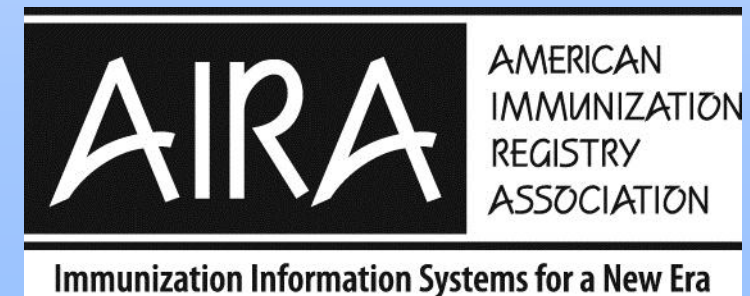# MIROW Decrementing Inventory via Electronic Data Exchange
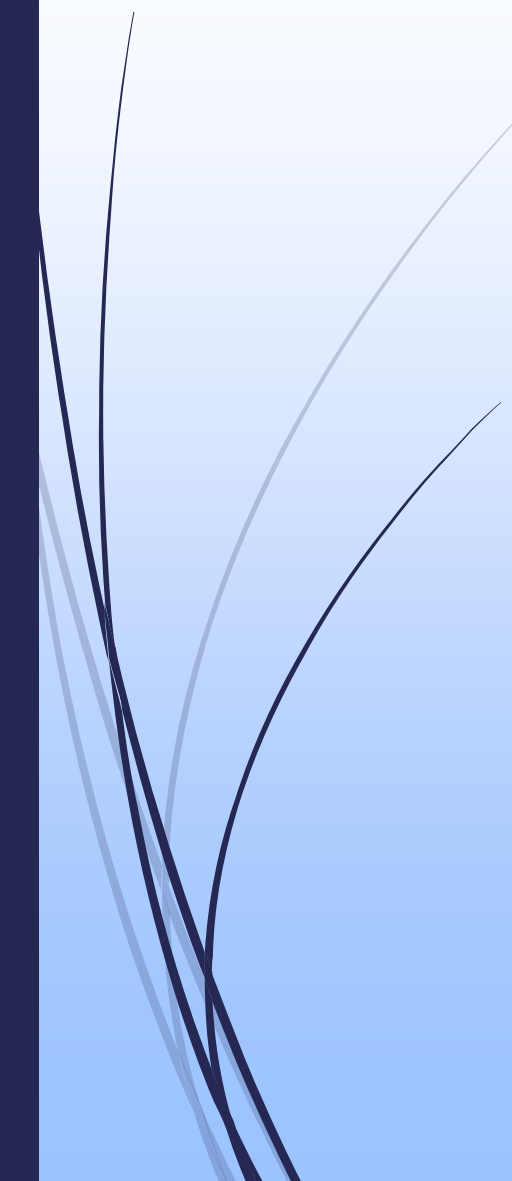
AIRA National Conference

April 6, 2016 – Seattle, WA

Overview

- Introduction to MIROW
- Overview of DI-v-EDE
- Implementation Considerations
  - User Perspective

Introduction to MIROW

- The <u>M</u>odeling of <u>I</u>mmunization <u>R</u>egistry <u>O</u>perations <u>W</u>orkgroup
  - Formed in 2005
  - AIRA in partnership IISSB at the CDC

- Objective
  - Develop and promote IIS Best Practices

- Goal
  - Provide the basis and support for uniform alignment of IIS processes

Inconsistency among IIS negatively affects overall data quality, comparability, operational cost, and usefulness of information.

MIROW Steering Committee

- Oversight from the MIROW Steering Committee
  - Warren Williams – Co-Chair
  - Elaine Lowery - Co-Chair
  - Brandy Altstadter, STC
  - Amanda Harris, NV
  - David Lyalin, CDC
  - Megan Meldrum, NY
  - Elizabeth Parilla, MN
  - Katie Reed, HP
  - Kim Tichy, IA
  - Bhavani Sathya, NJ

- AIRA Staff
 - Rebecca Coyle
  - Nichole Lambrecht

How MIROW Works

- Business analysis and development process support provided by IISSB/CDC and AIRA public health consultants

- Organizational support for in-person meetings from AIRA staff

- Facilitation support for in-person meetings provided by external consultants

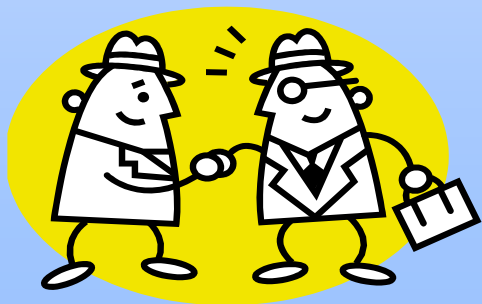- Volunteering subject matter experts from the IIS community

The MIROW Process

Brainstorming
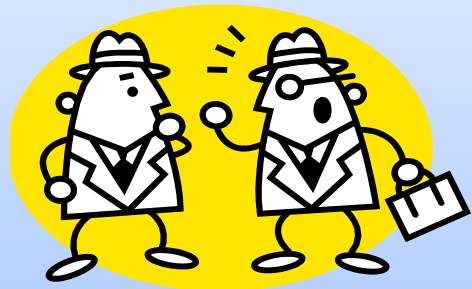
Discussing

Reaching Consensus

Consensus =
"*I can live with that and support it*"

The MIROW Process
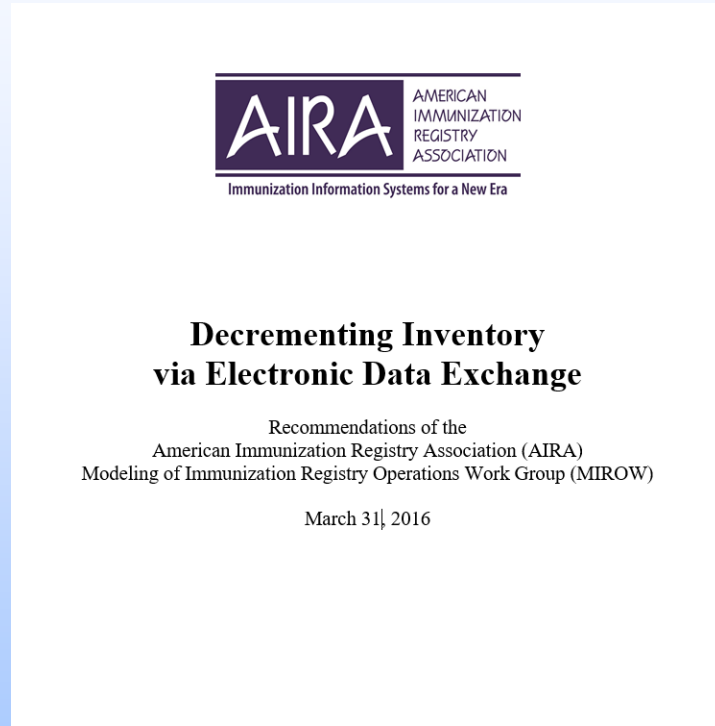
Past Topics

- Management of Patient Active/Inactive Status in IIS

- Data Quality Assurance – Selected Aspects

- Inventory Management

- Patient Eligibility for the VFC Program and Grantee Immunization Programs

- Reminder/Recall

- Incoming Data Quality Assurance – Incoming Data

- Vaccination Level Deduplication

- IIS-Vaccine Adverse Event Reporting System Collaboration (pilot project)

MIROW Documents

Complete Guide – 150 pages

AIRA AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

Immunization Information Systems for a New Era

Decrementing Inventory via Electronic Data Exchange

Recommendations of the
American Immunization Registry Association (AIRA)
Modeling of Immunization Registry Operations Work Group (MIROW)

March 31, 2016

Mini-guide – 4 to 8 pages

Decrementing Inventory via Electronic Data Exchange
...Coming Soon!

Download MIROW documents at:
AIRA web site: http://www.immregistries.org/pubs/mirow.html
CDC web site:
http://www.cdc.gov/vaccines/programs/iis/activities/mirow.html
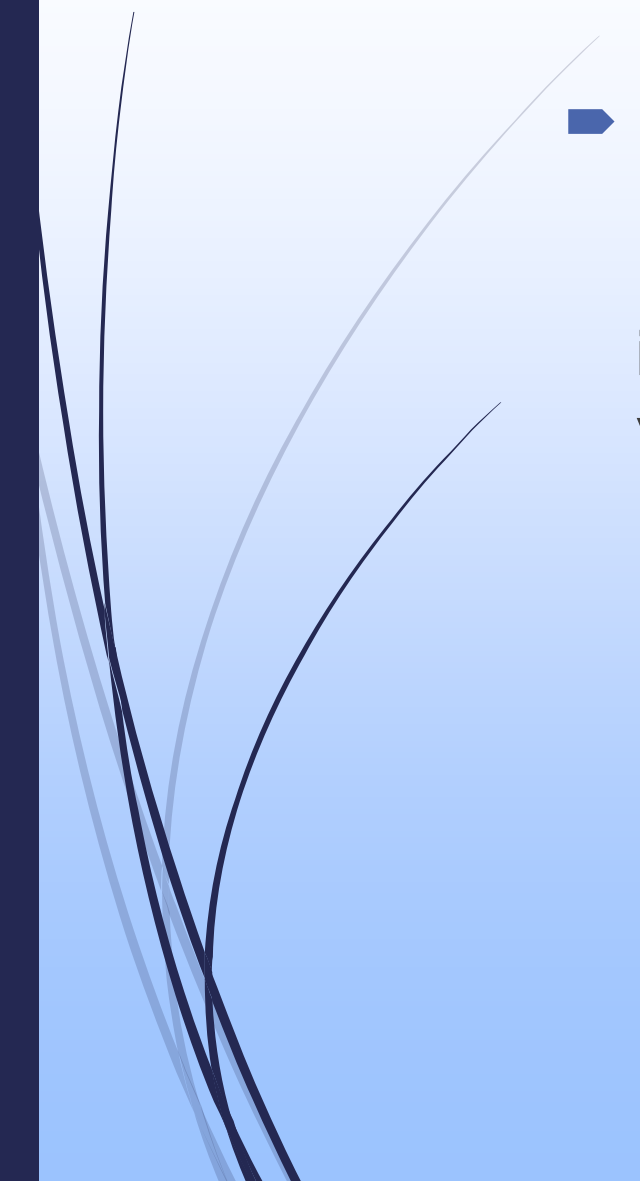
Why DI-v-EDE?

- DI-v-EDE assists immunization programs in maintaining more accurate provider vaccine inventories and provider organizations in meeting awardee immunization program operational requirements (e.g., vaccine accountability).

Development Methods

- Formed a diverse workgroup comprised of 13 subject matter experts
  - IIS Staff
  - IIS Vendor Staff
  - Health IT Vendor Staff
- Utilized modern business analysis and facilitation techniques
- Conducted preliminary work
  - Collected and analyzed existing IIS materials
- Met July 2015 (Decatur, GA)
  - Analyzed existing practices
  - Formulated consensus-based recommendations
- Finalized work via phone meetings
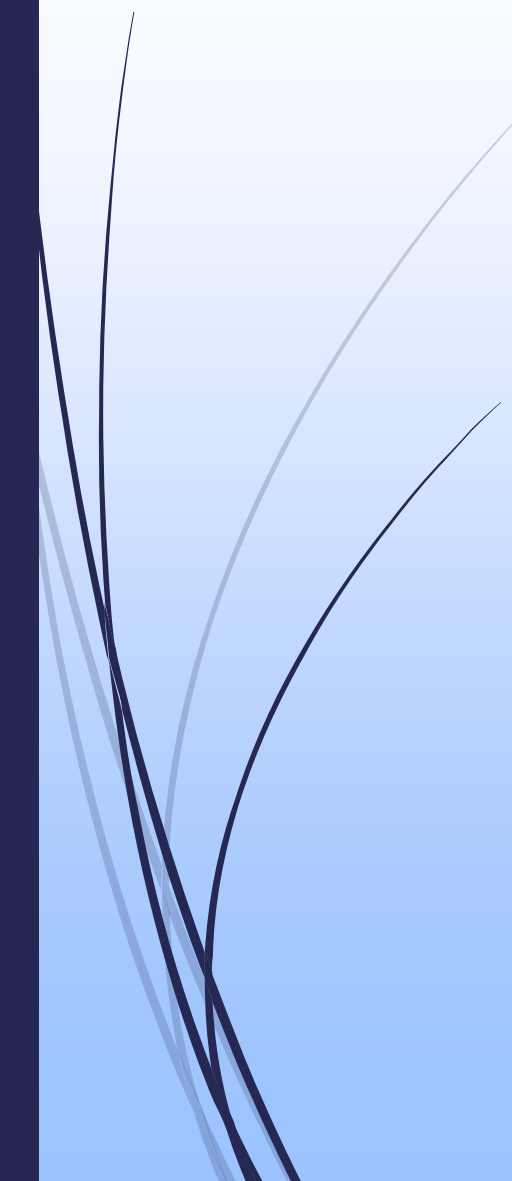- Small group and workshop

DI-v-EDE Concepts

- The DI-v-EDE process is an automated method to decrement the number of vaccine doses in a provider organization's inventory in the IIS when the organization reports a vaccination event through electronic data exchange from an EHR to the IIS.

- Each provider organization's vaccine inventory is categorized based on funding indicators.

- To deduct a vaccine dose from the appropriate stock the IIS matches information that the provider organization submits regarding a vaccination event against the information that IIS has for the inventory of that provider organization.

- The IIS uses data elements such as lot number, lot number expiration date, dose level eligibility, lot level public/private indicator and, in some cases, dose level public/private indicator to match inventory.

Fundamental Concepts

- Fund Type
- Storage Model
- Dose Level Eligibility
- Dose Level Public/Private Indicator
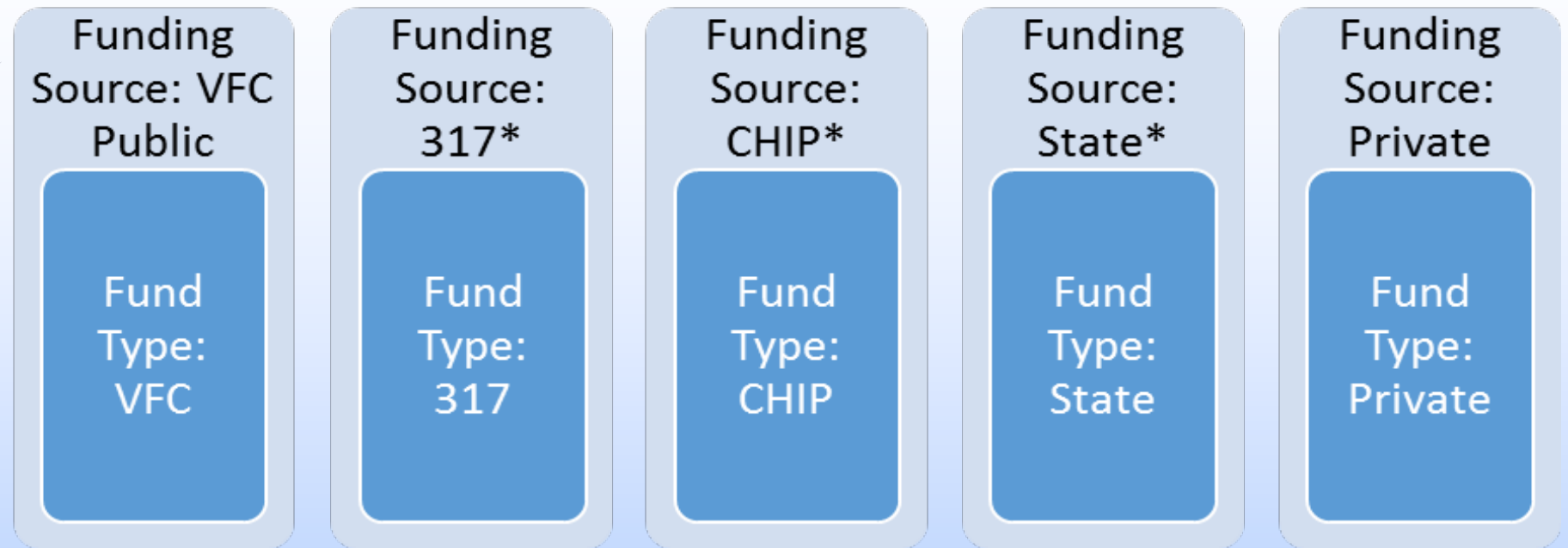- Lot Level Public/Private Indicator

Fund Type

- Describes the program (or a private payee) that paid for vaccine.

- Each dose of vaccine is paid for with funds from a public program (e.g., VFC, 317, state or CHIP funds) or private funding.

Storage Model

- Describes the way vaccine stocks are physically separated in the provider organization's storage unit.

- Depending on the awardee's requirements,
  - the provider organization may need to separate the vaccines by fund type or
  - may be allowed to have less specific categories (e.g., VFC public, non-VFC public and private).

Funding Source: VFC Public	Funding Source: 317*	Funding Source: CHIP*	Funding Source: State*	Funding Source: Private
Fund Type: VFC	Fund Type: 317	Fund Type: CHIP	Fund Type: State	Fund Type: Private

Multi-stock (4 or more) model

- Provider organization separates vaccines by fund type (e.g., VFC, 317, CHIP, State, and private).
- This model takes advantage of the fact that a provider organization knows fund type for each vaccine from the packing slip or other mechanism.

Funding Source: VFC Public	Funding Source: Non-VFC Public	Funding Source: Private
Fund Type: VFC	Fund Types: 317, CHIP, State	Fund Type: Private

Three-stock model

- Provider organization separates vaccines into three funding source categories.

- This is the only model that VFC recommends; however, awardees can request to use a model that blends fund types into two stocks or one stock.

Funding Source: Public

Funding Source: Private

Fund Types: VFC, 317, CHIP, State

Fund Type: Private

Two-stock model

The provider organization separates vaccines into two funding source categories.

One-stock model

- Does not require provider organizations to partition vaccines into multiple inventory stocks within their storage.

- Two types:

  - Replacement: The provider organization uses privately-funded vaccines to vaccinate all patients and the VFC program replaces privately-funded vaccines that were administered to VFC eligible children.

  - Universal: The provider organization only has publicly-funded vaccine (at least for pediatric patients) supplied directly from the awardee immunization program.

Dose Level Eligibility

- Dose level eligibility describes a patient's eligibility for a dose of vaccine from a funding program (e.g. VFC, 317, etc.)

- Determined for each dose administered to a patient at the time of the vaccination event.

Dose Level Public/Private Indicator

- The provider selects a dose of vaccine from the storage unit based on the patient's eligibility.

- When the provider documents the vaccination event, they may include

  - specific fund type of the dose administered or

  - less specific categories (e.g., VFC public, non-VFC public & private).
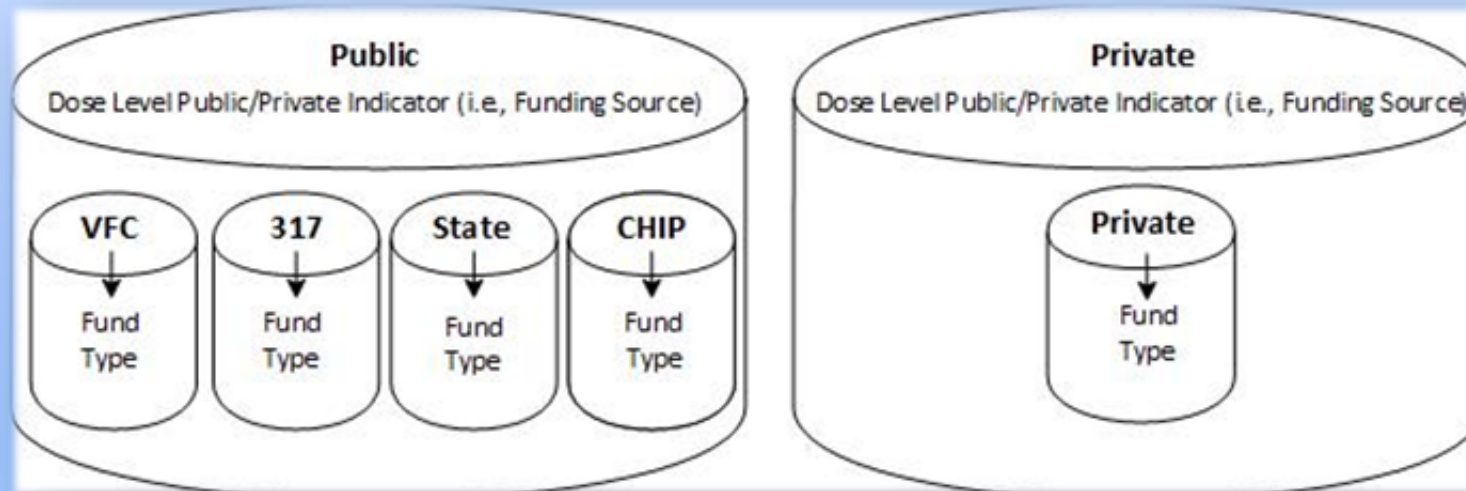
Dose Level Public/Private Indicator

- These less specific categories are referred to as dose level public/private indicator since the data element identifies if the dose that was administered was purchased with public or private funds.

- Dose level public/private indicator is an aggregated reflection of fund type at the vaccine dose level.

Lot Level Public/Private Indicator

- The lot level public/private indicator is an aggregated reflection of fund type at the vaccine lot level.

- It indicates if vaccine doses with a given lot number are associated with publicly-funded or privately-funded inventory in the IIS.

DI-v-EDE Workgroup

- Experts
  - Brandy Altstadter, STC
  - Jennifer Bednar, HP
  - Janet Fath, CDC
  - Danielle Hall, ME
  - Amanda Harris, NV
  - Therese Hoyle, MI
  - Tracy Little, OR
  - Megan Meldrum, NY
  - Bhavani Sathya, NJ
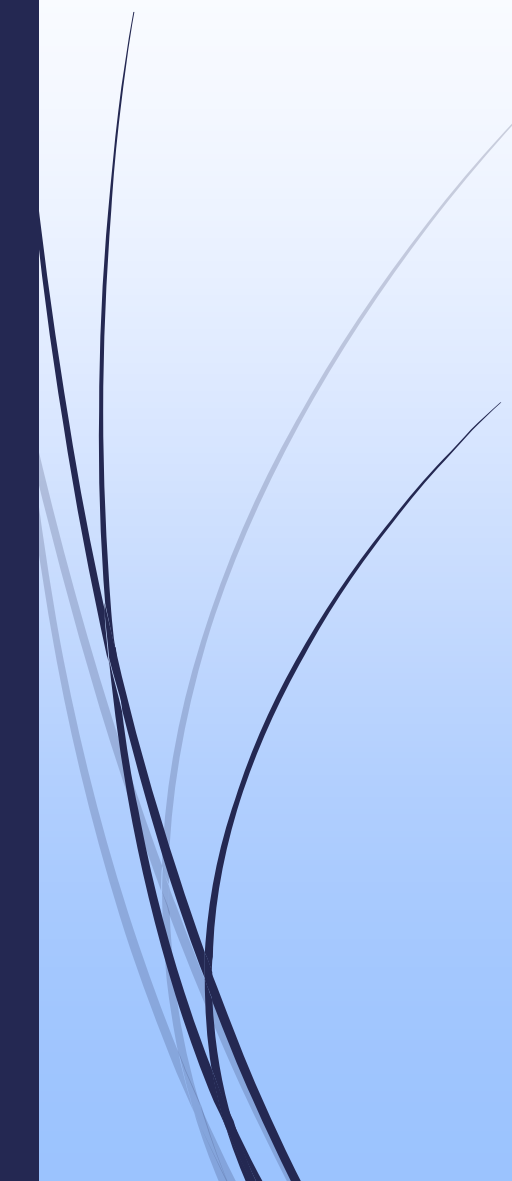
- Project Support Team
  - Warren William, Co-Chair
  - Elaine Lowery, Co-Chair
  - Nichole Lambrecht, AIRA
  - Angela Lindsay, CDC
  - David Lyalin, CDC
  - Elizabeth Parilla, MN

Implementation Considerations

- Key Data Elements
- Data Quality
- HL7 Immunization Messaging
- EHR
- Outreach and Education
- Staff Time
- Resources

Therese Hoyle

Senior Public Health Advisor

Michigan Department of Health and Human Services

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Michigan is a 2 Stock Model

Funding Source: Public
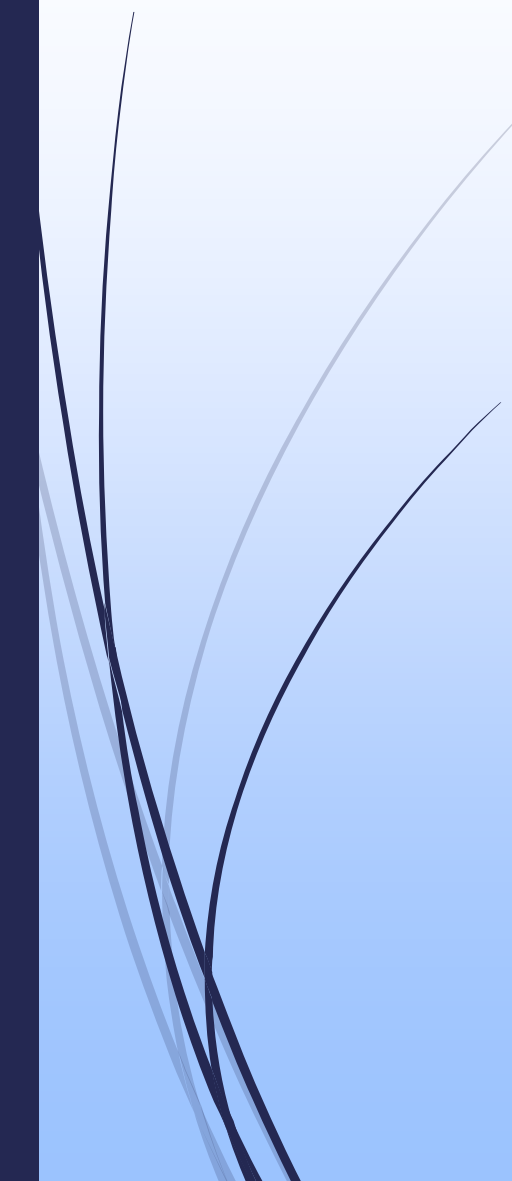
Fund Types: VFC, 317, CHIP, State

Funding Source: Private

Fund Type: Private

Vaccine Inventory Module

- In 1999 MCIR released an Inventory Module
- EXT files deducted from inventory if the lot number matched the inventory in the IIS.
- Very few provider offices used the inventory module
- It did not separate private from public vaccine.
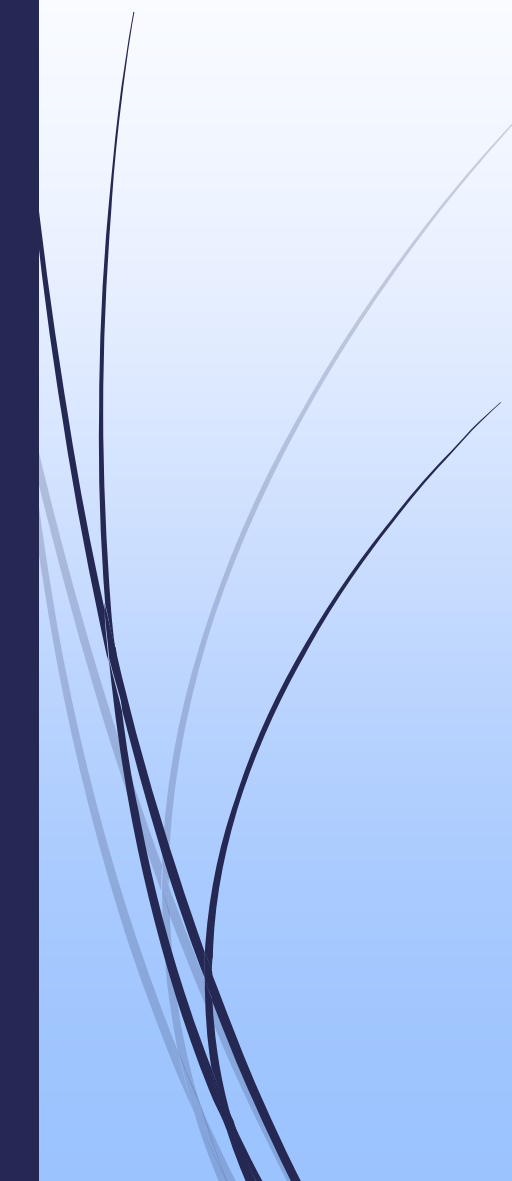
Inventory Module Enhancement

- New inventory module
- 2 stock model
- Private and Public
- Flat File deducted from inventory
- Submitting VFC orders to VTrckS since December 2010 (EXIS)
- Processing McKesson Shipping Files since 2011
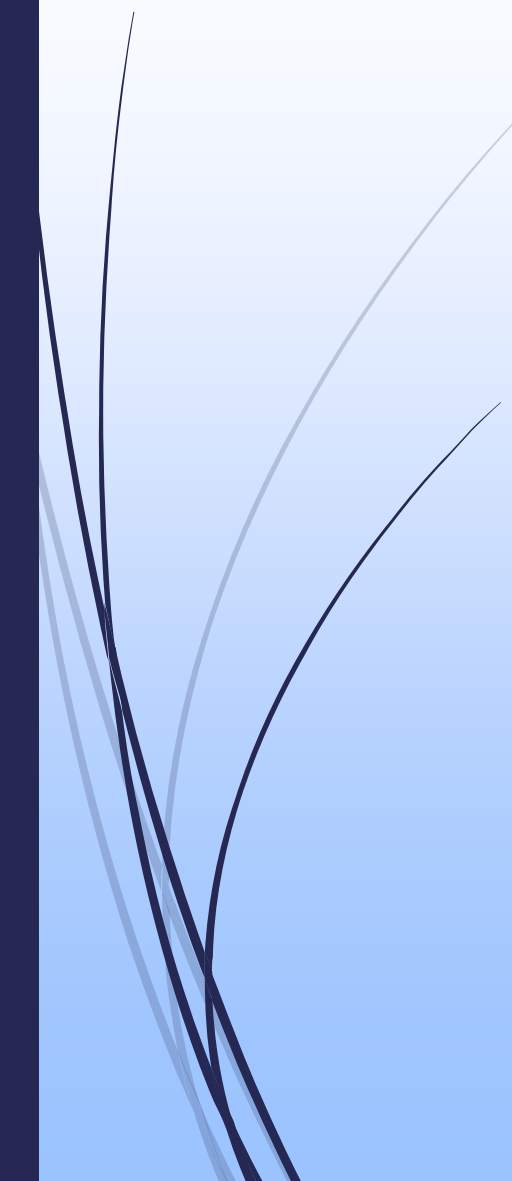
HL7 Immunization Messaging

- 2012 Implemented HL7 2.5.1

- Onboarding does take a little more time with per site to meet the inventory requirements

- 440 VFC provider sites are submitting HL7 messages
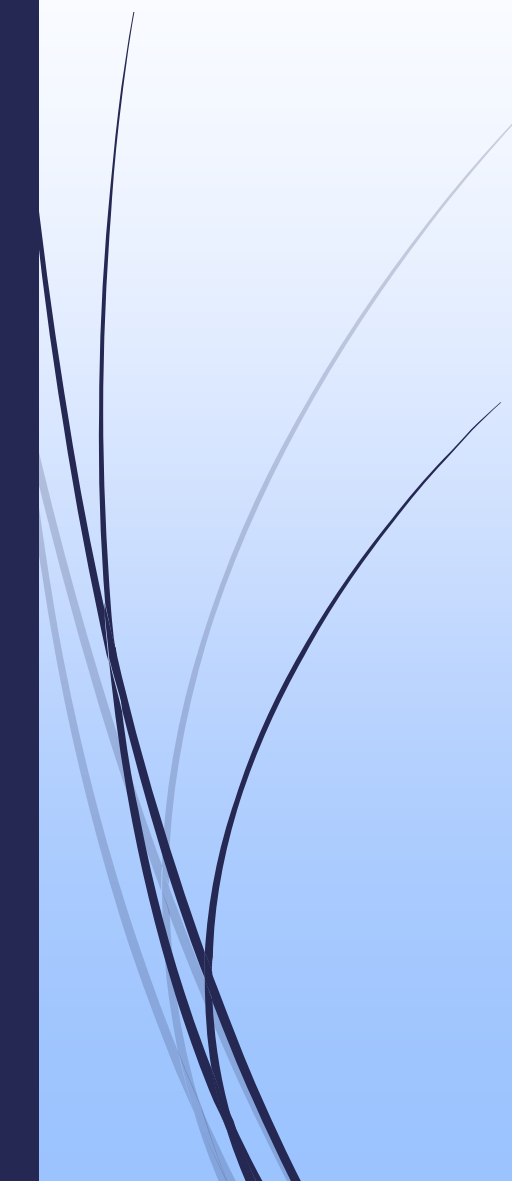
Key Data Elements

- Provider Organization level identifiers, including sending facility and administering facility.

- Patient identifiers and demographic information for matching and or adding new patient to MCIR.

- Lot Number

- CVX Codes

- MVX Codes

- Dose Level Eligibility

- Date Administered

Data Quality

- Having a test bed with active inventory for HL7 testing
- Lot number may be missing a letter or a number
- CVX code mapping and manufacture code mapping
- How the EHR displays vaccines to the end user
- Historical vs Administered
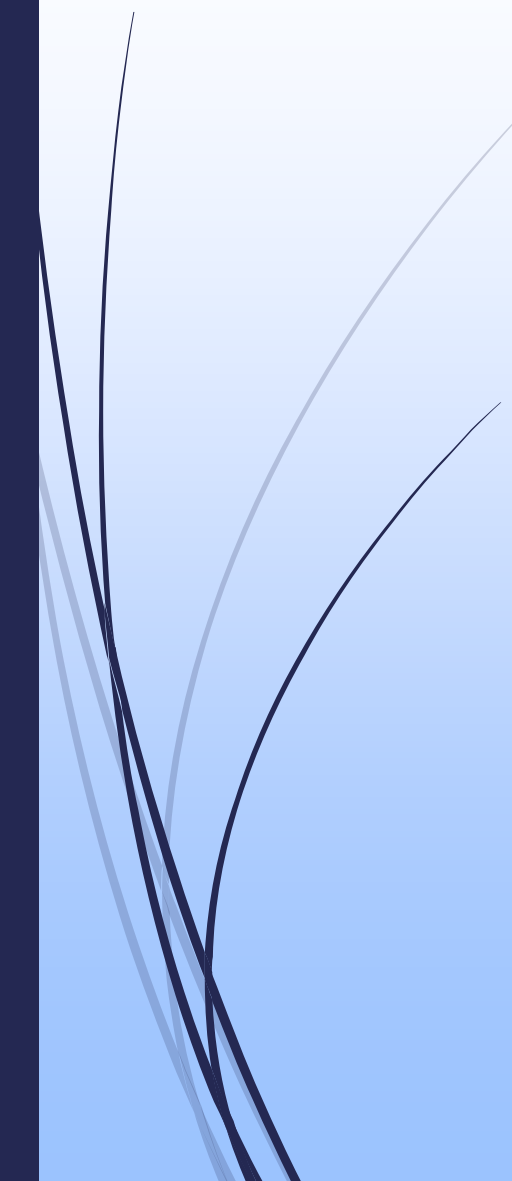
Data Quality (cont'd)

- Deleting or modifying an existing dose in the IIS via HL7
  - Implementing Unique Vaccine ID process to help manage this process. Currently 500,000 doses of vaccine in MCIR have a unique Vaccine ID associated with them.

- Ongoing modifications of data quality reports to meet the end users needs.
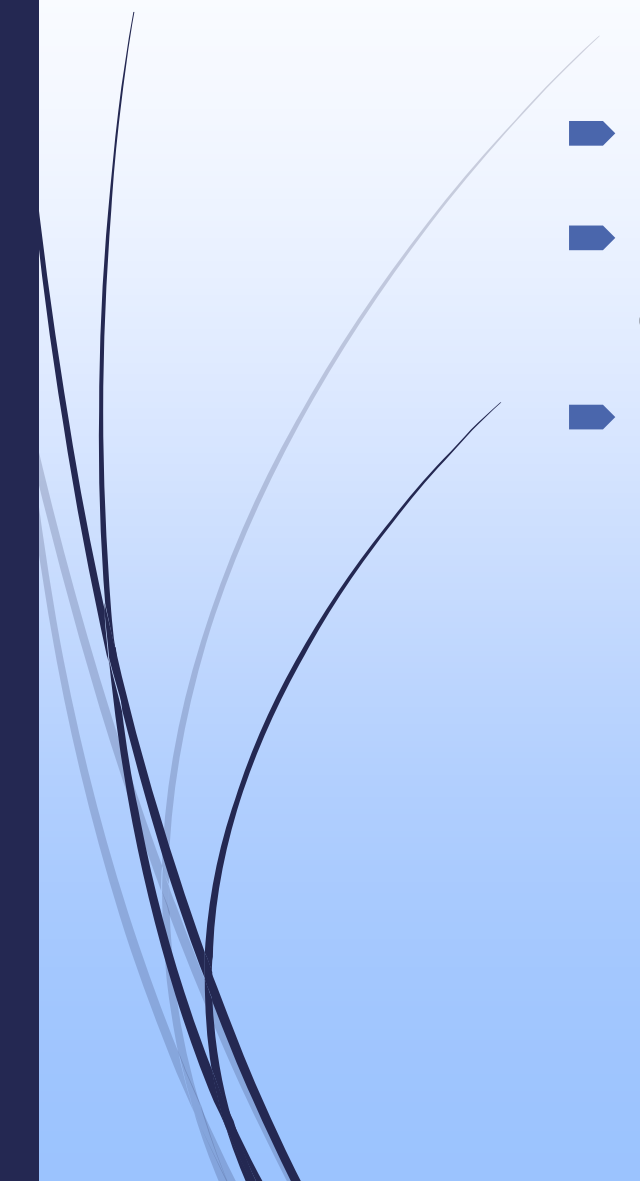
Electronic Health Record (EHR)

- Dose level eligibility was an issue for EHR vendors.

- The staff using an EHR recognizes the importance of data quality when submitting via HL7 to MCIR.

- User chooses the wrong vaccine in the EHR, but immunizes with the correct dose.

Outreach and Education

➡ How to use data quality reports in MCIR.

➡ Encourage end users to review data quality reports daily or at a minimum once a week.

➡ Primarily the focus is on data quality!!!!

Staff Time

- Reconciliation is time consuming for all.
- Onboarding requires dedicated staff to train on HL7 submissions and the use of the vaccine inventory.
  - Michigan has 2.5 FTE's for onboarding
  - 12 FTE's for training (MCIR Regional Staff)

Resources

Inventory Deductions

Admin Date	Product - Lot	Eligibility	Action	Inv.
Test, Patient - 08/16/2003 - 3023226780				
04/06/2015	Tdap (adol/adult) (Glaxo) - 7GH57	Under Insured	Add	VFC
04/06/2015	HPV4 (Gardasil) (Merck) - K006960	Under Insured	Add	VFC
Test, Patient 2 - 06/09/2013 - 36750889123				
04/10/2015	Varicella (Varivax) (Merck) - J013903	Medicaid-VFC	Add	VFC
Test, Patient 3 - 01/17/2015 - 36123352073				
04/22/2015	DTaP-Hep B-IPV (Pediarix) (Glaxo) - 5A5T5	Medicaid-VFC	Add	VFC
04/22/2015	Hib (PedvaxHIB) (Merck) - J015435	Medicaid-VFC	Add	VFC
04/22/2015	PCV13 (Prevnar13) (Wyeth (WAL)) - J11485	Medicaid-VFC	Add	VFC

Resources

No Inventory Deductions

Admin Date	Product - Lot	Eligibility	Action	Inv.
Test, Patient - 11/21/1998 - 10040336845				
04/20/2015	HPV4 (Gardasil) (Merck) - K009482	Private Pay/Insurance	Add	UNK
	Status: Lot not found inventory			
Test, Patient 5 - 02/04/2001 - 30122448966				
04/01/2015	HPV4 (Gardasil) (Merck) - K009482	Private Pay/Insurance	Add	UNK
	Status: Lot not found inventory			
Test, Patient 7 - 12/13/1943 - 56507828888				
04/09/2015	PPSV23 (Pneumovax) (Merck) - K007262	Medicare A	Add	UNK
	Status: Lot not found inventory			
Test, Patient - 10/10/1948 - 56623881237				
04/23/2015	Hep B (ped/adol) (Glaxo) - 99B32	Private Pay/Insurance	Add	UNK
	Status: Lot not found inventory			
TEST, PATIENT - 07/15/1945 - 54472735653				
04/16/2015	Zoster (Zostavax) (Merck) - K012785	Medicare A	Add	UNK
	Status: Lot not found inventory			
TEST, PATIENT 3 - 03/05/1950 - 51163526332				
04/23/2015	PPSV23 (Pneumovax) (Merck) - K007262	Medicare A	Add	UNK
	Status: Lot not found inventory			

Future Enhancements

- Funding Source (possible if EHR's capture it)
  - Private
  - Public
- Capturing Expiration Date in HL7 Message

Vaccine Expiration Date: 1/15/08
Note: Use through January 15, 2008. Do NOT use on or after January 16, 2008.

Bhavani Sathya

New Jersey IIS Coordinator

New Jersey Department of Health

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New Jersey IIS

- Inventory module
- VTrckS-ExIS integration implemented in 2012
- VFC/317 vaccines are automatically added into inventory module and available for decrementing
- Providers have the option to enter private vaccines into NJIIS inventory
- DI-v-EDE in place since 2009; updated 2013
- NJIIS interface engine supports:
  - HL7 v2.3.1 and v2.5.1
  - Action codes Add, Update, Delete (RXA-21)
- Do not currently support funding source field
  - Dose-level eligibility is used to determine whether to deduct from public or private vaccine inventory

Key Data Elements

- Provider Organization level identifiers, including sending facility and administering facility.

- Patient identifiers and demographic information for matching and or adding new patient to NJIIS.

- Date Administered

- CVX Codes

- Dose Level Eligibility

- Lot Number

Data Quality

- Pre-certification (onboarding)
  - CVX code mapping
  - Lot number and dose-level eligibility reported for all administered doses
  - Patient-level demographics and identifiers for matching

- Production data review
  - Three interoperability reports available in NJIIS

Data Quality (cont'd)

- Three interoperability reports available in NJIIS
  - Statistics report - overview of all data submitted and whether patients/doses were successfully added
  - VFC statistics report – same as statistics report but only includes doses submitted with VFC eligibility
  - Details report – provides details about processing for each patient and dose; identifies errors
    - Dose status – 'Added' or 'Not Added', 'Deleted' or 'Not Deleted', 'Updated' or 'Not Updated'
    - Dose status message – provides reason why the dose was not added
  - Troubleshooting Guides
    - Review frequently encountered issues/scenarios
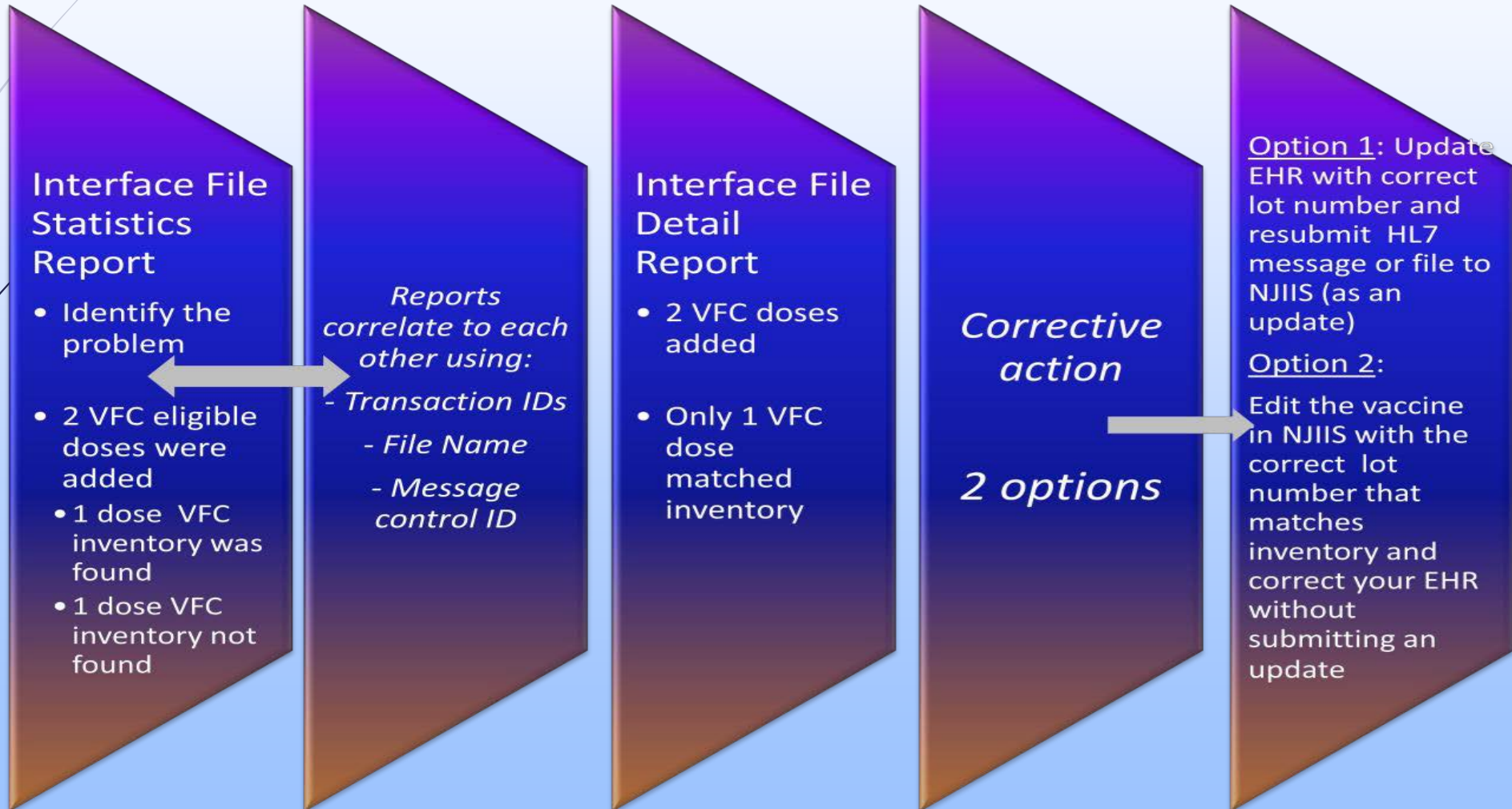   - Review how to use the NJIIS interface reports

Data Quality (cont'd)

- Frequently encountered errors that cause problems with inventory decrementing

    - Incorrect lot number reported

    - Incorrect dose-level VFC eligibility submitted or no dose-level VFC eligibility was included in submission

    - Patient not matched or added in NJIIS

Scenario: VFC Dose Added into Patient Record but Inventory not Decremented
Reason: Incorrect lot number reported

Interface File Statistics Report

- Identify the problem

- 2 VFC eligible doses were added
  - 1 dose VFC inventory was found
  - 1 dose VFC inventory not found

Reports correlate to each other using:
- Transaction IDs
  - File Name
  - Message control ID

Interface File Detail Report

- 2 VFC doses added

- Only 1 VFC dose matched inventory

Corrective action

2 options

Option 1: Update EHR with correct lot number and resubmit HL7 message or file to NJIIS (as an update)

Option 2:

Edit the vaccine in NJIIS with the correct lot number that matches inventory and correct your EHR without submitting an update

Scenario: Dose added to patient record with no inventory decremented
Reason: VFC eligibility was not reported

Interface File Details Report

- Identify the problem

- VFC eligibility Not available

- Dose status message– no matching inventory found

Corrective action

2 options

Option 1:

EHR data should be updated with correct dose-level VFC eligibility and file or HL7 message resubmitted to NJIIS (as an update).

Option 2:

Use the Edit Immunization function in NJIIS to correct the patient and dose-level funding source. Make the correction in EHR without sending update.

Scenario: Patient and Doses Not Added into NJIIS
Reason: Multiple possible matches

Interface File Statistics Report

- Identify the problem
- Patient multi match – not added into NJIIS
- Note transaction ID

Reports correlate to each other using:

- Transaction IDs
- File Name
- Message control ID

Interface File Detail Report

- Patient status – Multi Match
- Patient Status Message
- Lists the possible matches

Corrective action

Find the correct match in NJIIS and correct name in your EHR

Option 1:

File or HL7 message should be resubmitted to NJIIS.

Option 2:

If not possible add the vaccine to the correct registry ID manually & correct the EHR record

Electronic Health Record (EHR)

- During pre-certification (onboarding), we request production data submitted to our test system to evaluate readiness for production interface
- Variability in ability to support all action codes (add, delete, update)
- Ensure all CVX codes are supported
- NJIIS staff work closely with EHR staff to resolve issues during pre-certification and after
- Important to include vendor contact on go-live calls with practices to ensure everyone is on the same page

Outreach and Education

- Significant staff time spent on outreach and education
  - Developing training materials
  - Creating support documentation
  - Answering follow-up questions from users
- Training opportunities:
  - Interface webinar training (6 modules)
    - Training is web-based using pre-recorded modules with live question & answer session with NJIIS Trainer and NJIIS Interoperability Coordinator
  - Regional interface workshops – in-person training for practices requiring extra help
    - Pre-requisite is interface webinar training
    - Minimum of 4 NJIIS staff required (for 8 -10 trainees) to assist users one-to-one with how to review reports and correct errors to ensure VFC inventory is accurate

Staff Time / Resources

- Supporting DI-v-EDE can be resource intensive:
  - Pre-certification (onboarding) is time and resource intensive
    - Ensuring correct submissions up front should reduce errors in production environment
    - 5.5 FTEs required for onboarding and data quality review
  - 4 FTEs for training (but only 1 in any given month is conducting interface training

Acknowledgements

- Subject Matter Experts

- Steering Committee

- Facilitation Team at Advanced Strategies

- AIRA Staff

- Grantee IIS

- Participants of 2015 MIROW Workshop

- External Reviewers

- Technical Editor at CDC

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Read MIROW recommendations documents and abridged mini-guides at:

AIRA website:
http://www.immregistries.org/resources/aira-mirow
CDC website:
http://www.cdc.gov/vaccines/programs/iis/activities/mirow.html

Q & A