

AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

Data Quality Incoming/Ongoing Assessment

Aggregate Report

2026 – Quarter 3

M&I
MEASUREMENT & IMPROVEMENT

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Introduction

Overview: 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. 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*.

Background: Data Quality Incoming/Outgoing (DQI) moved into the Measurement and Improvement (M&I) stage of Assessment in 2020. This report contains the aggregate results of the IIS assessment completed in **Quarter 3 of 2026**. IIS can access their individual measurement reports in AART.

Measures: Measurement for Assessment and Certification Workgroup (MACAW), the advisory body for M&I, approved measures and tests for DQI in February 2020. The detailed measures and tests document is located on the AIRA repository. 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.

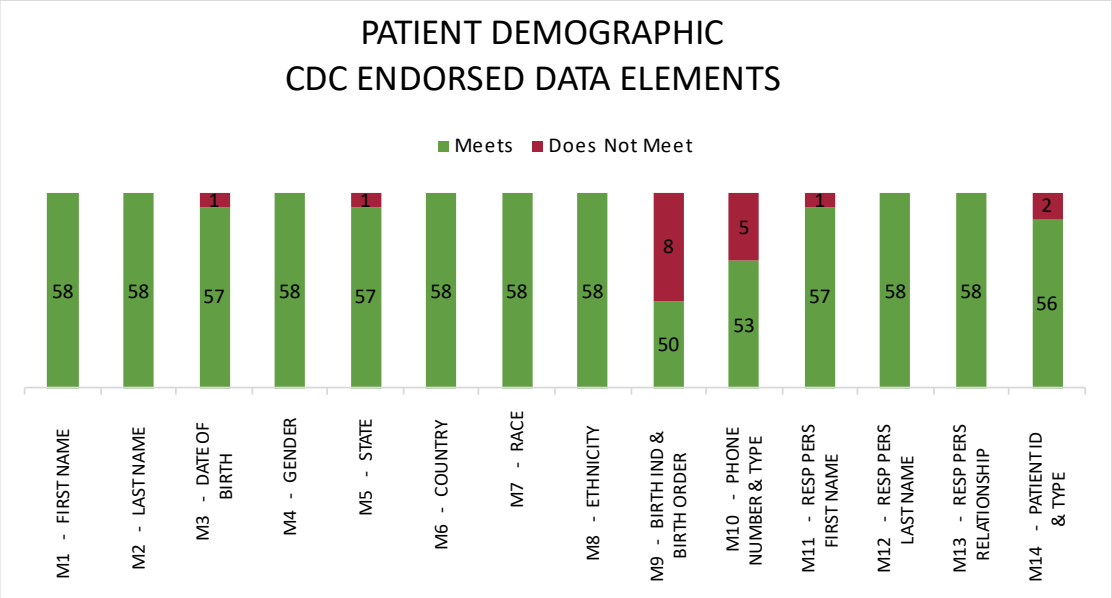
Possible Results: IIS can achieve one of three possible results in both test and measure outcomes – **meets, does not meet,** or **not measured**.

Summary Results

Sixty-one[1] IIS were encouraged to be measured in the IIS Assessment. Of the 61 participating IIS,[2] **58 (95%)** could be measured and are included in this report.

Patient Demographic Results

Measures 1–14 focus on CDC-endorsed data elements related to patient demographics. The tests intentionally submit missing, invalid, or conflicting data to the IIS. The IIS is expected to identify the data-quality issue via the ACK message and/or not propagate the data-quality error in the RSP.



[1] 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 registry.

[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.

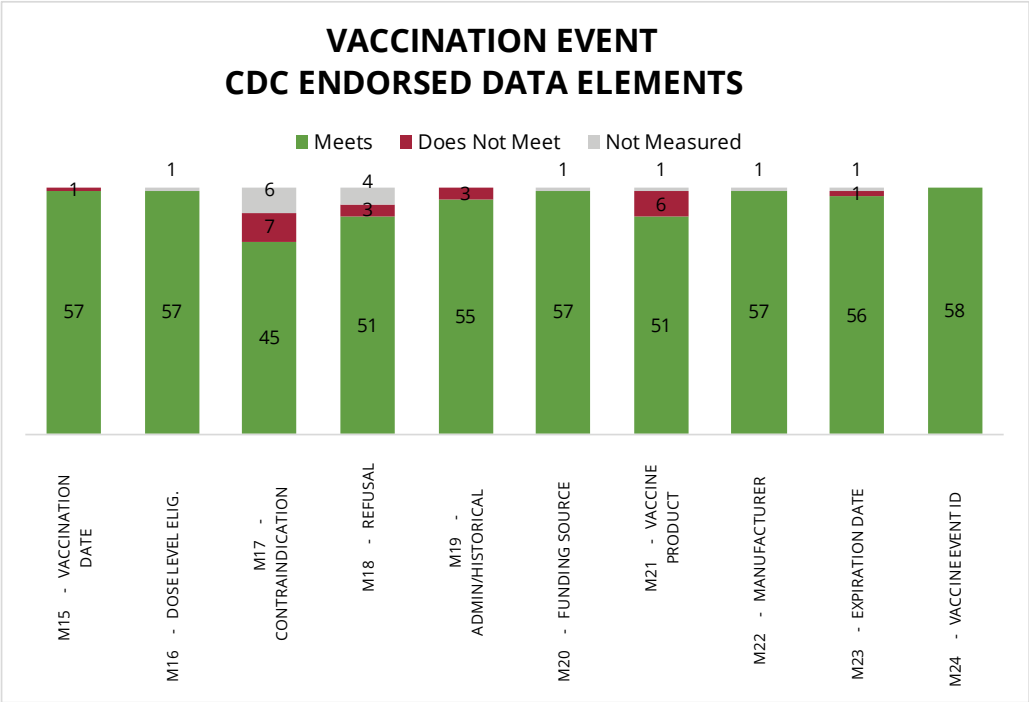
* M1, M2, M3, etc. denote the measure number reflected in the Data Quality: Incoming/Ongoing Measures section above.

The following observations related to the patient demographic data elements where less than 95% of IIS met the measure provide additional context for reading and interpreting the aggregate results graph:

- **Multiple birth indicator and birth order**: Eight IIS that did not pass this measure showed support for accepting multiple birth indicator and birth order but did not detect when these two data elements were conflicting (e.g., a multiple birth was not indicated with a birth order of two) Also of the eight, five IIS did not detect when birth indicator was invalid, and one IIS did not detect when birth order was invalid.
- **Telephone number and type**: Five IIS showed support for accepting a valid patient telephone number, but four IIS did not detect when the telephone number was invalid and one IIS did not detect when the telephone number type was invalid.

Vaccination Event Results

Measures 15–24 focus on CDC-endorsed data elements related to vaccination events. The tests intentionally submit missing, invalid, or conflicting data to the IIS. The IIS is expected to identify the data-quality issue via the ACK message and/or not propagate the data-quality error in the RSP.



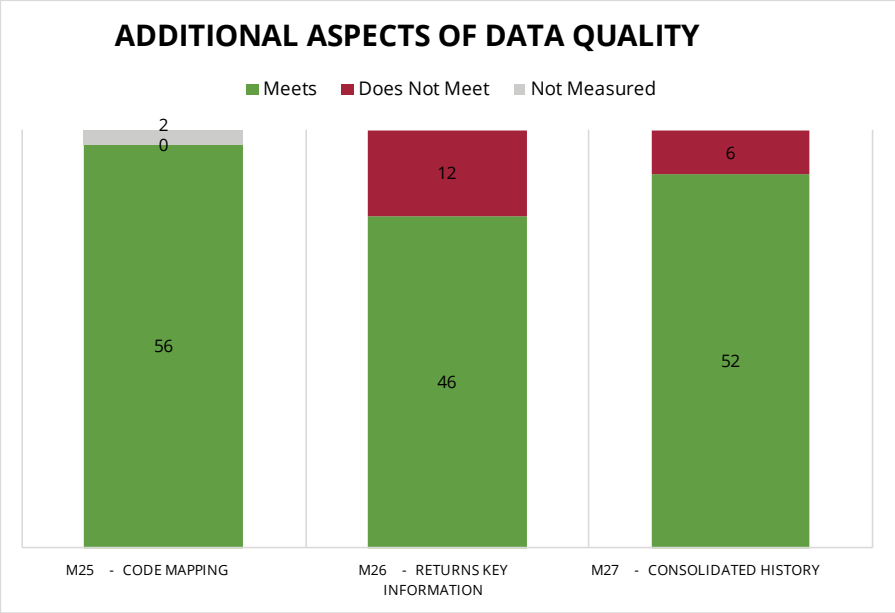
* M15, M16, M17, etc. denote the measure number reflected in the Data Quality: Incoming/Ongoing Measures section above.

The following observations related to the vaccination event data elements where less than 95% of IIS met the measure provide additional context for reading and interpreting the aggregate results graph:

- **Contraindications/Precautions**: Seven IIS showed support for accepting contraindications/precautions, but six IIS did not detect a contraindications/precautions observation date in the future or before the patient date of birth and one IIS did not detect an invalid observation date. Six IIS could not be measured because they did not accept a valid contraindications/precautions coded element which is a prerequisite to be tested for this measure.
- **Refusals**: Four IIS could not be measured because they did not accept a valid refusal coded element which is a prerequisite to be tested for this measure. Three IIS did show support for accepting a valid refusal, but did not detect a refusals date dated in the future or before the patient date of birth.
- **Vaccine Product**: Six IIS showed support for accepting vaccine product coded elements, but all six did not detect when the NDC and CVX conflicted with each other (e.g. NDC for HepB and CVX for MMR). Two IIS could not be measured because one did not accept the prerequisite message to be tested for this measure and the other due to system downtime.

Additional Aspects

In contrast to Measures 1–24, Measures 25–27 focus on additional aspects of data quality to ensure data submitted are represented when returned.



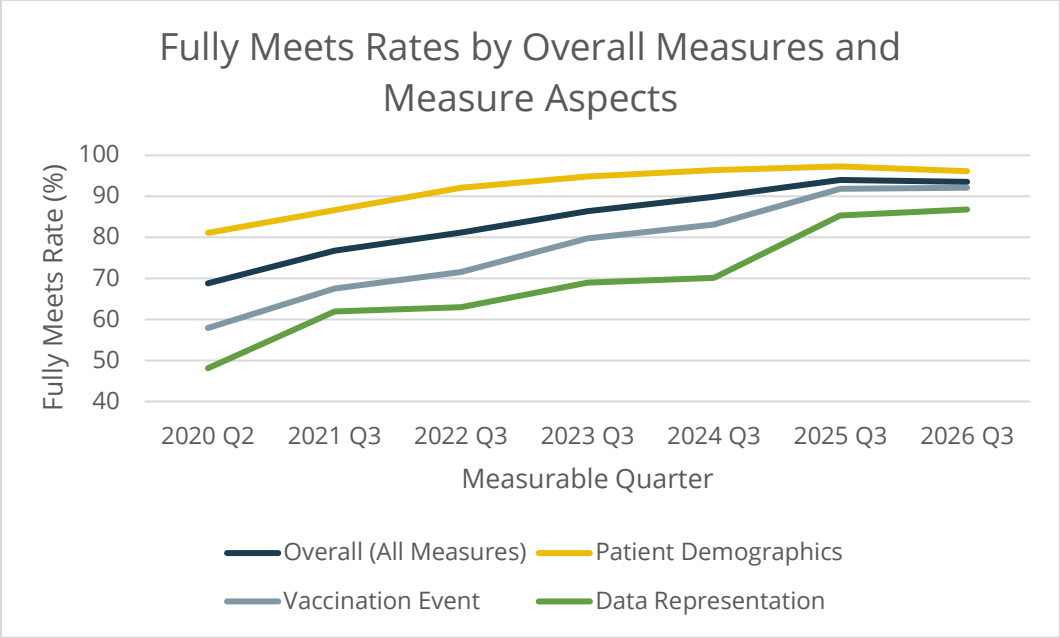
* M25, M26, M27 denote the measure number reflected in the Data Quality: Incoming/Ongoing Measures section above.

The following observations related to the additional aspects where less than 90% met the measure provide additional context for reading and interpreting the aggregate results graph:

- **Returns key information:** Eight IIS did not return information about a reported expired administration in the RSP, three IIS did not return information about an expired administration and a partially administered dose in the RSP, and one IIS did not accept the expired vaccination VXU and did not return information about a partially administered dose in the RSP.
- **Consolidated History:** Six IIS did not return information about the updated CVX code that was sent in the RSP.

Summary of Progress

This remeasurement demonstrated progress in the following areas:



- **Increase in "Meets" outcomes:** Since establishing baseline measurements in 2020 Q2, overall data quality across all measured areas has demonstrated significant and sustained improvement. The overall "Meet" rate increased from a baseline of 68.8% in 2020 Q2 to 93.6% in 2026 Q3. This ongoing trajectory reflects system-wide gains in data accuracy, standard adoption, and operational compliance over time.

Questions and/or Comments

Please direct questions and/or comments via AIRA's Technical Assistance Request form.

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Appendix A: Report Limitations and General Recommendations

Report Limitations

- Some tests may not be able to leverage the ACK while others may not be able to leverage the RSP due to measure design and requirements.
- Analyzing the RSP will be used as a second method to determine success but may also lead to an occasional false positive.
    - This approach was preferred over not analyzing the RSP, which could lead to a larger set of false negatives as well as only one possible way to pass a test.
- IIS who meet a measure through their ACK message do not have their RSP analyzed.
    - The ACK message is used as evidence of detecting poorly submitted data. No further assessment is performed to verify how that poor data is stored and/or returned via query.
- The IIS does not need to have perfect ACK or RSP conformance for this content area.
    - HL7 conformance is measured in the Submission/Acknowledgment and Query/Response content areas. However, the IIS must populate key fields appropriately for them to be analyzed.
        - For example, ERR-2 is the error location where the error occurred in the VXU message. The IIS must populate this field properly. The testing program will not "look" in other ACK segments or fields to derive or imply the data-quality error was detected.
- The error severity found in ERR-4 (i.e., I, W, or E) will not be considered. Any severity is acceptable per local IIS business rules.

General Recommendations

1. Continued education and direction
    a. Both are needed on ACK messaging to ensure IIS are implementing standards consistently across all systems. The ACK is becoming the face of the IIS and is the only way to determine in an automated and timely fashion if the submitted data were accepted by the IIS. Positive movement is being seen by select IIS, but more work is needed to successfully communicate with certified electronic health records (EHRs) in a standardized way.
2. Standard alignment among partners
    a. Operationally, IIS should coordinate with their interface partners to jointly align with standards while, whenever possible, not disabling existing interfaces. It is important to communicate to partners that modifications may

demand short-term work but yield long-term gains in faster and easier interoperability and interface development.