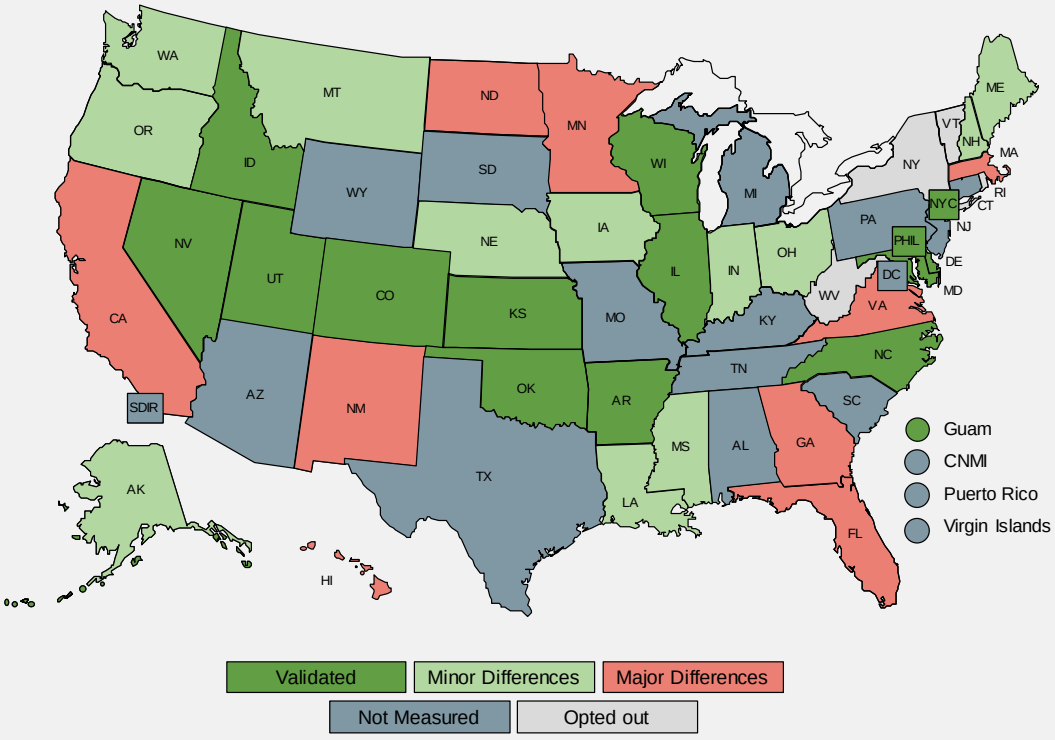
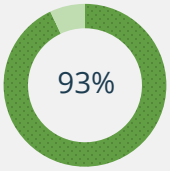
TRANSPORT VALIDATION

Complete Level

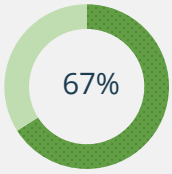
April 2018

AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

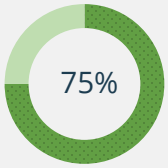




54 of 58 (or 93%) targeted IIS participated in Transport Validation for 2018.



36 of 54 (or 67%) participating IIS were connected with SOAP/Web Services and the CDC WSDL and measured.



27 of 36 (or 75%) connected IIS were Validated or Validated with Minor Differences at the Complete Level for Transport.

The American Immunization Registry Association (AIRA) launched its community-driven Immunization Information System (IIS) Measurement and Improvement initiative in mid-2015, with the dual goals of providing IIS with information to more fully align with IIS Functional Standards, while also developing a summary of where IIS are as an overall network in meeting standards and best practices. This report shares the results of IIS who have participated in Validation as the third stage of the voluntary, phased Measurement and Improvement process.

Introduction

Measurement and Improvement

The American Immunization Registry Association (AIRA) launched its community-driven Immunization Information System (IIS) Measurement and Improvement initiative in mid-2015, with the dual goals of providing IIS with information to more fully align with IIS Functional Standards, while also developing a summary of where IIS are as an overall network in meeting standards and best practices. The initiative connects AIRA testing processes with IIS pre-production (or test) systems and shares actionable results with IIS. AIRA is continuing to connect and test with a growing number of IIS interfaces, with more than three quarters of the IIS community's pre-production systems currently connected. The data available are helping to guide individual IIS enhancements to align with standards, and the AIRA Measurement for Assessment and Certification Advisory Workgroup (MACAW) is seeing significant improvements in interoperability between IIS and electronic health record (EHR) systems across the community.

The first two stages of Testing and Discovery and IIS Assessment are well-underway. This report shares the results of IIS who have participated in Validation as the third stage of the voluntary, phased Measurement and Improvement process for IIS measurement. This stage recognizes those IIS aligning with standards, while also acknowledging IIS progressing toward meeting standards. Transport is the first phase or content area to move into Validation.

The following table presents the phased schedule for Measurement and Improvement, with emphasis on this current report on Transport Validation:

Stages

Phases

	Testing and Discovery Stage	Assessment Stage	Validation Stage
Transport	→	→	→
Submission/ ACK	→	→	→
Query/ Response	→	→	→
CDS	→		
Data Quality (6)	→		
Functions (e.g. AFIX)			
Policy			
Security			

Transport

Interoperability is a core function for IIS. Although there are many aspects to interoperability, message transport, or how messages get from system A to system B, is an important building block for standardized data exchange. In 2011, CDC convened an EHR-

IIS Interoperability Expert Panel that recommended SOAP Web Services as the IIS Transport standard, and CDC developed a common Web Services Definition Language (WSDL) to allow for easier IIS and EHR adoption. This report provides results for the **complete** level of Transport Validation; results for the **basic** level can be found here.

Summary information is presented for all participating IIS; individual results are available to authorized users in the Aggregate Analysis Reporting Tool (AART). An overview document is available that details the entire Measurement and Improvement initiative.

Methods

AIRA technical staff are responsible for implementing and conducting all testing efforts within the Measurement and Improvement initiative. Current test methodology involves connecting with IIS pre-production systems through a Web services interface, submitting test messages, and receiving back and analyzing test results. The National Institute of Standards and Technology (NIST) is partnering with AIRA in the testing process to develop conformance test tools in support of this initiative.

All measures and tests are developed by the Measurement for Assessment and Certification Advisory Workgroup (MACAW), and approved by the AIRA Board of Directors. Transport measures were approved by the AIRA Board in June 2016 for Assessment, and in December 2017 for Validation. Measures and test are based on the Centers for Disease Control and Prevention's (CDC's) IIS Functional Standards. For Transport, the Functional Standards and Operational Guidance Statements referenced include:

> **FS 8.0:** The IIS exchanges data with health information systems in accordance with current interoperability standards endorsed by CDC for message content, format, and transport.
>
> > **OGS 8.1:** The IIS supports the Simple Object Access Protocol (SOAP) standard Interface, Web Services Definition Language (WSDL), or other transport solutions as endorsed by CDC.

The Validation stage uses the same (or a subset of) measures and tests which have been developed, vetted, and approved by the IIS community and AIRA Board for IIS Assessment. Measures for each phase of Validation will be drawn from published IIS Assessment measures and tests. No new measures or tests will be introduced in the Validation stage that are not already measured and visible in the Assessment stage.

Validation reports are run quarterly, and an IIS can achieve validation status during any quarter of the year. Once achieved, Validation is considered "active" for the calendar year. Validation will be retested and renewed in the first quarter of each subsequent calendar year.

Measures

Validation is measured at two levels: basic and complete. The **complete** level of Transport Validation contains three measures:

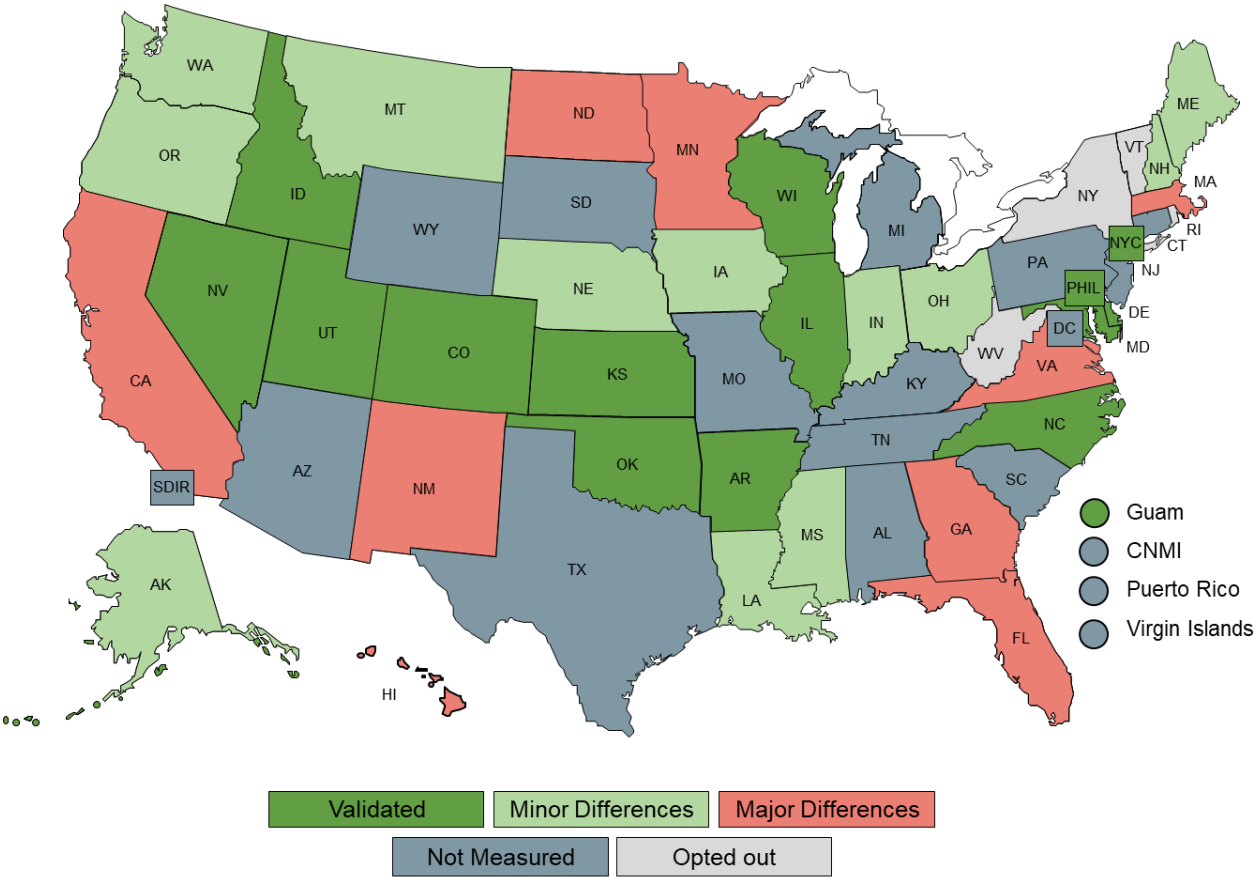
1. *The IIS supports the Connectivity Test Operation as defined in the SOAP Standard Interface 1.2 specification, Web Services Definition Language (WSDL), as endorsed by CDC.*
2. *The IIS supports the Submit Single Message Operation as defined in the SOAP Standard Interface 1.2 specification, Web Services Definition Language (WSDL), as endorsed by CDC.*
3. *The IIS supports the Security Fault as defined in the SOAP Standard Interface 1.2 specification, Web Services Definition Language (WSDL), as endorsed by CDC.*

The **basic** level report can be found here. Visit the AIRA repository for more detailed information about Transport measures and tests.

Results

Below are results for Transport Validation for 2018:

Map: Transport Validation, Complete Level - 2018



58 IIS (which includes all 50 states, plus CNMI, District of Columbia, Guam, New York City, Philadelphia, Puerto Rico, San Diego, and the Virgin Islands) were encouraged to voluntarily participate in Transport Validation. Of the 58, 54 IIS opted to participate in the IIS Transport Validation for 2018. Of the 54 participating IIS, 36 (or 67%) were connected with a CDC WSDL and measured.

Of those 36 IIS connected and measured, 27 (or 75%) were Validated or Validated with Minor Differences at the **Complete** Level for Transport. Another 9 IIS were measured but displayed Major Differences with the standard.

18 additional IIS participated but were not measured, while 4 opted not to participate in Transport Validation. Validation reports are run quarterly, and an IIS can achieve validation status during any quarter of the year. Once achieved, Validation is considered "active" for the calendar year. Validation will be retested and renewed in the first quarter of each subsequent calendar year.

Below are results for Transport Validation for 2018 in tabular form:

Table: Transport Validation, Complete Level - 2018

Validation Status and Definition	IIS
Validated: The IIS must Fully Meet Measure 1 (Connectivity Test) and Measure 2 (Submit Single Message).	Arkansas, Colorado, Delaware, Guam, Idaho, Illinois, Kansas, Maryland, Nevada, New York City, North Carolina, Oklahoma, Philadelphia, Utah, Wisconsin
Validated with Minor Differences: The IIS must Fully Meet Measure 1 (Connectivity Test), Measure 2 (Submit Single Message), and Deviate in Measure 3 (Security Fault).	Alaska, Indiana, Iowa, Louisiana, Maine, Mississippi, Montana, Nebraska, New Hampshire, Ohio, Oregon, Washington
Major Differences: The IIS fails to meet the requirements for Validated or Validated with Minor Differences.	California, Florida, Georgia, Hawaii, Massachusetts, Minnesota, New Mexico, North Dakota, Virginia
Not Measured: The IIS is participating, but is not able to be tested at this time.	Alabama, Arizona, CNMI, Connecticut, District of Columbia, Kentucky, Michigan, Missouri, New Jersey, Pennsylvania, Puerto Rico, San Diego, South Carolina, South Dakota, Tennessee, Texas, Virgin Islands, Wyoming
Opted Out: The IIS has chosen not to participate.	New York State, Rhode Island, Vermont, West Virginia

Conclusion

Many IIS are continuing to implement functionality to fully conform with the IIS Functional Standards, but it is impressive to see that, of the 36 IIS measured, 27 of them (or 75%) were Validated or Validated with Minor Differences at the complete level for Transport. Published Validation reports will offer transparency into the progress IIS are making to

come into full alignment with our community-driven standards. The AIRA staff are also available to provide technical assistance to IIS Programs and Vendors as requested.

For more background or information on the Measurement and Improvement initiative, please visit AIRA's webpage. Contact Kristi Siahaya with questions at ksiahaya@immregistries.org.

Appendix A: Glossary of Terms and Acronyms

AART: The Aggregate Analysis Reporting Tool, an application used to display and share results from the Measurement and Improvement process.

Assessment Stage: A more formal testing step to measure IIS systems using IIS community-selected measures and tests, sharing those results for quality improvement, and providing technical assistance to accelerate improvement. This is the second of three stages.

Basic Level: A level of Validation measurement that includes only essential measures to functionally meet this phase.

Complete Level: A level of Validation measurement that includes conformance to all measures approved for Validation.

MACAW: Measurement for Assessment and Certification Advisory Workgroup.

Major Differences Status: The IIS cannot support the measures because of additional requirements that conflict with the national standard; the IIS must make significant changes in one or more measures to align with standards.

Measure: A metric developed to measure how well an IIS aligns with IIS Functional Standards/Operational Guidance Statements or other recognized standard.

Phase: A content area for measuring IIS functionality and capability within a specific functional area, made up of distinct measures and tests. Measures and tests will become more formalized as they progress into different stages.

Stage: A distinct period of testing in the Measurement and Improvement Process.

Testing and Discovery Stage: A step in testing IIS systems to gather preliminary and general information on community alignment with standards. Testing and Discovery precedes all subsequent stages.

Validated Status: The IIS has achieved full alignment with community-selected measures.

Validated with Minor Differences Status: The IIS has achieved full alignment with community-selected measures except for differences that 1) are allowed by the standard (e.g., constraints), or 2) are meeting requirements of local policy/law that do not conflict with standard requirements.

Validation Stage: A summary step to acknowledge IIS that are progressing toward or achieving alignment with community-selected measures and tests. A Validation designation is automatically achieved when an IIS meets the designated measures and tests in a specific phase (e.g., Transport, Submission/Acknowledgement, Query/Response, etc.).

Appendix B: Planned Stages and Phases of Measurement

The stages and phases of measurement were developed by the MACAW Workgroup.

A stage is defined as distinct level of testing in the Measurement and Improvement Process. The stages of measurement are defined as follows:

Stage	Definition
Testing and Discovery Stage	An initial step in testing IIS systems to gather preliminary and general information on community alignment with standards. Testing and Discovery precedes all subsequent stages.
Assessment Stage	A more formal testing step to measure IIS systems using IIS community-selected measures and tests, sharing those results for quality improvement, and providing technical assistance to accelerate improvement. This is the second of three stages.
Validation Stage	A summary testing step to acknowledge IIS that are progressing toward or achieving alignment with community-selected measures and tests. A "Validation" designation is automatically achieved when an IIS meets the designated measures and tests in a specific phase (e.g., Transport, Submission/Acknowledgement, Query/Response, etc.), but interim steps toward Validation are also recognized. Validation statuses include Validated, Validated with Minor Differences, Major Differences, Participating but Not Measured, and Opted Out. This is the third and final stage of measurement for each phase at this time.

A phase is defined as a content area for measuring IIS functionality and capability within a specific functional area, made up of distinct measures and tests. Measures and tests will become more formalized as they progress into different stages. The table below includes planned phases of Assessment. The order may be subject to change:

Planned Phase	Definition
Transport Messaging	Assessing alignment with standard protocols of SOAP/Web Services and specifications for the CDC WSDL for communications over a computer network.
Submission/ Acknowledgement Messaging	Assessing alignment with the HL7 2.5.1 release 1.5 Implementation Guide and addendum for Immunization Messaging for submission and acknowledgement.

Planned Phase	Definition
Query/ Response Messaging	Assessing alignment with the HL7 2.5.1 release 1.5 Implementation Guide and addendum for Immunization Messaging for query and response.
Clinical Decision Support	Assessing alignment with specifications for Clinical Decision Support for Immunizations, based on the Advisory Committee for Immunization Practices.
Data Quality – tentatively planned to include six phases or topic areas	Assessing alignment with guidance and best practices from MIROW and AIRA Data Validation guides for testing new incoming, ongoing incoming and existing (data at rest) patient and immunization data via HL7 and User Interface entry for completeness, accuracy and timeliness; Assessing completeness for enrollment and submission of provider organizations within a jurisdiction; Assessing completeness for demographic records for a patient population within a jurisdiction; Assessing the ability to detect unique and redundant patient and vaccination records and resolve appropriately in accordance with standards and best practices.
Functions	Assessing the availability of specific functionality or capacity within the program or the system, and its adherence to published standards or guidance (e.g., AFIX).
Policy	Assessing the existence of policies and procedures that the program, or an individual in the program, is responsible for (e.g., a written Disaster Recovery Plan).
Security	Assessing the existence of business rules or automated procedures that have been implemented to maintain the security of the system (e.g., ensuring data is backed-up on a periodic basis).