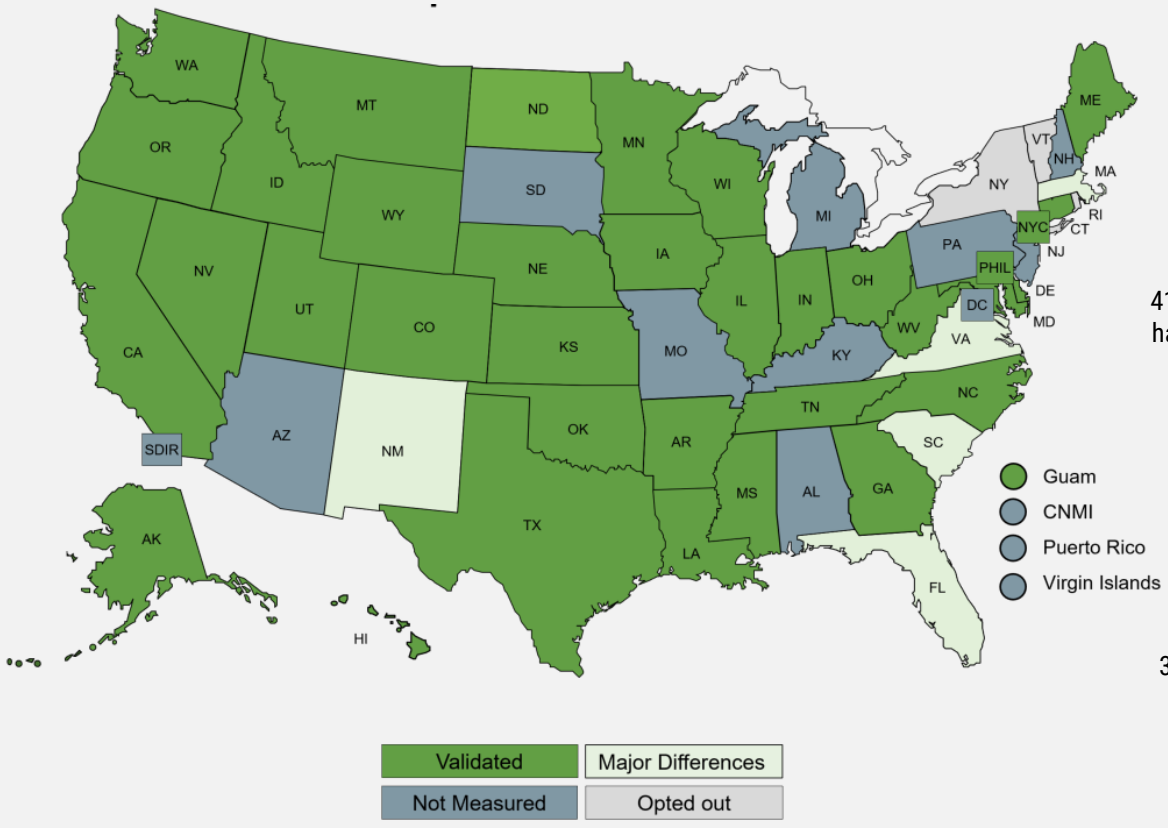
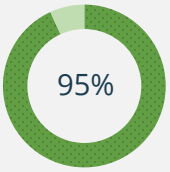
TRANSPORT VALIDATION

Basic Level

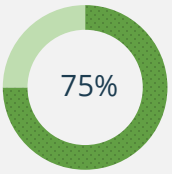
2018

AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

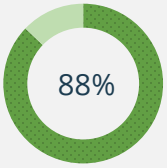




55 of 58 (95%) targeted IIS participated in Transport Validation for 2018.



41 of 55 (75%) participating IIS had a CDC WSDL available and were measured.



36 of 41 (88%) connected IIS were Validated at the basic 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 that have participated in Validation as the third stage of the voluntary, phased measurement and improvement process.

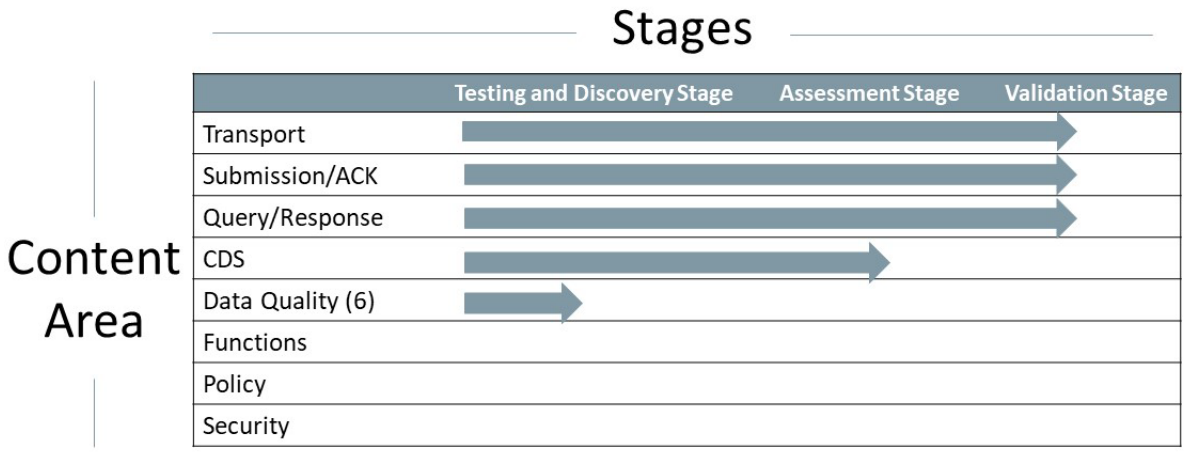
Introduction

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 3 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 2 stages of Testing and Discovery and IIS Assessment are well under way. This report shares the results of IIS that 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 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.



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, Centers for Disease Control and Prevention (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 **basic** level of Transport Validation; results for the **complete** 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 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 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 that have been developed, vetted, and approved by the IIS community and AIRA board for IIS Assessment. Measures for each content area 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 2 levels: basic and complete. The **basic** level of Transport Validation contains 2 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.*

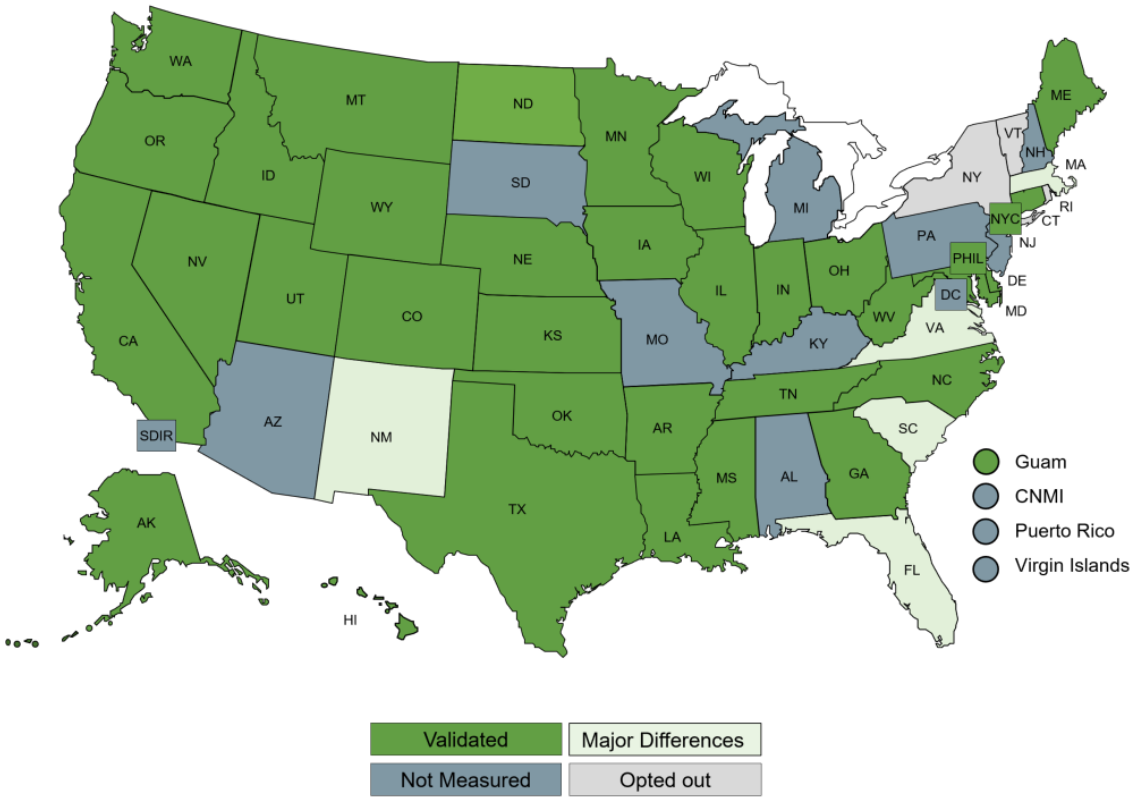
2. *The IIS supports the Submit Single Message Operation as defined in the SOAP Standard Interface 1.2 specification, Web Services Definition Language (WSDL), as endorsed by CDC.*

The **complete** 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 (note that there is no category for Validated with Minor Differences in the basic level of Transport Validation). Unless an IIS declares otherwise, the functionality tested in pre-production is presumed to be available to end users in production.

Map: Transport Validation, Basic Level 2018



Fifty-eight IIS (comprising all 50 states, plus Commonwealth of the Northern Mariana Islands, the District of Columbia, 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, 55 IIS opted to participate in the IIS Transport Validation for 2018. Of the 55 participating IIS, 41 (75%) participating IIS had a CDC WSDL available and were measured. Of those measured, 36 (88%) were Validated at the basic level for Transport. Another 5 IIS were measured but displayed Major Differences with the standard.

Fourteen additional IIS participated but were not measured, while 3 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 (note that there is no category for Validated with Minor Differences in the basic level of Transport Validation).

Table: Transport Validation, Basic Level 2018

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

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 41 IIS measured, a full 36 of them (88%) were Validated at the basic 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. 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 web page. 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, to share those results for quality improvement, and to provide technical assistance to accelerate improvement. This is the second of 3 stages.

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

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

Content Area: A category 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.

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 1 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.

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 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 content area (e.g., Transport, Submission/Acknowledgement, Query/Response, etc.).

Appendix B: Planned Stages and Content Areas of Measurement

The stages and content areas of measurement were developed by MACAW. A stage is defined as a 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 stages.
Assessment Stage	A more formal testing step to measure IIS systems using IIS community-selected measures and tests, to share those results for quality improvement, and to provide technical assistance to accelerate improvement. This is the second of 3 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 content area (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 content area at this time.

Content areas for measuring IIS functionality and capability within a specific functional area are 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 content areas for Assessment. The order may be subject to change.

Planned Content Area	Definition
Transport Messaging	Assessing alignment with standard protocols of SOAP/Web Services and specifications for the CDC WSDL for communications over a computer network.

Planned Content Area	Definition
Submission/ Acknowledgement Messaging	Assessing alignment with the Health Level Seven (HL7) 2.5.1 release 1.5 Implementation Guide and addendum for Immunization Messaging for submission and acknowledgement.
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 6 topic areas	Assessing alignment with guidance and best practices from MIROW (Modeling of Immunization Registry Operations Workgroup) 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., quality improvement initiatives).
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).