports

### Manage Patient & Immunization Records
- Patient search
- Add, edit patient demographics
- Patient status
- Patient consent
- Add, edit patient immunization
- Print/export record
- Mass vaccination

### Manage Vaccine Inventory
- Vaccine inventory search
- Add, edit vaccine inventory
- Vaccine ordering
- Review/approve order
- Vaccine decrementing
- Vaccine inventory reconciliation
- Vaccine transfer
- Vaccine wastage
- Vaccine expiration

### Provide Data Access
- Standard reports
- Print/export reports
- Ad hoc queries & reports
- Consumer access

## IIS Attributes

These attributes represent the technical characteristics of an IIS necessary to support immunization programs and stakeholders. Refer to the **IIS Baseline RTM** for descriptions and non-functional requirements associated with each.

| Performance Efficiency | Usability | Reliability | Security | Maintainability | Portability |
|---|---|---|---|---|---|
| • Time behavior<br>• Resource utilization<br>• Capacity | • Operability<br>• User error protection<br>• Accessibility | • Availability<br>• Fault tolerance<br>• Recoverability | • Confidentiality<br>• Non-repudiation<br>• Accountability<br>• Authenticity | • Analyzability | • Adaptability<br>• Installability |

# IIS Functions and Capabilities

## What Does an IIS Do?

- Monitors new vaccine uptake
- Tracks and evaluates trends in coverage levels
- Monitors outbreaks and disease levels
- Automatically calculates vaccinations needed
- Consolidates immunization-related information
- Generates vaccination reminder/recall notices
- Connects providers to complete vaccination records
- Monitors Vaccines for Children (VFC) vaccine use and provider compliance

## IIS Core Capabilities

✔ Evaluating vaccine validity and forecasting next appropriate vaccination(s) due, specific to each patient
✔ Supporting emergency preparedness and pandemic planning
✔ Integrating with other electronic health information systems
✔ Supporting vaccine management at the provider and immunization program levels

# Primary IIS Data Sources

**Vital statistics**

**Provider data via EHR**
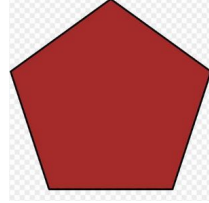
**Data from other jurisdictions and federal entities via the IZ**

# IIS Focus in the Immunization VFC/317 Cooperative Agreement

# Using the IIS to Support the Immunization Program through its Cooperative Agreement

**B** – Coverage

**C** – Vaccines for Children

**D** – IIS

**F** – Quality Improvement

**G** – Surveillance and Outbreak Response

**I** – Emergency Preparedness

**L** – Adult

# Guidance | IPOM Chapter D

CDC's Immunization Program Operations Manual (IPOM) Chapter D has requirements to drive IIS advancement towards strategic priorities in three areas.

## 1 Improve Data Quality

- Improve demographic data completeness and accuracy
- Submit data to CDC monthly (flu) and quarterly (routine)
- Ensure appropriate IIS capabilities and staffing for data quality improvement, staffing, and reporting
- Develop public-facing dashboards
- Resolve duplicate and fragmented patient records

## 2 Advance IIS Capabilities

- Onboard to **Immunization (IZ) Gateway**
- Implement **PPRL**

## 3 Adhere to IT Industry Best Practices

- Evaluate IIS ability to modernize
- Apply governance and PM best practices
- Improve demographic data completeness and accuracy
- Develop the appropriate deliverables and artifacts from the applied governance and best practices

# Guidance | IPOM Chapter G

CDC's Immunization Program Operations Manual (IPOM) Chapter G provides requirements to drive IIS advancement towards strategic priorities with within three areas.

**Assess vaccination coverage. Identify vulnerable populations. Prepare for and respond to outbreaks and other public health emergencies.**

- Enroll and onboard providers that may contribute to mass vaccination events and vaccinate front line workers
- Leverage the IIS for timely and accurate demographic and vaccine administration reporting
- Report all vaccinations to the CDC
- Implement and support systems to provide consumer access to immunization records
- Implement and support systems to facilitate data linkages

# CDC Reports and Tools

# Immunization Information System Annual Report (IISAR)

An annual assessment is conducted of IIS activity among the 64 immunization program awardees that receive funding under section 317b of the Public Health Service Act

The IISAR is a self-administered web-based questionnaire completed by immunization program managers as part of their annual reporting requirement. Awardees are asked to provide information about their IIS, such as:

- The number of children aged less than 6 years with two or more vaccinations recorded in the IIS
- Public and private provider site participation levels
- Fulfillment of IIS functional standards
- Other IIS-related programmatic functions

# CDC Tools to Improve IIS and Data Quality

- CDC Functional Standards v 4.1

- CDC Functional Standards Resource Guide

- IIS Data Quality Blueprint

- IIS Routine Vaccination Submission Data Quality Report*

- IIS Dashboard

# Functional Standards

- The IIS Functional Standards describe the operations, data quality, and technology needed by IISs to support immunization programs, vaccination providers, and other immunization stakeholders
- The IIS Functional Standards and Operational Guidance Statements (OGS) help assure that all IISs attain a level of uniformity and consistency in supporting common clinical, programmatic, and public health immunization goals for both public and private stakeholders
- https://www.cdc.gov/vaccines/programs/iis/functional-standards/func-stds-v4-1.html

# IIS Functional Standards Resource Guide

https://www.cdc.gov/vaccines/programs/iis/functional-standards/func-stds-v4-1-resource-guide.pdf

## Immunization Information System Functional Standards Version 4.1 Resource Guide

This document lists primary resources associated with the IIS Functional Standards v 4.1. The resources were created collaboratively and vetted with the immunization information systems (IIS) community unless otherwise noted. These resources may be useful to inform efforts to create or enhance IIS functionality related to the Functional Standards.

### Resources Related to the Functional Standards

Formal guidance does not currently exist for all Functional Standards. The table below categorizes available guidance as either introductory or advanced/technical. Note that the resource list is not exhaustive, and individual IIS needs and solutions may vary.

The American Immunization Registry Association (AIRA) Resource Repository Key Words listed below will help locate additional content related to each Functional Standard in the AIRA Resource Repository. The AIRA Repository contains valuable resources for the IIS community, IIS vendors, health care providers, electronic health record (EHR) vendors, policy makers, funders, and others interested in IISs. AIRA Repository Search Tips describe the many ways to search and filter in the repository.

| Functional Standard | Primary Resources | AIRA Repository Key Words |
|---|---|---|
| 1.0 The IIS contains complete and timely demographic and immunization data for children, adolescents, and adults residing or immunized within its jurisdiction. | **Introductory**<br>• Fundamentals of IIS: Data Quality – no-cost, interactive training that requires setting up an account with the Public Health Informatics Institute (PHII)<br>• Data Quality Assurance in Immunization Information Systems – mini guide<br><br>**Advanced/Technical**<br>• HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5<br>• HL7 Version 2.5.1 Implementation Guide for Immunization Messaging (Release 1.5) – Addendum<br>• Data Quality Assurance in Immunization Information Systems – full guide<br>• Guidance for HL7 ACK Messages to Support Interoperability<br>• AIRA Data Validation Guide – for the IIS Onboarding Process | • Data quality assurance |

Centers for Disease Control and Prevention, Immunization Information Systems Support Branch

November 2022

# IIS Data Quality Blueprint

The IIS Data Quality Blueprint is a guide to help immunization programs address and advance data quality within IISs. Its measures focus on improving IIS data throughout the lifespan.

The blueprint focuses on driving IIS data that are:
- **AVAILABLE**
- **COMPLETE**
- **TIMELY**
- **VALID**

Other enabling characteristics (i.e., **ACCURATE**, **CONSISTENT**, and **UNIQUE**) and functional processes (e.g., interoperability) are inherent to high quality IIS data and complement the blueprint data quality characteristics.

Sample activities for achieving high quality data and the associated recommended measures are found in the IPOM Chapter D Sample Activities for 2022 document.
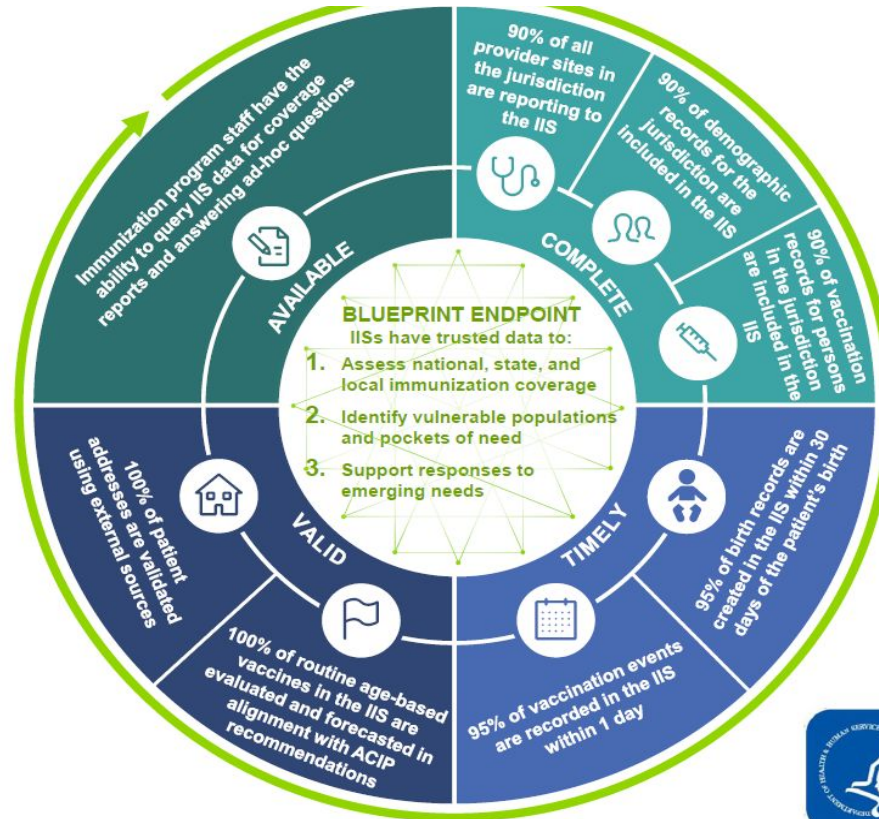
# The Blueprint defines IDAB's goals for IIS and guides awardee activities for data quality improvement

*Blueprint Guiding Principles:*

① Focuses on **improved IIS data quality**, which will support improved immunization outcomes by supplying **credible immunization data**

② Prioritizes a **small set of meaningful, quantifiable** IIS measure

③ Informs **technical assistance approach** to address shared challenges

④ Adapts to **national, state, and local emerging priorities and needs**
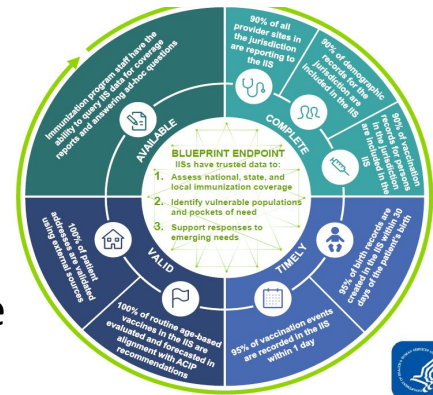
# The Blueprint endpoint defines IDAB's vision for improving IIS data quality



**Endpoint**
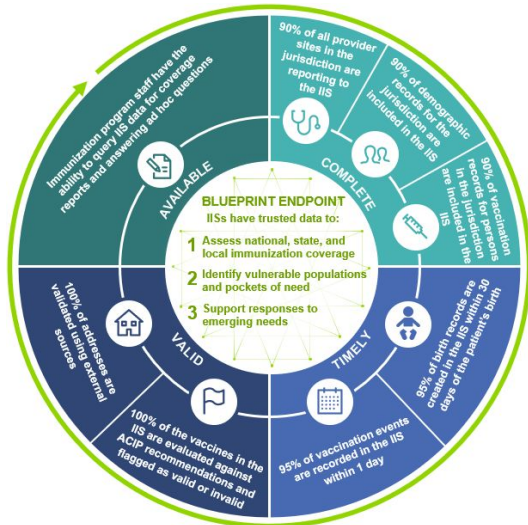
- IISs will be **the trusted source** for reliable immunization data
- As the trusted source, IISs will produce data to support:
  - **Immunization coverage assessments**
  - **Identification of pockets of need**
  - **Responses to emerging needs**

# IIS Dashboard

[The IIS Dashboard](#) is a tool intended for Immunization Program Managers and IIS Managers to:

- Determine how well the IIS and vaccination data it contains meet data quality targets

- Compare Annual IIS Annual Report (IISAR) responses over time

- Determine progress for groups of indicators related to each of the seven data quality characteristics

- Compare the jurisdiction's IIS performance with other awardees' IIS

# IIS Dashboard (cont.)

- Determine opportunities and formulate plans for improvement when drafting the jurisdiction's Immunization VFC/317 cooperative agreement work plan and budget

- Take a comprehensive view of data quality, including the associated policies, IIS infrastructure, auxiliary projects, and measures

IIS

# IIS Dashboard Data Sources

- IISAR

- Census CIA World Factbook

- Behavioral Risk Factor Surveillance System (BRFSS)

- NIS-Child, and NIS-Teen

- VTrckS

- AIRA Measurement and Improvement Results

- Jurisdictional Policy Information

- PEAR

# Accessing the IIS Dashboard

Dashboard requirements include:

- Internet Explorer 10 and above for Windows

- Adobe Reader 9 and higher

- Operating Systems: .NET Framework 3.0; Windows 2000, Vista, XP, 7

# Reviewing the IIS Dashboard

Targets, Met or Unmet

- Reference the columns labeled Year: 2019, 2020, 2021, 2021 Target Achieved, and Target

Comparisons

- Reference the % Awardees Meeting Target in 2021 column

# Activity: IIS Dashboard

1. Review your IIS Dashboard printout
2. Identify which targets your jurisdiction are meeting/not meeting?

   - Are there strategies to maintain your targets/opportunities for improvement?

   - What discussions should you have and with whom to champion improvement e.g., immunization program manager, vendor, other?

3. Discuss strategies/opportunities with your 'assigned' IIS SME
4. Large group discussion of key themes

# Immunization Services Division & Informatics and Data Analytics Branch Organizations

# Immunization Services Division (ISD)
## National Center for Immunization and Respiratory Diseases (NCIRD)

**Division Director**
Georgina Peacock, MD, MPH

**Associate Director for Program Management**
Pamela Nonnenmacher, MS

**Chief Medical Officer**
Sarah Meyer, MD, MPH

**Associate Director for Science**
Nicole Dowling, MD

**Associate Director for Policy**
Rebecca Miller, MPH

**Associate Director for Health Equity and Adult Immunization**
Ram Koppaka, MD, PhD

**Associate Director for Communication**
Sara Dodge Ramey, MEd

**Vaccine Supply and Assurance Branch**
Jeanne Santoli, MD, MPH

**Deputy Director for Science Implementation**
Shannon Stokley, DrPH

**Deputy Director for Program Implementation**
Jill Moses, MD

**Surveillance and Epidemiology Branch**
Jim Singleton, PhD, MS

**Applied Research, Implementation Science, and Evaluation Branch**
Tara Vogt, PhD, MPH (Acting)

**Informatics and Data Analytics Branch**
Lynn Gibbs-Scharf, MPH

**Immunization Operations and Services Branch**
CDR Dianna Carroll, PhD, MS (Acting)

**Field Services Branch**
Chris Parker, PhD, MPH, MPA (Acting)

**Health Education and Communication Branch**
Sarah Schillie, MD (Acting)

**Partnership and Health Equity Branch**
Mike Sennett (Acting)

Updated 03/01/2023

# Informatics and Data Analytics Branch (IDAB)

As part of 2022 reorganization of NCIRD, IISSB underwent an assessment of its own operations and proposed changes in structure and name to reflect its post-pandemic priorities. All changes were approved in February 2023
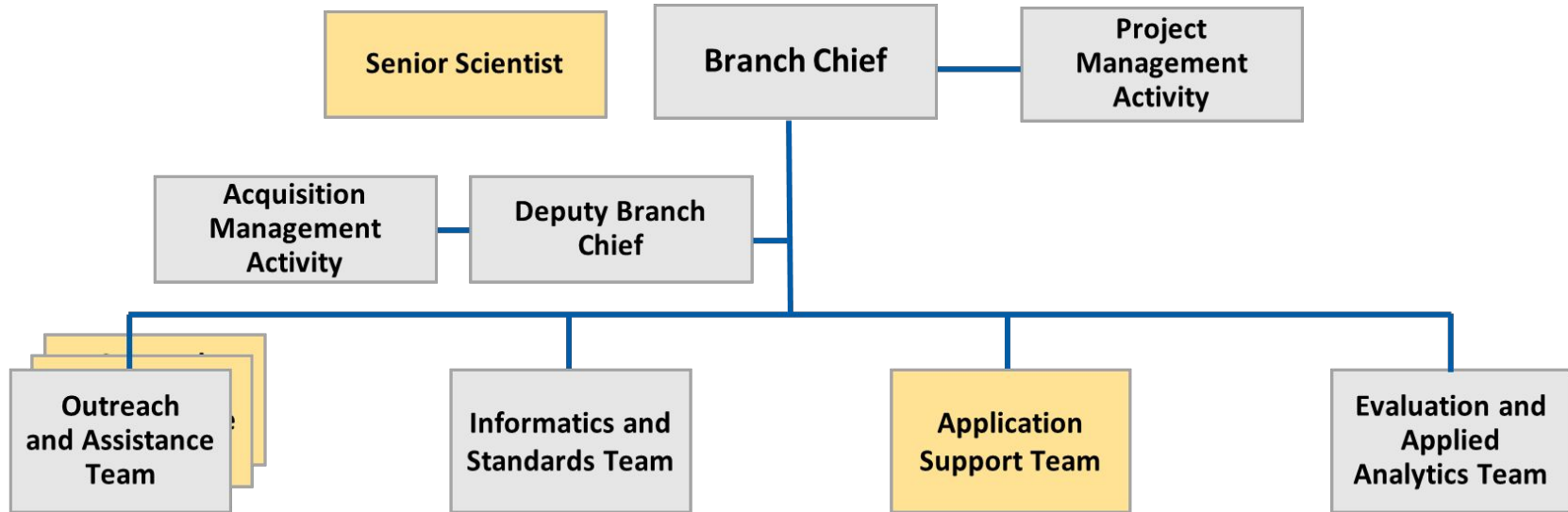


*Formerly Operations Team, will add 2 more teams*

# Awardee Organizational Reporting Structure

Does your organizational structure impact the information you receive from and your engagement with CDC ISD or IDAB?

- Does your IIS reside within the Immunization Program? Does your IIS reside within a state IT chain of command? If so, does it impact your ability to develop and maintain your IIS to support your Immunization Program? Does your program have a Data Quality Team? Does this group report to program or up through IIS?
- Does your IIS Subject Matter Expert (SME) communicate with the right individuals for your health department's structure?
- Is your IT department involved in supporting your IIS? If so, how?
- Do you have an outside technology partner? Do the right individuals from your jurisdiction engage with your technology partner?

How can you leverage your relationship with CDC to solve data quality challenges?

# CDC and Communications

# CDC Awardee Communications

- Weekly All-Awardee Message

- Weekly IIS Information Brief

- ISD All-Awardee SharePoint

- IIS Documentation on the CDC Website

- IIS All Awardee Forum Calls

# Opportunities to Engage with CDC

- Monthly calls with IIS SME
- CDC Hosted All-awardee calls and meetings
- Awardee Site Visits
- Program Area Reverse site visits
- American Immunization Registry Association National (AIRA) Conference
- American Immunization Managers Association (AIM)
- National Immunization Conference

# Questions/Comments/Discussion?

# CDC Resources

- [IIS Functional Model](#) - a framework and terminology for conveying and communicating the core functions, capabilities and attributes of an Immunization Information System (IIS)

- [IIS Data Quality Blueprint](#) - guide to address and advance IIS data quality characteristics

- [IIS Functional Standards](#) - describes the operations, data quality, and technology needed by IISs to support immunization programs and partners

- [IIS Functional Standards Resource Guide](#) - resources that may be useful to inform efforts to create or enhance IIS functionality related to the Functional Standards

- [IIS Data Quality Reports](#) - identifies jurisdiction-specific data quality strengths and challenges