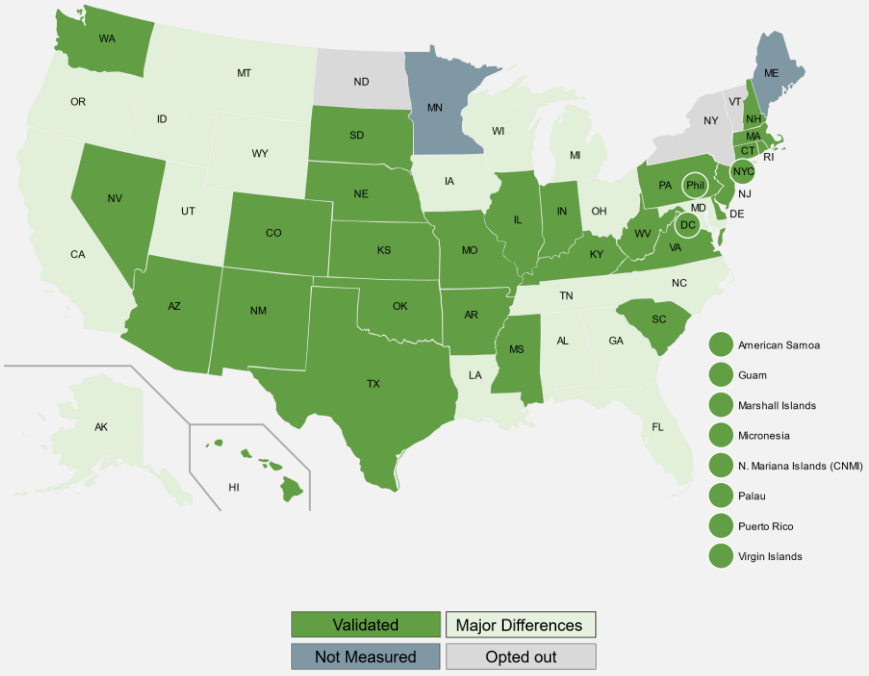
DATA QUALITY INCOMING/ ONGOING VALIDATION

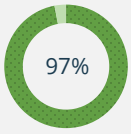
Basic Level

2025

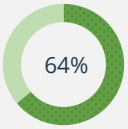
AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

M&I
MEASUREMENT & IMPROVEMENT





59 of 61 (97%) IIS were connected to the testing process and all measures assessed.



38 of 56 (64%) connected IIS were Validated at the basic level Data Quality Incoming/Ongoing.

The American Immunization Registry Association (AIRA) launched its community-driven immunization information system (IIS) Measurement and Improvement (M&I) Initiative in mid-2015, with the dual goals of providing IIS with information to align with IIS Functional Standards and developing a summary of IIS community alignment progress with best practices and standards. This report contains the results of IIS that have been measured within Validation, the final stage of the M&I process.

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Introduction

Overview: The measurement process for Data Quality Incoming/Outgoing (DQI) uses the National Institute of Standards and Technology (NIST) Immunization Test Suite Validation Tool. This tool provides consistent conformance-based results for all measured IIS. In addition, the technical requirements for data submission and Acknowledgement are documented in the HL7 Version 2.5.1: Implementation Guide for Immunization Messaging, Release 1.5 and addendum. This is referred to as the National IG.

A key role of immunization information systems (IIS) is combining vaccination records from many sources to create complete and accurate histories. To do this well, IIS need data from most immunizers in their area, sent through standardized electronic channels. For over 20 years, the IIS community has used messaging standards, which have become even more important with the rise of electronic health record (EHR) integration. The main messaging standard is HL7 Version 2.5.1 Implementation Guide for Immunization Messaging, Release 1.5. As data are exchanged, IIS must check for and correct errors to maintain high data quality. Guidelines for ensuring data quality are outlined in several key documents, including *Data Quality Assurance in Immunization Information Systems: Incoming Data*, *Data Quality Assurance in Immunization Information Systems: Selected Aspects*, and *IIS Data Quality Practices – Monitoring and Evaluating Data Submissions*.

Commented [AC1]: @nick/megan – the overview section in this report is different than those in the Submission and Query Validation BASIC reports. It would be nice if we could use the language in those to make them more uniform across reports.

Background: Data Quality Incoming/Outgoing (DQI) moved into the Measurement and Improvement (M&I) stage of Validation in 2023. Validation testing occurs quarterly. DQI Validation Summary reports are updated twice a year, and an IIS can achieve either Basic or Complete Validation during either half of the year. Once achieved, Validation is considered active for the calendar year. This report contains the Basic Validation results from Quarter 4, 2025 (October through December).

Measures: Measurement for Assessment and Certification Workgroup (MACAW), the advisory body for M&I, the approved measures and tests for the basic level of Validation in September 2024. Measures and tests are based on the IIS Functional Standards v5.0. DQI measures and tests are specifically based off the following:

- **Functional Standard B4.0**: The IIS validates patient demographic and vaccination data.
- **Guidance Statement B4.1**: The IIS supports the identification, prevention, and resolution of duplicate and fragmented patient demographic and vaccination data in accordance with policies and procedures.
- **Guidance Statement B4.2**: The IIS monitors data quality within the IIS in accordance with policies and procedures.

- **Guidance Statement B4.4**: The IIS delivers feedback and training to IIS partners and providers to ensure complete, timely, and accurate patient demographic and vaccination records.
- **Guidance Statement B4.5**: The IIS meets federal and jurisdictional data quality metrics.

Testing Method: For DQI testing, AIRA will submit an HL7 message (VXU) that reflects the condition described in the test case. Each test case will be isolated to one data quality error. Following the VXU, a query (QBP) will be sent for the patient. The information returned by the IIS in both acknowledgment (ACK) and response (RSP) will be used to determine if the IIS has met the expectation of the test case. The expectations for the ACK and/or the RSP vary by test case and are fully defined in the Data Quality: Incoming/Ongoing assessment measures and tests document.

Results: This report provides results for the **basic** level of DQI Validation; results for the **complete** level can be found here. Summary information is presented for all measured IIS; individual results are available to authorized users in AART. IIS can achieve the following **basic** level statuses or DQI:

- **Validated**: The IIS meets Measures 1–5, 7–8, 14–15, 19–27.
- **Validated with Minor Difference:** The IIS deviates in one or more measures.
- **Major Differences:** The IIS does not meet one or more measures.
- **Not Measured:** The IIS was not able to be tested at this time.
- **Opted Out:** The IIS has chosen not to be measured.

Commented [AC2]: @nick – the bullet for [--> "**Validated with Minor Difference:** The IIS deviates in one or more measures <---] is missing

Results

Commented [AC3]: @nick and @megan -- the section is formatted differently than the Transport basic report which has a bulleted summary, consider making the section uniform across all validation summary reports.

Below are the results for the basic level of DQI Validation from Quarter 4, 2025. Unless an IIS declares otherwise, the functionality tested in preproduction is presumed to be available to end users in production.

The 61[1] IIS participating[2] in AIRA's M&I Initiative were encouraged to be formally measured in DQI Validation. Of the 61 participating IIS, **59 (97%)** were connected to the testing process, and all measures were assessed. Of those measured, **38 (64%)** were **Validated** at the basic level for DQI. Another 18 IIS were measured but displayed major differences. Two

[1] Note that the denominator for M&I participation decreased from 62 to 61 in Q2 2022, due to San Diego IIS's merge with California's state IIS.
[2] Includes all 50 states, American Samoa, the Commonwealth of the Northern Mariana Islands, the District of Columbia, the Federated States of Micronesia, Guam, New York City, Philadelphia, Puerto Rico, the Republic of the Marshall Islands, the Republic of Palau, and the Virgin Islands.

IIS were not able to be measured[3] at this time, while three opted not to be measured in DQI Validation.

Below are the results for the basic level of DQI Validation from Quarter 4, 2025 in tabular form.

Table: Data Quality Incoming/Ongoing Validation, basic level Quarter 4, 2025

Validation Status and Definition	IIS
Validated: The IIS meets Measures 1–5, 7–8, 14–15, 19–27.	American Samoa, Arizona, Arkansas, Colorado, Connecticut, Delaware, District of Columbia, Guam, Hawaii, Illinois, Indiana, Kansas, Kentucky, Marshall Islands, Massachusetts, Micronesia, Mississippi, Missouri, N. Mariana Islands, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York City, Oklahoma, Palau, Pennsylvania, Philadelphia, Puerto Rico, Rhode Island, South Carolina, South Dakota, Texas, US Virgin Islands, Virginia, Washington, West Virginia
Major Differences: The IIS does not meet one or more measures specified above.	Alabama, Alaska, California, Florida, Georgia, Idaho, Iowa, Louisiana, Maryland, Michigan, Montana, North Carolina, Ohio, Oregon, Tennessee, Utah, Wisconsin, Wyoming
Not Measured: The IIS is not connected, or one or more measures could not be assessed for IIS.	Maine, Minnesota

[3] Note that "Not Measured" includes IIS who were not connected to the testing process and IIS whose results include one or more measures that could not be assessed.

Opted Out: The IIS has chosen not to be measured.	New York (State), North Dakota, Vermont

Conclusion

The IIS community continues to work towards full conformance with the IIS Functional Standards, with ongoing efforts to enhance functionality and align with community-driven standards. While results may vary due to evolving recommendations, standards updates, or differences in system implementation, the long-term trend is expected to show steady progress toward greater alignment across the IIS community.

Published Validation reports provide transparency into this progress, offering insights into how IIS are advancing toward meeting these shared standards. AIRA staff are available to provide technical assistance to IIS programs and vendors as needed.

For more information on the Measurement and Improvement (M&I) Initiative, please visit AIRA's website. Questions and comments can be submitted via AIRA's Technical Assistance Request form.

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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 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 three 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 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 another recognized standard.

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

Testing and Discovery Stage: A step in testing IIS to gather preliminary and general information on community alignment with standards. Testing and Discovery is the first of 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/acknowledgment, clinical decision support, etc.).

Appendix B: Measures/Methods – Additional Information

The **basic** level of DQI Validation contains 18 measures.

Patient demographic elements

1. The IIS detects data quality issues with patient name: first.
2. The IIS detects data quality issues with patient name: last.
3. The IIS detects data quality issues with patient date of birth.
4. The IIS detects data quality issues with patient gender.
5. The IIS detects data quality issues with patient address: state.
7. The IIS detects data quality issues with race.
8. The IIS detects data quality issues with ethnicity.
14. The IIS detects data quality issues with patient ID and patient ID: type.

Vaccination events data element

15. The IIS detects data quality issues with vaccine administration date.
19. The IIS detects data quality issues with vaccination event record type.
20. The IIS detects data quality issues with vaccine funding source.
21. The IIS detects data quality issues with vaccine product.
22. The IIS detects data quality issues with vaccine manufacturer name.
23. The IIS detects data quality issues with vaccine expiration date.
24. The IIS detects data quality issues with vaccine event ID.

Additional aspects

25. The IIS can map between coding systems.
26. The IIS returns critical information about a previously submitted vaccination event.
27. The IIS returns the consolidated immunization history following an update.