AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

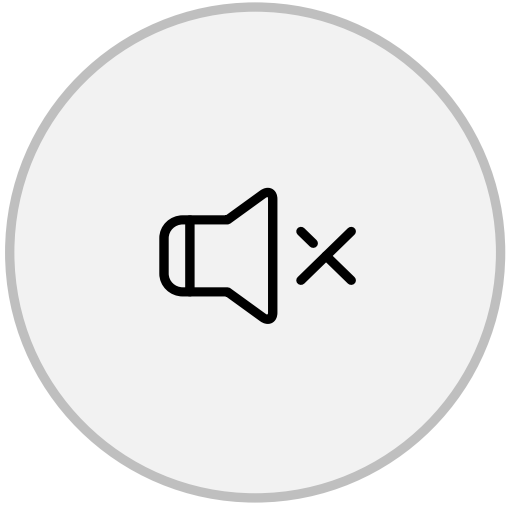
MEASUREMENT & IMPROVEMENT

Town Hall on Basic and Complete Validation for Data Quality Incoming/Ongoing

July 15, 2021

3:00pm-4:00pm ET

Welcome

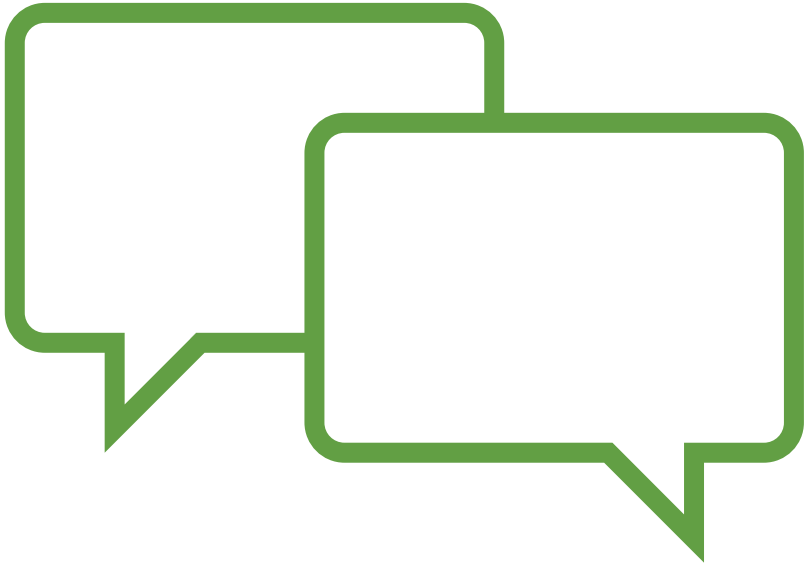


All phone lines
are muted

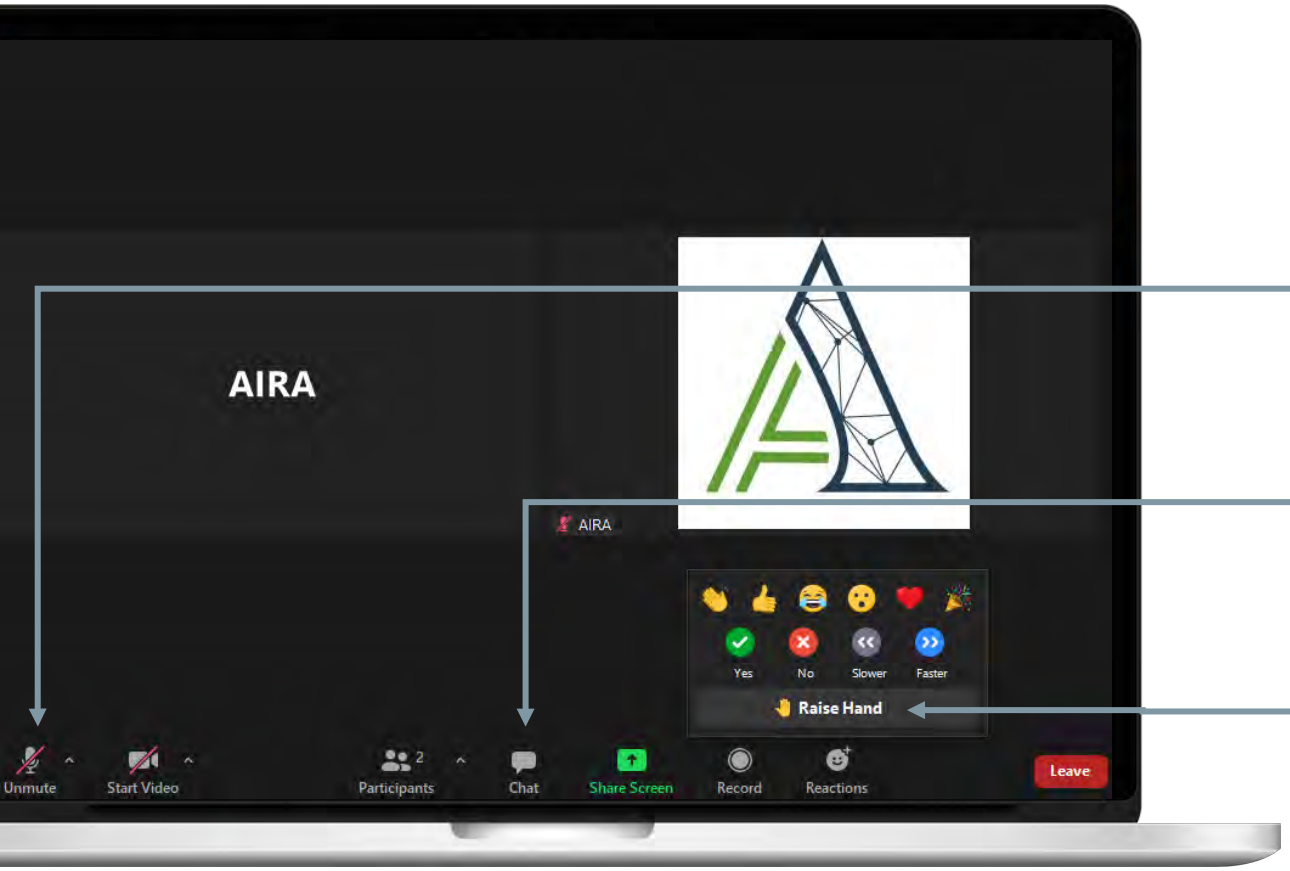
This meeting is being recorded
and will be posted on the
AIRA repository

Technical Support

If you experience any technical issues during the meeting, please contact **Rebecca Sandtveit** via direct message in the Chat.



Questions



How do I ask a question?

There will be time allotted for Q&A following each of the updates.

Select the unmute icon and ask your question verbally.

Select the chat icon and type your question into the chat box.

Select the reactions icon, select “Raise Hand,” and you will be called on.

Agenda

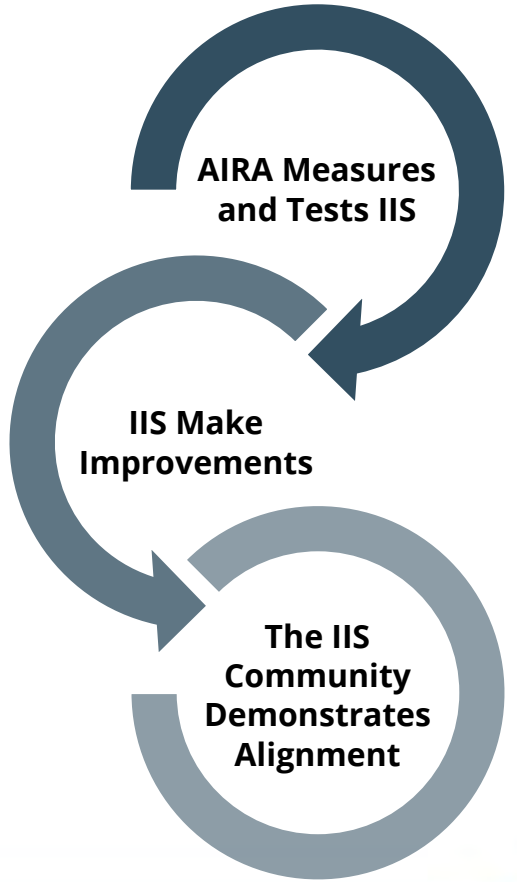
- Welcome – Kevin Snow, Co-Chair, MACAW
- M&I Overview – Kevin Snow, Co-Chair, MACAW
- Data Quality Incoming/Ongoing Validation – Eric Larson, AIRA
- DAR and Provider Participation – Assiatou Diallo, AIRA
- Questions/Discussion/Open Forum – All
- Wrap Up – Kevin Snow, Co-Chair, MACAW

Measurement & Improvement Overview

Kevin Snow, MACAW Co-Chair

Measurement and Improvement Initiative – What is it?

- The IIS Measurement and Improvement (M&I) Initiative began in 2015 in collaboration with CDC as an effort to:
  - Test IIS alignment with standards
  - Provide IIS with information and assistance to improve
- All testing is conducted by AIRA through:
  - Connecting with pre-production systems or analyzing deidentified data



Who is Supporting This Process Along with AIRA?

MACAW

The Measurement for Assessment and Certification Advisory Workgroup, made up of IIS, Immunization Program Managers IIS Vendors and Federal Partners

CDC

Centers for Disease Control and Prevention, our funders, supporters, and collaborators

NIST

National Institute of Standards and Technology, who collaborate with AIRA to develop tooling to support measurement

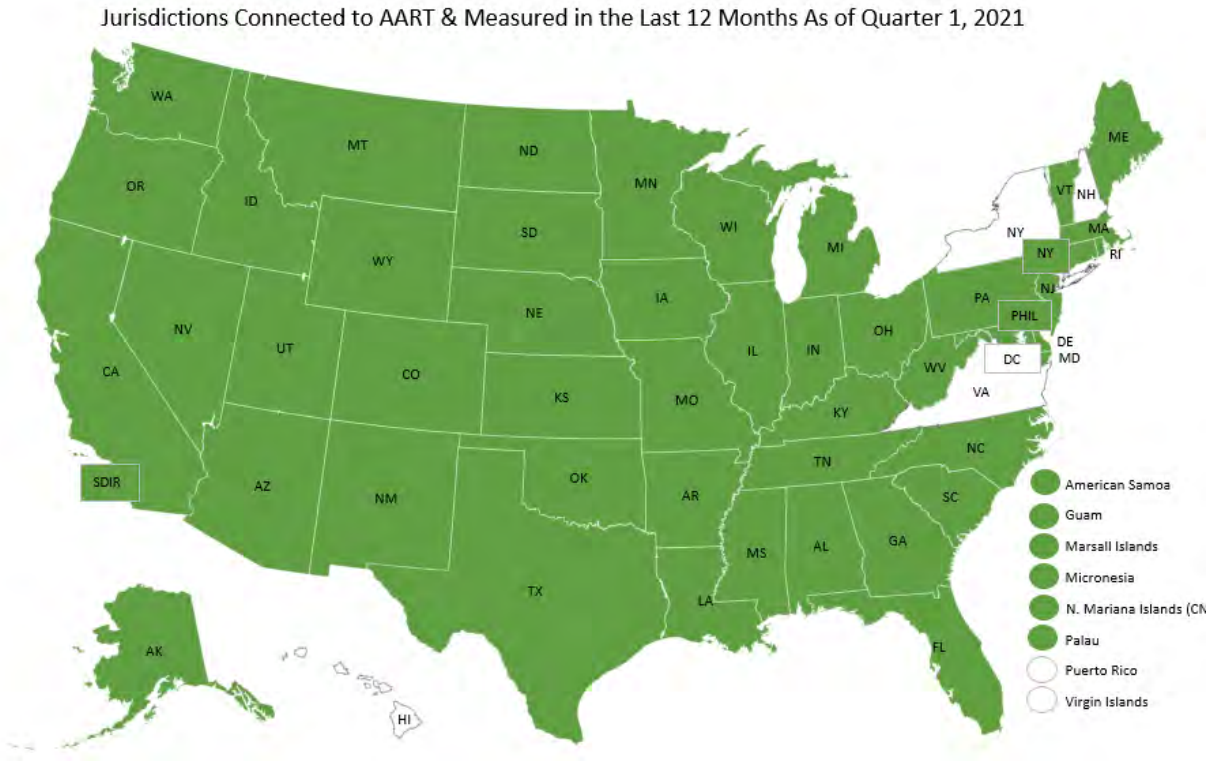
IIS and Imm Programs

IIS and Immunization Programs do the heavy lifting of analysis, planning, funding and implementation

IIS Vendors

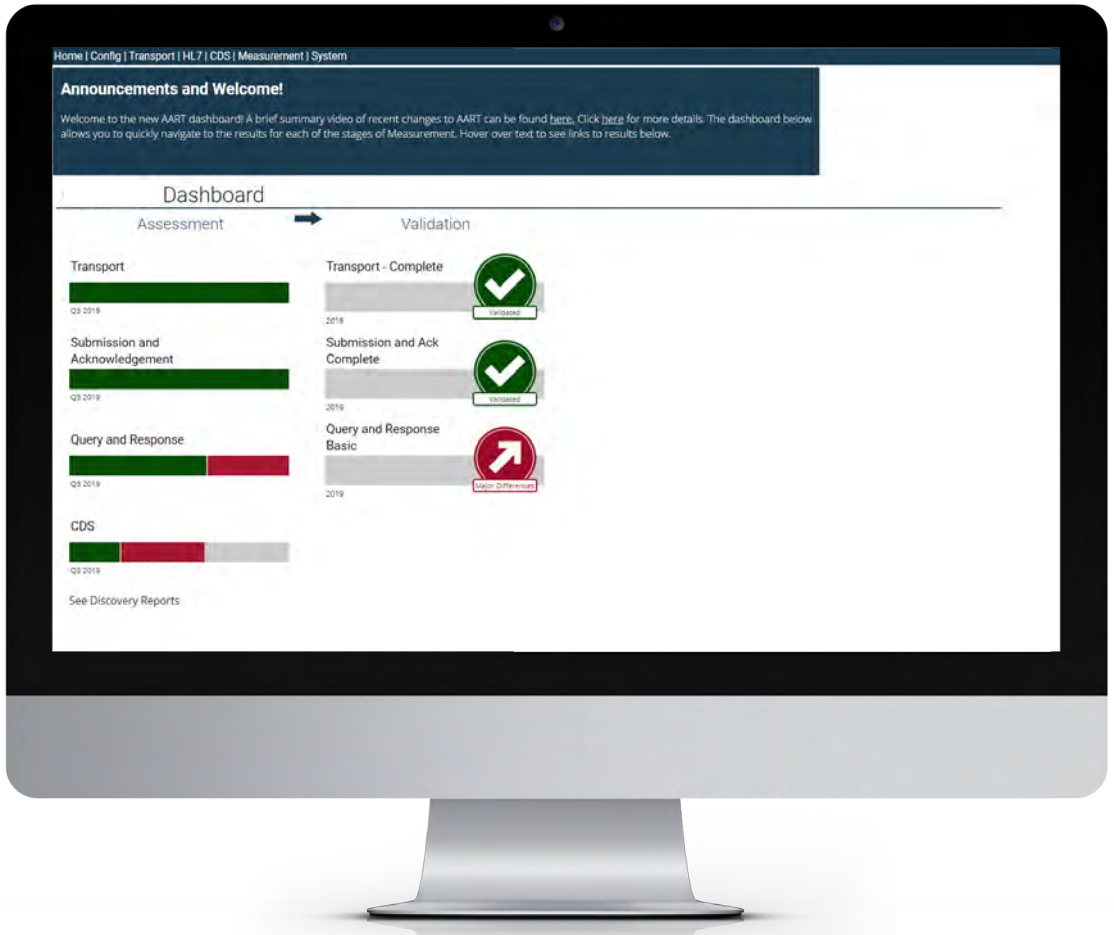
IIS Vendors support IIS and Immunization Programs in planning and implementation

Thank You For Engaging With Us!



- Participation is strong and increasing
- Improvements in standardization across IIS are broadly recognized

The AART Dashboard – Your Gateway To Data



Click to drill down to:

- Measure results and information
- Test case outcomes – expected and actual
- Historical perspectives
- Results from your peers who have shared their data and information

A Quick Reminder of the M&I Measure Development and Approval Process

Measures Created

MACAW Prioritizes, Discusses and Develops Measures

Measures Shared

Measures are Shared with IIS Community for Review and Input

Measures Refined, Updated

Comments are Compiled & Measures Updated

Measures Implemented

Testing Occurs and Results are Available in AART

Content Area

	Pre-Measurement	Testing & Discovery	Assessment	Validation
Transport	✓	✓	✓	
Submission/Acknowledgement	✓	✓	✓	
Query/Response	✓	✓	✓	
CDS	✓	✓	✓	
Data Quality Incoming/Ongoing	✓	✓	✓	
Data at Rest	✓	2021		2022
Provider Participation	2021	2023		
Patient Deduplication	2021			

Data Quality Incoming/Ongoing (DQI) Validation

Eric Larson

DQI Walkthrough

M&I Validation Refresher

Data Quality Incoming/Ongoing (DQI) Refresher

Validation Criteria for DQI

Timeline

Validation Refresher

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Validation 101

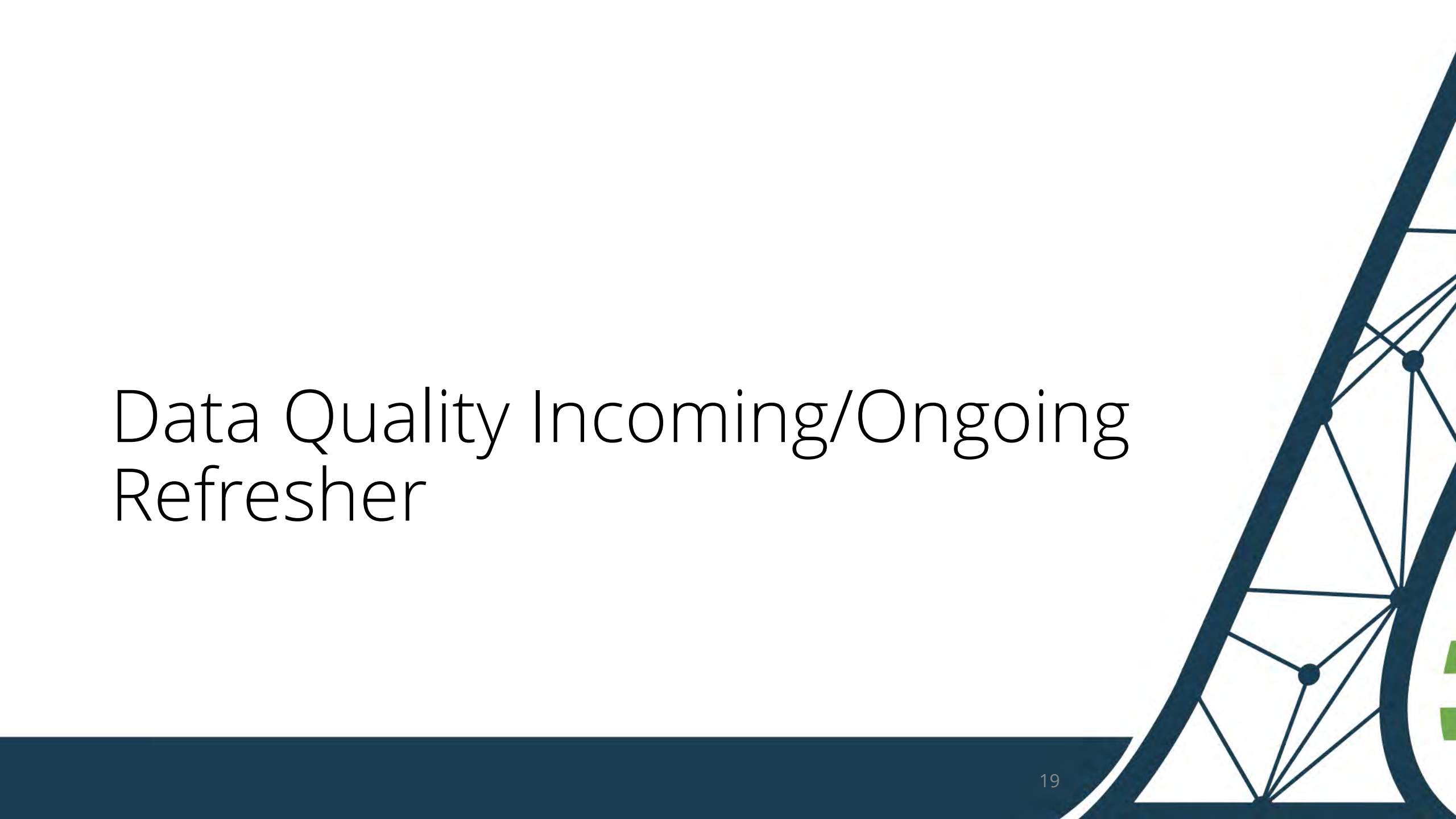
- A summary testing step to acknowledge IIS that are progressing toward or achieving alignment with community-selected measures and tests.
- Some content areas may be broken down into “Basic or Complete” measures.
  - **Basic:** includes essential measures an IIS would be expected to pass to minimally meet a specific content area
  - **Complete:** includes a more comprehensive set of measures for a given area
- Validation is a yearly achievement.

https://repository.immregistries.org/files/resources/5ab93d2cc818c/iis_measurement_and_improvement_-_overview_12-2019_update.pdf

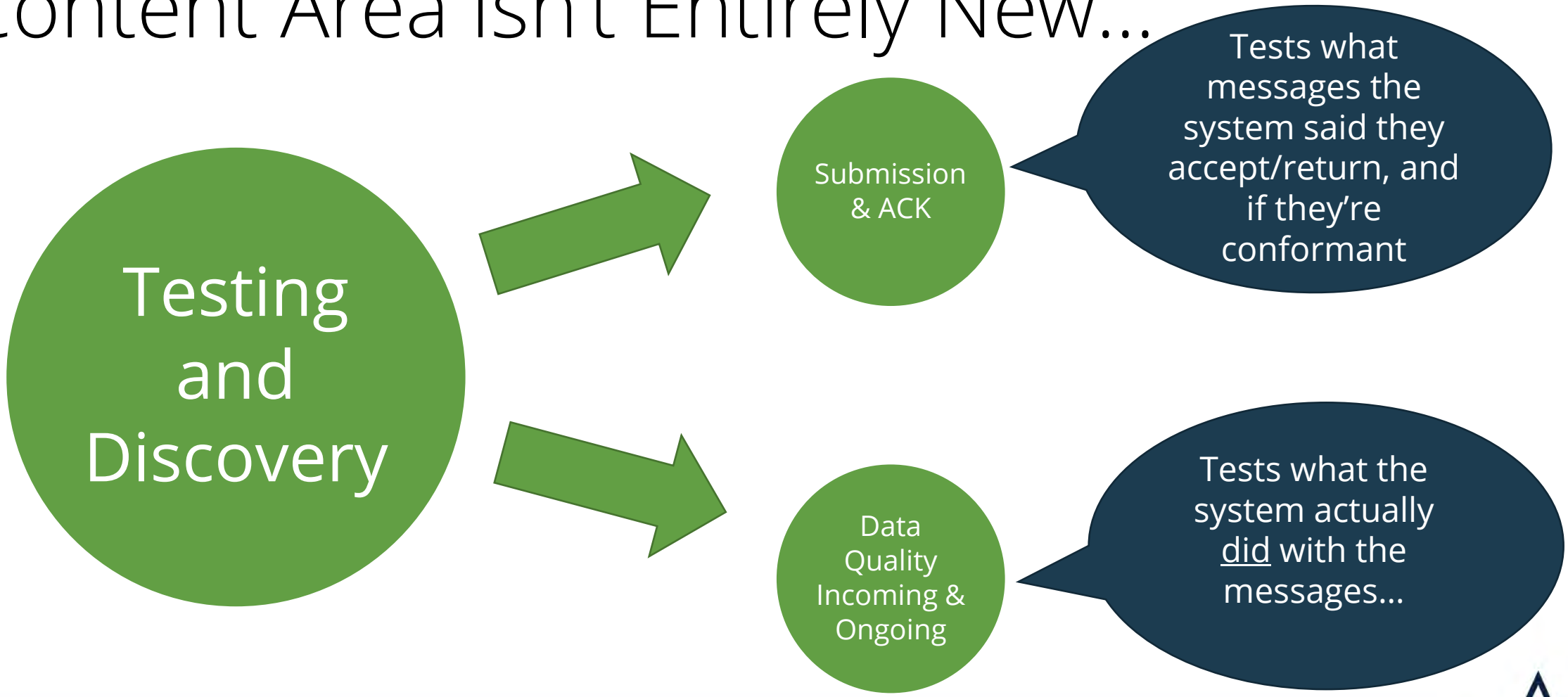
Submission & Acknowledgment Validation (2021)

Assessment Measure	Basic Level	Complete Level
1 - The IIS processes an administered vaccine for a patient.	X	X
2 - The IIS processes a historical vaccine for a patient.	X	X
3 - The IIS processes the submission of a full immunization record for a patient.	X	X
4 - The IIS processes an update to a previously submitted vaccination event.	X	X
5 - The IIS processes a delete to a previously submitted vaccination event.	X	X
6 - The IIS processes a submission where the patient does not give consent (i.e., patient data is protected) to share data.	X	X
7 - The IIS processes a refusal of a vaccination.		X
8 - The IIS processes an adverse event.		X
9 - The IIS processes an observation about a patient which results in a contraindication or immunity to a vaccine preventable disease.		X
10 - The IIS processes messages with only minimally required data elements populated per the HL7 2.5.1, release 1.5 guide and addendum.		X
11 - The IIS processes both complete and incomplete/partially administered doses.		X
12 - The IIS responds to a correctly formatted message with no errors.		X
13 - The IIS responds to a submission that has an error.		X
14 - The IIS responds to a submission with an ACK within 5 seconds or less for 95% of the records		X
15 - The IIS processes an administered vaccine using the preferred NDC format.	X	X
16 - The IIS processes an administered vaccine using alternative NDC formats.		X

Data Quality Incoming/Ongoing Refresher



The Data Quality Incoming and Ongoing Content Area Isn't Entirely New…



Data Quality Incoming/Ongoing Scope

- In Scope
  - The IIS's ability to detect data quality issues on a per message basis
  - The IIS's ability to retain and return vaccination events from submission to query without changing the meaning

- Out of Scope
  - Data quality monitoring of multiple messages (e.g., percentage of records submitted with phone number)
  - Patient or vaccine matching/deduplication algorithms
  - Address hygiene/cleansing

Measure Breakdown

- CDC Endorsed Data Elements
  - 14 Measures for patient demographic data elements
  - 10 Measures for vaccination event data elements

- Additional Aspects of Data Quality
  - 3 Measures to ensure IIS retain and return vaccination events from submission to query without changing the meaning

Data Element Data Quality

Example Measure

- The IIS detects data quality issues with the date of birth

Test Case	Expectation
DOB is missing	IIS detects data quality issue
DOB is in the future	IIS detects data quality issue
DOB is after vaccination date	IIS detects data quality issue
DOB is invalid (e.g., “yesterday”)	IIS detects data quality issue

Measuring Data Element Data Quality

Step 1

- Submit intentionally poor data
- E.g., Missing, Invalid, or Conflicting Data

Step 2

- Submit query for patient

Step 3

- Analyze ACK and/or RSP

Additional Aspects of Data Quality

Example Measure

- The IIS returns critical information about a previously submitted vaccination event.

Test Case	Expectation
Submit vaccination event representing an expired dose was administered.	IIS returns the expired administration which includes the expiration date in the RSP.

Measuring Additional Aspects of Data Quality

Step 1

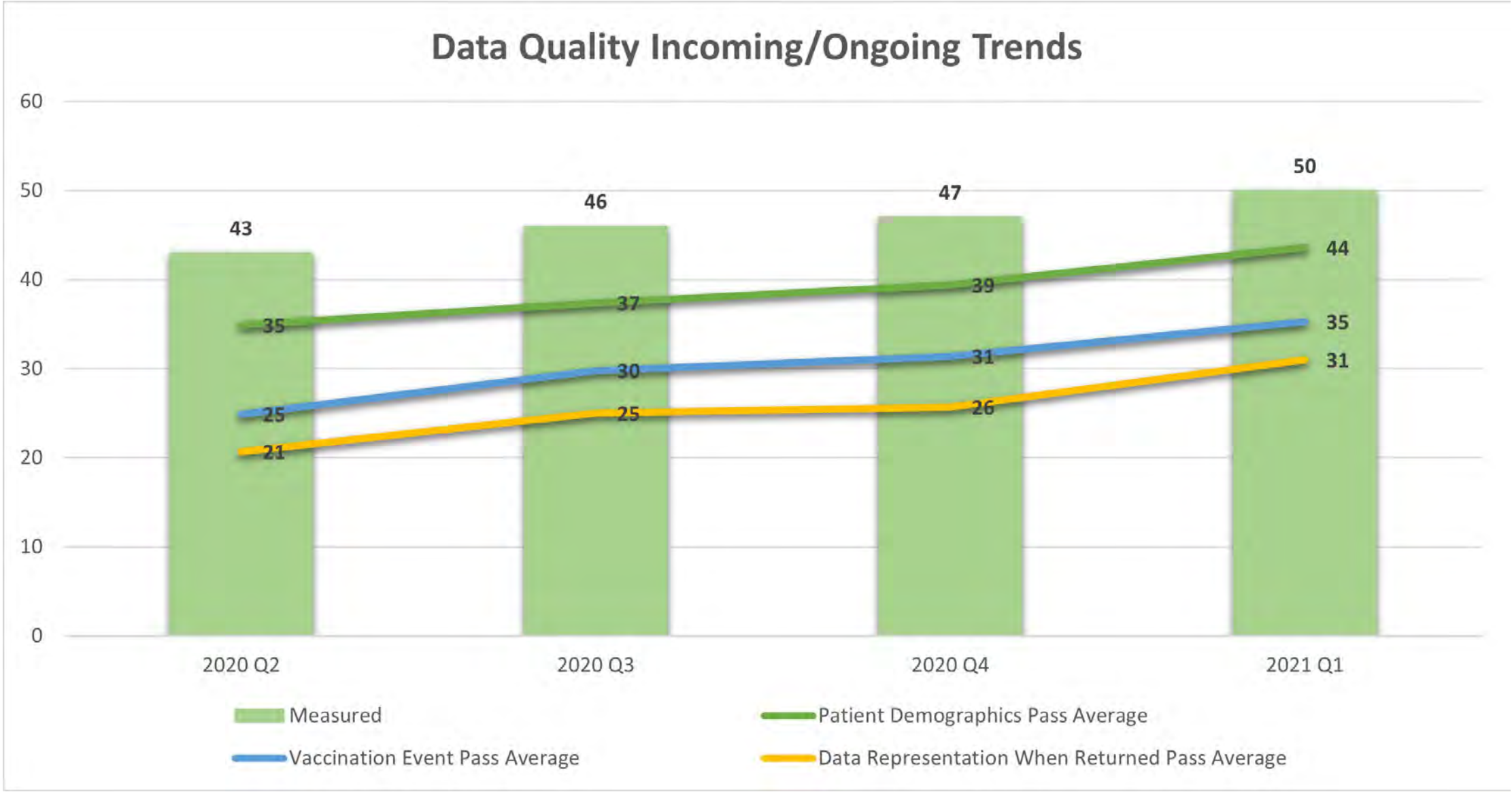
- Submit a vaccination event
- E.g., expired dose, NDC, combination vaccine

Step 2

- Submit query for patient

Step 3

- Analyze RSP to ensure submitted vaccination event is returned


Data Quality Incoming/Ongoing Trends
60
50
40
30
20
10
0
43
46
47
50
35
37
39
44
25
30
31
35
21
25
26
31
2020 Q2
2020 Q3
2020 Q4
2021 Q1
Measured
Patient Demographics Pass Average
Vaccination Event Pass Average
Data Representation When Returned Pass Average

Validation Criteria

Basic and Complete

Patient Measures

Measure IIS detects data quality issue with patient:	Basic	Complete
1) Name: first	X	X
2) Name: last	X	X
3) Date of birth	X	X
4) Gender	X	X
5) Address: State	X	X
6) Address: Country		X
7) Race	X	X
8) Ethnicity	X	X
9) Multiple birth indicator and birth order		X
10) Phone number and phone type		X
11) Responsible person name: first		X
12) Responsible person name: last		X
13) Relationship to patient		X
14) Patient ID and Patient ID type	X	X

Immunization Measures

Measure IIS detects data quality issue with:	Basic	Complete
15) Vaccination administration date	X	X
16) Dose level eligibility		X
17) Contraindications/precautions		X
18) Exemptions/refusals		X
19) Vaccination event type (e.g., Admin/Hist)	X	X
20) Vaccine funding source		X
21) Vaccine product	X	X
22) Vaccine manufacturer name	X	X
23) Vaccine expiration date	X	X
24) Vaccine event ID	X	X

Additional Aspect Measures

Measure	Basic	Complete
25) IIS Maps between coding systems	X	X
26) IIS Returns key information	X	X
27) IIS Returns a consolidated history	X	X

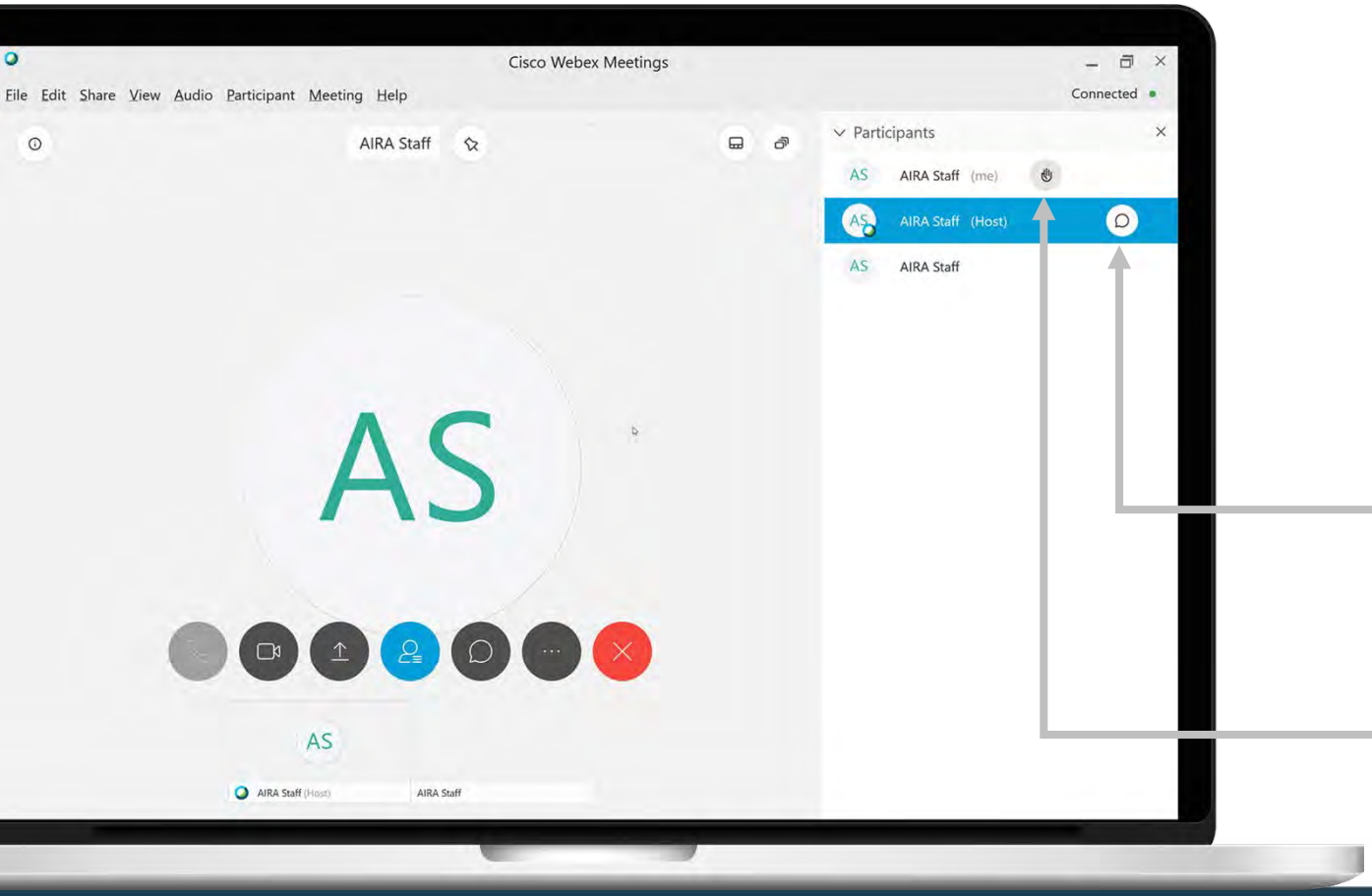
Timeline

- July
  - 12th: Begin comment period
  - 15th: Townhall
  - 29th: End comment period
  - Send comments to
    - Shalena Prude (sprude@immregistries.org)

- August
  - MACAW reconciles community comments

- 2022
  - Begin validation

Questions, Comments, Discussion?



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Data At Rest

Assiatou Diallo

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Patient Deduplication	2021			

Data at Rest is the measurement of data that has been accepted into the IIS production environment.

What is measured?

Cohort of 0 to 2-year-olds in your IIS.

What is measured?

Completeness Indicators

Validity Indicators

Timeliness Indicators

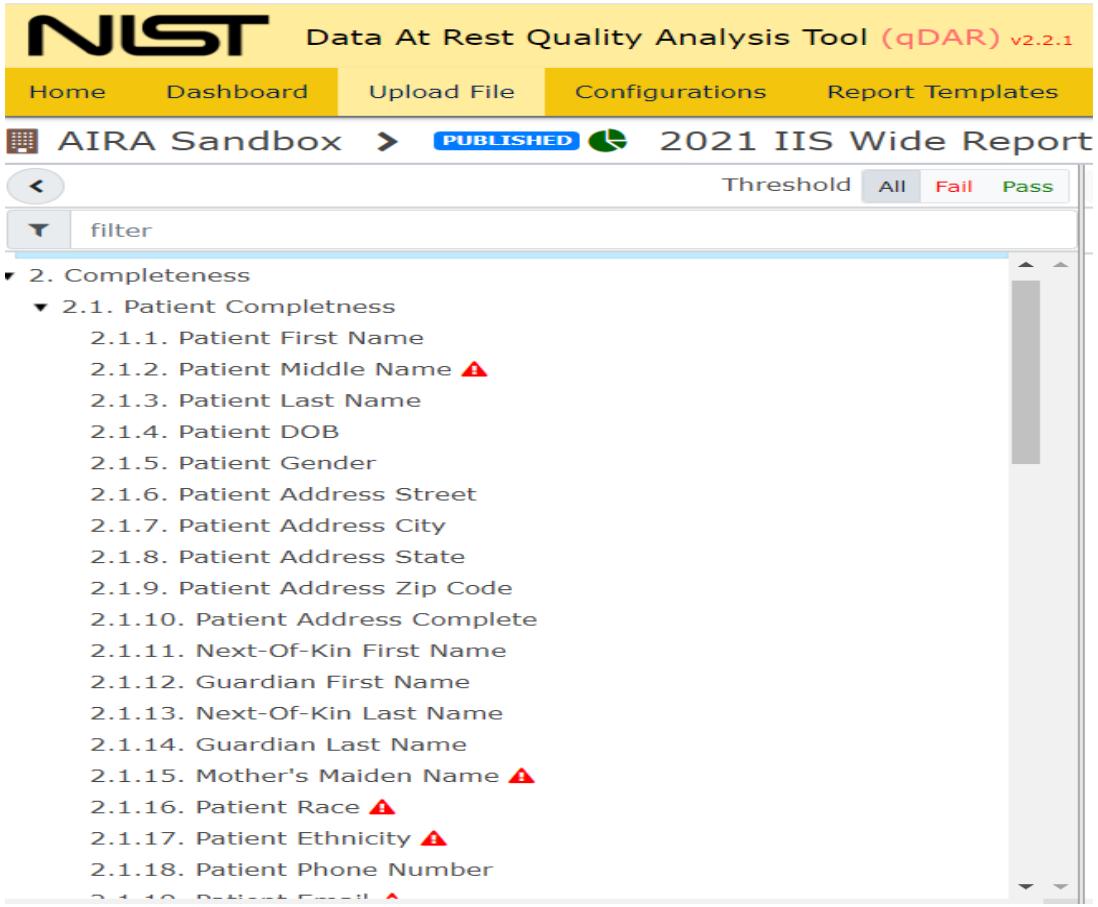
How is this information presented? – AART

Results Summary

Measure	Measure Title	Meets	Does Not Meet	Data Unavailable	No Threshold
1	Completeness Indicators	12	5	9	0
2	Validity Indicators	3	0	19	1
3	Timeliness Indicators	2	2	5	0

Test Case Results				
Test Case	**Test Case Title**	**Result**	**Value**	**Threshold**
1.1	Patient First Name	Meets	0%	Lower than 1%
1.2	Patient Middle Name	Does Not Meet	34%	Lower than 25%
1.3	Patient Last Name	Meets	0%	Lower than 1%
1.4	Patient DOB	Meets	0%	Lower than 1%
1.5	Patient Gender	Meets	0%	Lower than 1%
1.6	Patient Address Street	Meets	0%	Lower than 15%
1.7	Patient Address City	Meets	0%	Lower than 15%
1.8	Patient Address State	Meets	0%	Lower than 15%
1.9	Patient Address Zip Code	Meets	0%	Lower than 15%
1.10	Patient Address Complete	Meets	0%	Lower than 15%
1.11	Next-Of-Kin First Name	Meets	0%	Lower than 10%
1.12	Guardian First Name	Data Unavailable	0%	

How is this information presented? – NIST



Two views available for your data!

IIS-Wide Report

- Provides a view of the overall picture of the completeness, validity, and timeliness of the IIS data.

Provider Breakdown Report

- Stratifies the entire cohort of data by provider.

How does it work?

Extract

- IIS staff will pull a pre-defined cohort of patients from their production database into a flat file.

Transform

- IIS staff will run an AIRA-provided tool on their extracted data. This tool will assess for data quality indicators. The output of this tooling will be a set of aggregate detections void of identifiable patient data.

Load

- The aggregate file generated during the Transform step will be uploaded to AIRA for analysis.

Analyze

- AIRA will analyze and produce individualized reports for the IIS to review and use to improve their data quality.

2020 DAR Pilots

- Analyzed data from 7 jurisdictions.
- Compiling the extract took the most amount of time to participate ~ 18 to about 40 hours.
  - **We have sample scripts!**
- Provider breakdown report provided actionable information.
  - **Grouping functionality allows for additional views!**

DAR Testing and Discovery Next Steps

Summer 2021

- Technical improvements
- Education and communication

Fall 2021

- Enroll jurisdictions
- Measure data and generate reports

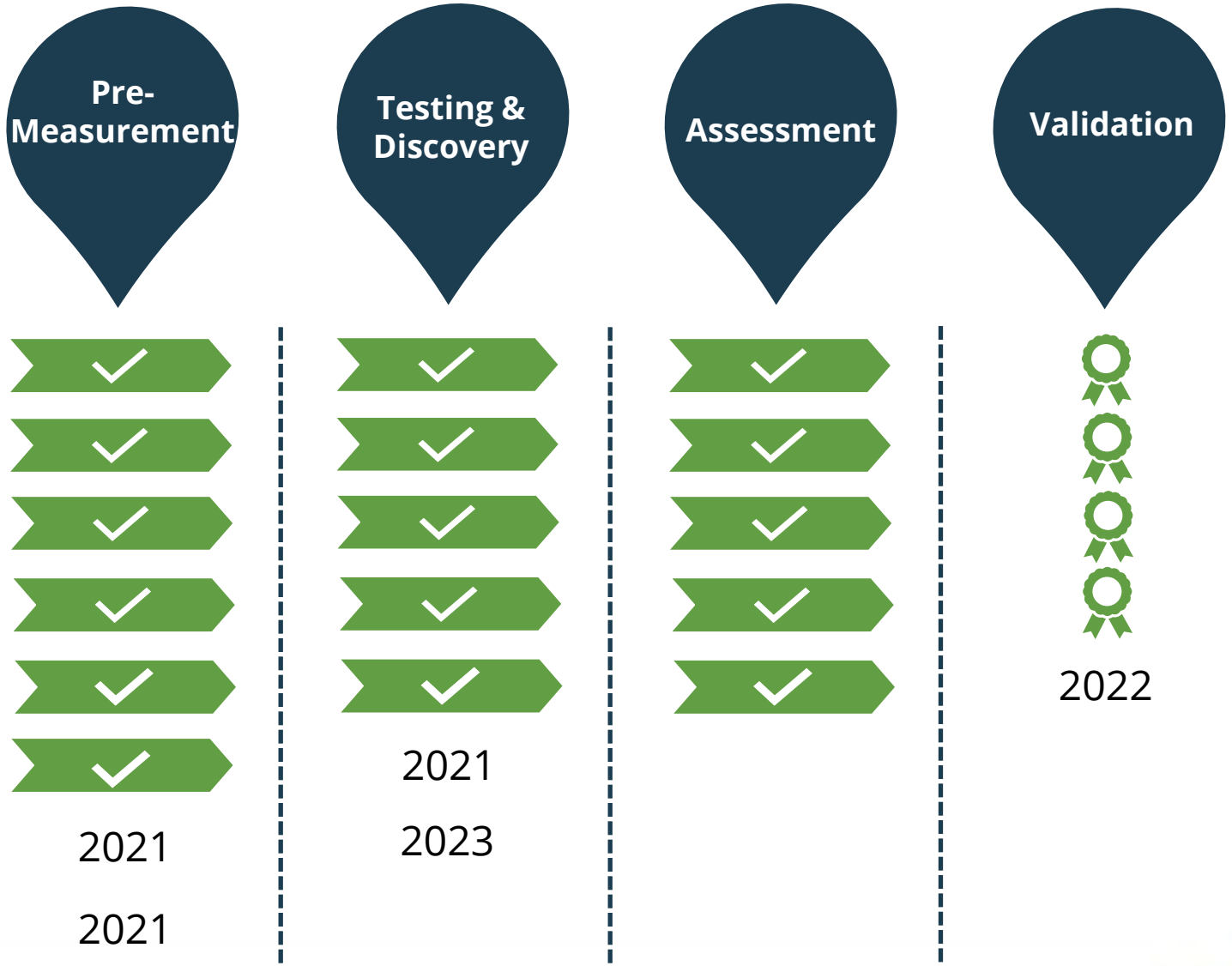
Interested in measuring your data?

Email Assi at adiallo@immregistries.org to get started.

Provider Participation

Assiatou Diallo

Content Area



Provider Participation

Assessing completeness for enrollment and submission of provider organizations within a jurisdiction

What will be measured?

In Scope

- The completeness of enrollment of provider sites in a jurisdiction
- The submission of data to the IIS from provider sites in a jurisdiction

Out of Scope

- Evaluation of patient saturation in jurisdictional IIS.
- Evaluation of vaccination saturation in jurisdictional IIS.

Provider Participation Next Steps

2021- PREPARE PILOT

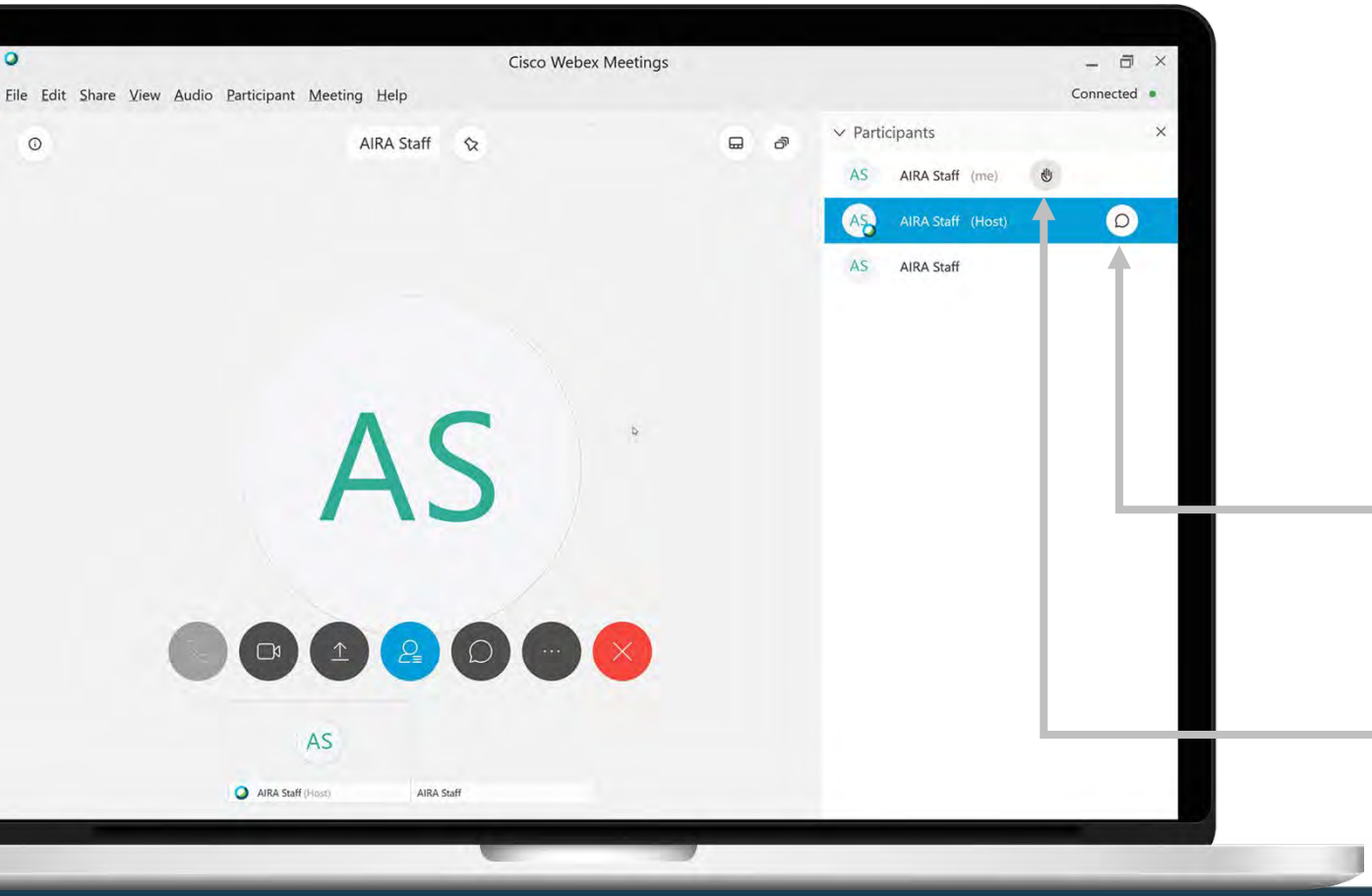
2022 – CONDUCT PILOT

2023 –
TESTING AND DISCOVERY

Questions/Discussion
Open Forum

All

Questions, Comments, Discussion?



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Wrap Up/Next Steps

Kevin Snow

Thank you for joining us, for your input, and for your continued improvement work!

Kevin Snow: ksnow@envisiontechnology.com
Eric Larson: elarson@immregistries.org
Assiatou Diallo: adiallo@immregistries.org