AIRA Welcomes You To

Data Validation – For the IIS onboarding Process Webinar

ALL PHONE LINES ARE IN LISTEN ONLY MODE

HOW DO I ASK A QUESTION?

- VIA WEBEX: TYPE YOUR QUESTION INTO THE Q&A BOX ON THE WEBEX TOOLBAR AND SEND TO PANELISTS

- QUESTIONS WILL BE NOTED AND ANSWERED AFTER THE PRESENTATION, TO UNMUTE YOUR LINE PRESS *6

THIS WEBEX PRESENTATION IS BEING RECORDED AND WILL BE POSTED ON THE AIRA WEBSITE AT: HTTP://WWW.IMMREGISTRIES.ORG/EVENTS/2017/02/22/OVERVIEW-OF-THE-DATA-VALIDATION-GUIDE
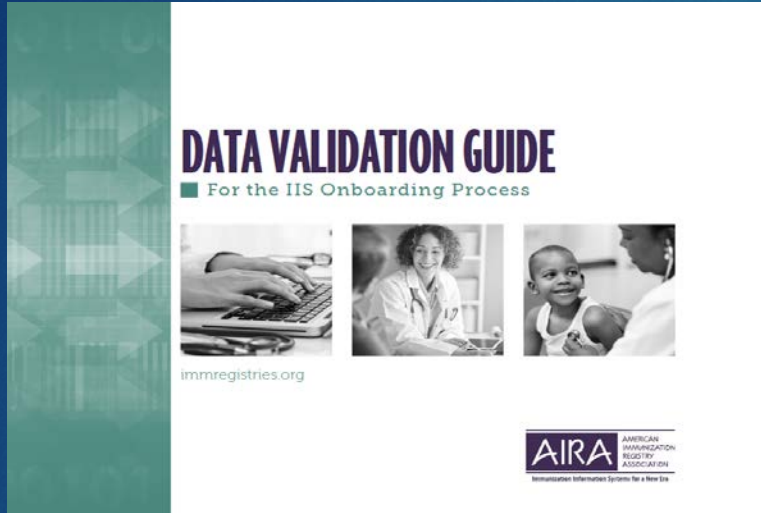
AIRA Data Validation Guide Webinar

FEBRUARY 22, 2017

4-5 PM EST

Introductions

- Today's Speakers:
  - Alison Chi – AIRA, Program Director
  - Monica Hemming – Minnesota, MIIC Data Quality Analyst
  - Vanessa Willis – Colorado, Data Quality Coordinator
  - Tracy Little – Oregon, ALERT IIS Interoperability Lead/ Data Exchange Analyst

Introduction to Project

ALISON CHI

Project Overview

- Purpose: Provide guidelines for IIS to ensure data quality during the onboarding process
  - Focuses on one aspect of onboarding: Data validation process
  - Data validation process: Assesses new sources of data for accuracy and completeness in a designated pre-production environment before allowing data into the IIS production system

Audience

IIS Managers & IIS staff

Information technology staff

CDC/NCIRD

IIS & EHR Vendors

Imm Program Managers

National organizations supporting IIS, Partners & Policy Makers

Methodology

- AIRA assembled a workgroup April – August 2016:
  - Subject matter experts from IIS community
  - CDC partners
  - Public health consultant and AIRA staff

Workgroup SMEs

- AIRA Onboarding Data Validation Workgroup:
  - **Laura Pabst**, IISSB, CDC Deputy Branch Chief
  - **Loren Rodgers**, IISSB, Acting CDC Evaluation Team Lead
  - **LaTreace Harris**, IISSB, CDC Evaluation Team
  - **Monica Hemming**, Minnesota, MIIC Data Quality Analyst
  - **Vanessa Willis**, Colorado, Data Quality Coordinator
  - **Tracy Little**, Oregon, ALERT IIS Interoperability Lead/Data Exchange Analyst
  - **Scott Benedict**, Nebraska, Data Exchange, Quality Coordinator
  - **Kimberly Lay**, Massachusetts, Data Quality Analyst and Trainer

Introduction to Guide

MONICA HEMMING

Scope of Guide

- Overview of how the guide is organized
- What's not included
- Onboarding overview and steps

Organization of Guide
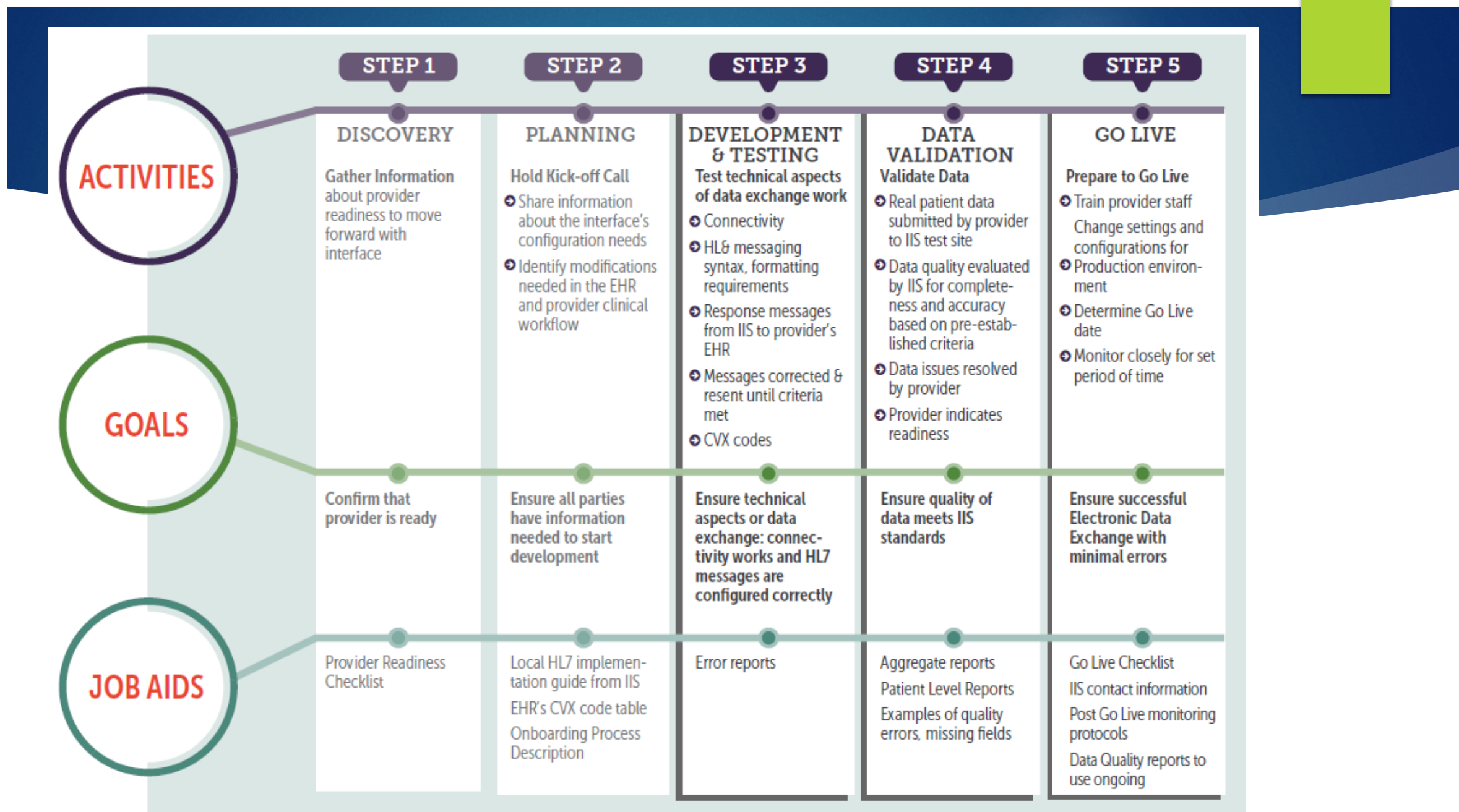
- ▶ Onboarding process is divided into sections
- ▶ Each section includes the process descriptions
- ▶ Process documents and examples are included in the appendices

What's Not Included

▶ Ongoing monitoring of incoming data and existing data

▶ How to engage with provider organizations and health information exchanges

▶ Query/response messaging

▶ Structure and format of HL7 messages

Onboarding Overview and Steps

Step 1
- Discovery or Preparation

Step 2
- Planning

Step 3
- Development and Testing

Step 4
- Data Validation

Step 5
- Go Live

	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
	DISCOVERY	**PLANNING**	**DEVELOPMENT & TESTING**	**DATA VALIDATION**	**GO LIVE**
ACTIVITIES	**Gather Information** about provider readiness to move forward with interface	**Hold Kick-off Call** ⊃ Share information about the interface's configuration needs ⊃ Identify modifications needed in the EHR and provider clinical workflow	**Test technical aspects of data exchange work** ⊃ Connectivity ⊃ HL& messaging syntax, formatting requirements ⊃ Response messages from IIS to provider's EHR ⊃ Messages corrected & resent until criteria met ⊃ CVX codes	**Validate Data** ⊃ Real patient data submitted by provider to IIS test site ⊃ Data quality evaluated by IIS for completeness and accuracy based on pre-established criteria ⊃ Data issues resolved by provider ⊃ Provider indicates readiness	**Prepare to Go Live** ⊃ Train provider staff Change settings and configurations for ⊃ Production environment ⊃ Determine Go Live date ⊃ Monitor closely for set period of time
GOALS	Confirm that provider is ready	Ensure all parties have information needed to start development	Ensure technical aspects or data exchange: connectivity works and HL7 messages are configured correctly	Ensure quality of data meets IIS standards	Ensure successful Electronic Data Exchange with minimal errors
JOB AIDS	Provider Readiness Checklist	Local HL7 implementation guide from IIS EHR's CVX code table Onboarding Process Description	Error reports	Aggregate reports Patient Level Reports Examples of quality errors, missing fields	Go Live Checklist IIS contact information Post Go Live monitoring protocols Data Quality reports to use ongoing

Data Validation Process

VANESSA WILLIS

Data Validation Process

- Overview
  - Source of data
  - Determining sample data set for testing
  - Data quality
    - Accuracy
    - Completeness
  - Business Rules
    - Accuracy
  - Completeness Recommendations
  - Thresholds

Source of Data for Validation

Who	What	Where
• Each provider organization • Separate data validation conducted	• Real patient data	• Pre-production data should be staged for review

Determining Sample Data Set for Review

▶ What data should be included:

- ▶ Data that represent the provider organization's vaccination practice
- ▶ Full age range accepted by the IIS
- ▶ Historical as well as administered vaccine doses should be sent for validation

▶ How much data should be included:

- ▶ 250 - 1000 HL7 messages
  - ▶ Needed for a thorough testing process
- ▶ 50-100 patient records with vaccinations
  - ▶ Can provide a good idea of data quality

Components of Data Quality

- Accuracy
- Timeliness
- Completeness

Business Rules for Accuracy Validation

- MIROW: provides best practices for incoming data quality that can be used by IIS to develop rules, protocols, and procedures

- Cross-checks can be used to examine conflicts within a specific vaccine event, such as:

  - Vaccine administration date preceding birth date

  - Submission date preceding administration date

  - Consistency of manufacturer and CVX code within an event

- Recommendation: IIS should review the Principles and Business Rules found in the 2 MIROW data quality guides and determine which are most valuable for their own unique IIS needs and available resources

Business Rules for Accuracy Validation

▶ Table 1 lists a subset of the 2008 and 2013 business rules, which were prioritized in the original MIROW documents, and reviewed, prioritized, and slightly modified by this guide's workgroup

Data Validation Check Description	Source of Rule	Rationale	Comments
HIGH PRIORITY			
Vaccination Encounter Date must not be before Patient Date of Birth.	BR 101	Indicates major data quality issue.	**Possible interpretations**: • Either the Vaccination Encounter Date or Patient Date of Birth is incorrect (or both). • Patient identification is incorrect (e.g., could be a sibling).
Vaccination Encounter Date must be less than or equal to (before or the same as) the Submission Date.	BR 103	Indicates major data quality issue.	**Possible interpretations**: • Vaccination Encounter Date is incorrect and EHR allows recording of encounter date in the future.
Every administered vaccine should be recorded as a single Vaccination Event (e.g., combo vaccine should be recorded as 1 event rather than separate events for each component).	BR 107	Indicates data quality or clinical quality issues. Is a requirement for VFC accountability – affects inventory if using IIS for tracking.	**Possible interpretations**: • Data entry error. • Provider organization's EHR may not be updated with the correct combo vaccine choice. **Example**: Pentacel®, which contains DTaP, IPV, and Hib, should be submitted as one CVX code (one Vaccination Event) rather than one Vaccination Event for DTaP, one for IPV, and one for Hib (three Vaccination Events).
Vaccination Encounter Date should not be the same as the Patient Date of Birth unless it is on the list of vaccines recommended for administration on the date of birth, e.g., HepB.	BR 114	Indicates major data quality issue with date of birth, vaccine administration date, or vaccine code, or clinical practice issue.	**Note**: At this time, only HepB is recommended before 1 month of age. **Possible interpretations**: • Clinical practice error. • Professional decision which differs from common practice. • Date entry error with Vaccination Encounter Date, or Date of Birth. • Provider organization's EHR may not support data validation for these fields.

Completeness Recommendations

- Completeness at the field level
  - Complete demographic and immunization records ensures the information needed to match patient records in the IIS is available
  - Ensures adequate data is available in the IIS for clinical -decision making by providers to determine which vaccines a patient may need

- Business rules defined in the 2008 and 2013 MIROW guides describe some of the individual fields/data elements that are deemed necessary for a high quality record submission

- Most IIS will start with those fields most important to achieving their data quality priorities

Completeness

▶ Completeness demonstrates the percent of submitted records that contain data in various data fields/elements. Completeness percentage is calculated by dividing the number of data fields/elements present (per data field/element) by the total number of demographic records or vaccination events (depending on data field/element) submitted.

Table 2. Recommendations for Completeness Measure Thresholds[17]

Field/Element	Recommended Completeness Level[18]	Location in HL7 Messaging	Designation Usage in HL7	Source of Rule (other than HL7)	Rationale for Requiring High Completeness Level
Medical Record Number (AKA Client ID)	100%	PID-3	Required (R)	Workgroup	• Unique identifier of patient at provider • organization level. • Deduplication – matching to existing patient. • May be leveraged by provider's EHR in query messaging.
Patient Name (Last, First)	100%	PID-5	Required (R)	BR 105	• Component of minimum/mandatory dataset – see details in Appendix D-4.
Mother's Maiden Name	90% (if the patient is a minor)	PID-6	Required but can be empty (RE)	Workgroup	• Deduplication for childhood population. • 90% is gold standard level. Though currently difficult to achieve this mark, highly recommended as a goal because of its deduplication value.
Patient Date of Birth	100%	PID-7	Required (R)	BR 105	• Component of minimum/mandatory dataset – see details in Appendix D-4.
Patient Gender	95-100%	PID-8	Required (R)	Workgroup	• Deduplication. • Possibility of future gender-specific vaccine recommendations. **Note:** This changed from RE to R in the HL7 Addendum.

Thresholds

- The metrics and thresholds will vary
  - By provider organization type
  - Capabilities of the EHR
  - IIS-specific needs
  - Other circumstances and local needs
- IIS have made their own determinations of the required fields that are critical enough to cause automatic rejection of a message

Thresholds

- Determining the threshold of data completeness for non-required fields

- Rule of thumb: if an EHR captures a data element that has a corresponding field in the IIS, the IIS should encourage the provider organization to submit it, regardless of its priority

Implementation Considerations

TRACY LITTLE

Aggregate Data Review

- Aggregate data analysis allows us to
  - Identify error trends and patterns
  - Assist in correction of systemic problems
- What to look for
  - Count of immunizations by age, vaccine type
  - Test for completeness of data submitted
  - Match CVX to MVX
  - Validity of vaccine type; 'unspecified' vaccines only sent for historical doses
  - Presence of vaccine eligibility and funding source
- IIS reports
- Extract data, use tools such as SAS, SQL

Individual Patient Record Review

▶ If time/resources allow, comparing IIS data to medical records can reveal data quality issues

▶ Some IIS will review a random selection of patients; engaging the clinic staff in this review is beneficial

  ▶ Clinic staff often identify issues not found in aggregate review or apparent to IIS staff

  ▶ Prepares clinic staff for responsibility of owning interface monitoring and data quality

Provider Organization Profiles

▶ Generate profiles based on an average of data across providers of same type (peds, OB-GYN, internal med etc.)

▶ Develop distributions based on an 'ideal' vaccination pattern, up-to-date records

▶ Set up vaccine distribution profile, for testing with VFC provider organizations

▶ These profiles can be used to benchmark test data against.

Helpful Hints

- Start incrementally, establish a base level of validation and add as capacity grows

- Adhere as closely as possible to national specifications and data exchange standards

- Have at least one team member fluent in HL7 messaging

- Provide a local specification guide, identifying any variations or local rules

- Have a clear policy statement on data quality requirements, provide a data quality best practice guide to EHR vendors and provider organizations

- Meet the national or vendor-accepted standard for transport

- Document internal data validation processes

- Automate data quality reports in the pre-production environment to save IIS time

More Helpful Hints

▶ Provide reports to provider organizations throughout the testing process

▶ Engage clinic staff to help with review of data and patient records

▶ Make data quality reports available to provider organizations

▶ Understand the impact that programmatic requirements may have on submission of complete data

▶ Be aware of EHR capabilities, balance with expectations (and requirements)

Hints & Tips

Next Steps

ALISON CHI

Next Steps

Phase 1
- Focused on one aspect of onboarding – the data validation process

Phase 2
- Will focus on ongoing incoming data monitoring and evaluation
- Community Review planned for March 2017

Phase 3
- To focus on monitoring and evaluation of data at rest

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Q & A

THANK YOU!