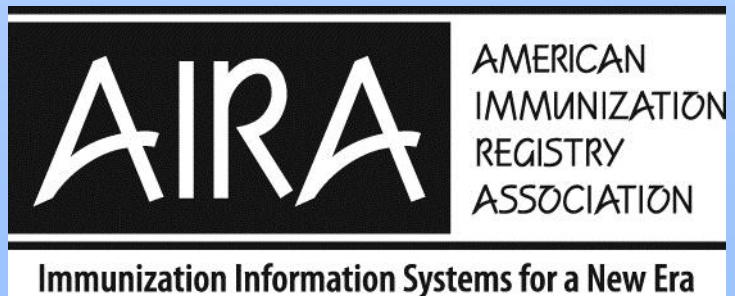


MIROW Decrementing Inventory via Electronic Data Exchange

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 Modeling of Immunization Registry Operations Workgroup
 - ▶ Formed in 2005
 - ▶ AIRA in partnership IISB 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 IISB/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

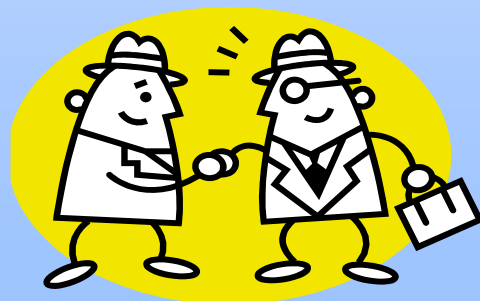
The MIROW Process



Brainstorming



Discussing



Reaching
Consensus

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

The MIROW Process



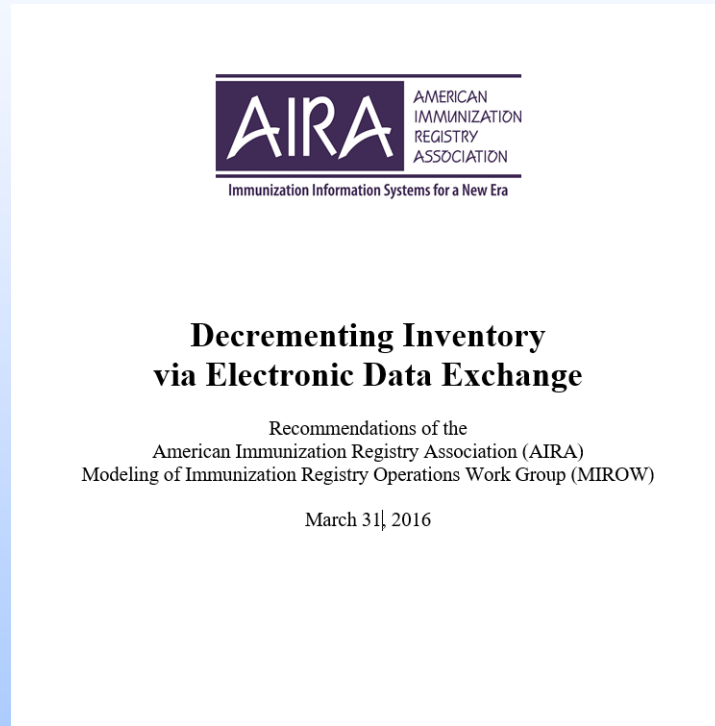
Past Topics

- ▶ 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



Mini-guide – 4 to 8 pages



Download MIROW documents at:

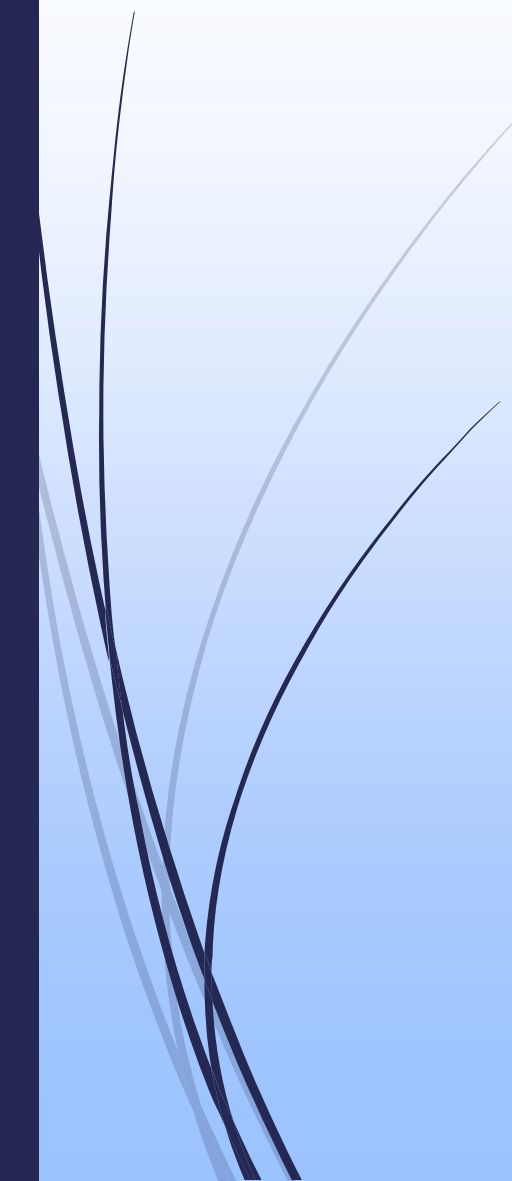
AIRA web site: <http://www.immregistries.org/pubs/mirow.html>

CDC web site:

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

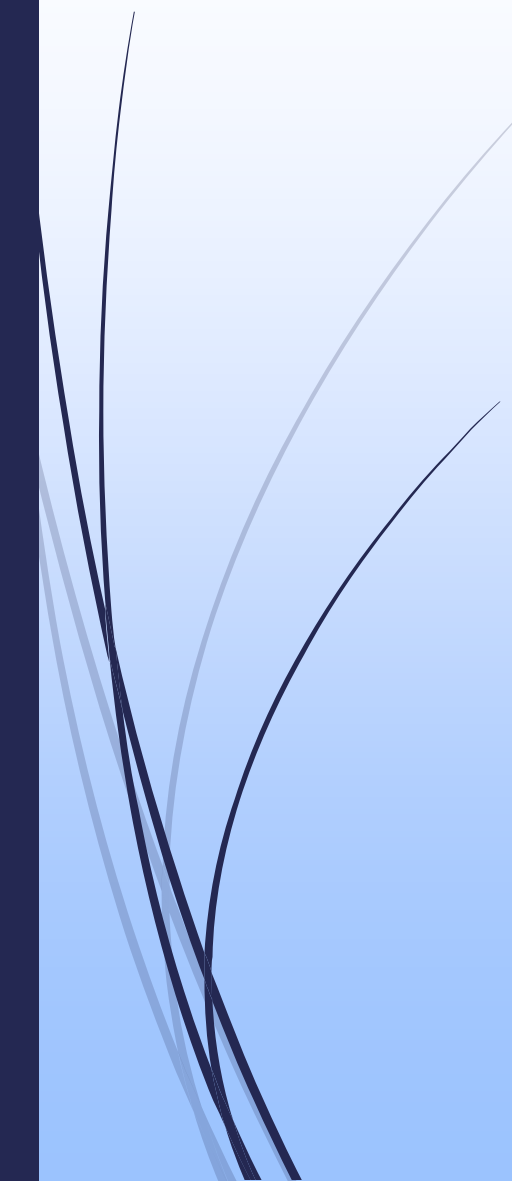


DI-v-EDE Concepts

- ▶ 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

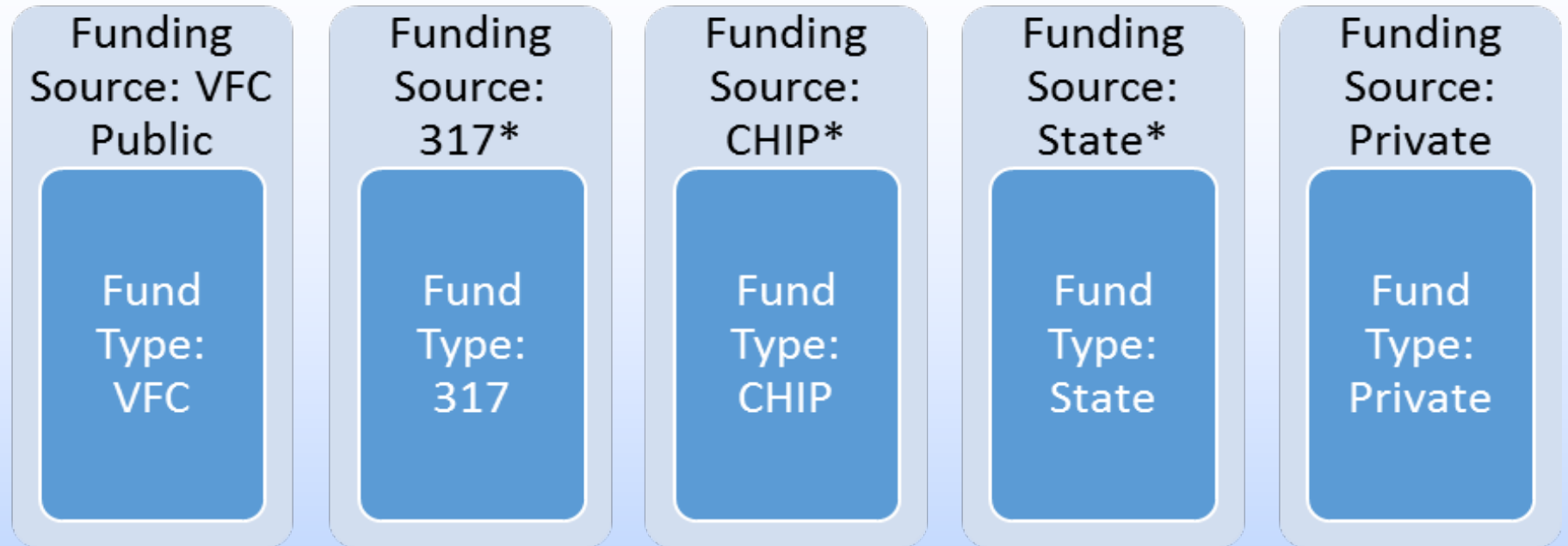
- Describes the program (or a private payee) that paid for vaccine.
- Each dose of vaccine is paid for with funds from a public program (e.g., VFC, 317, state or CHIP funds) or private funding.



Storage Model

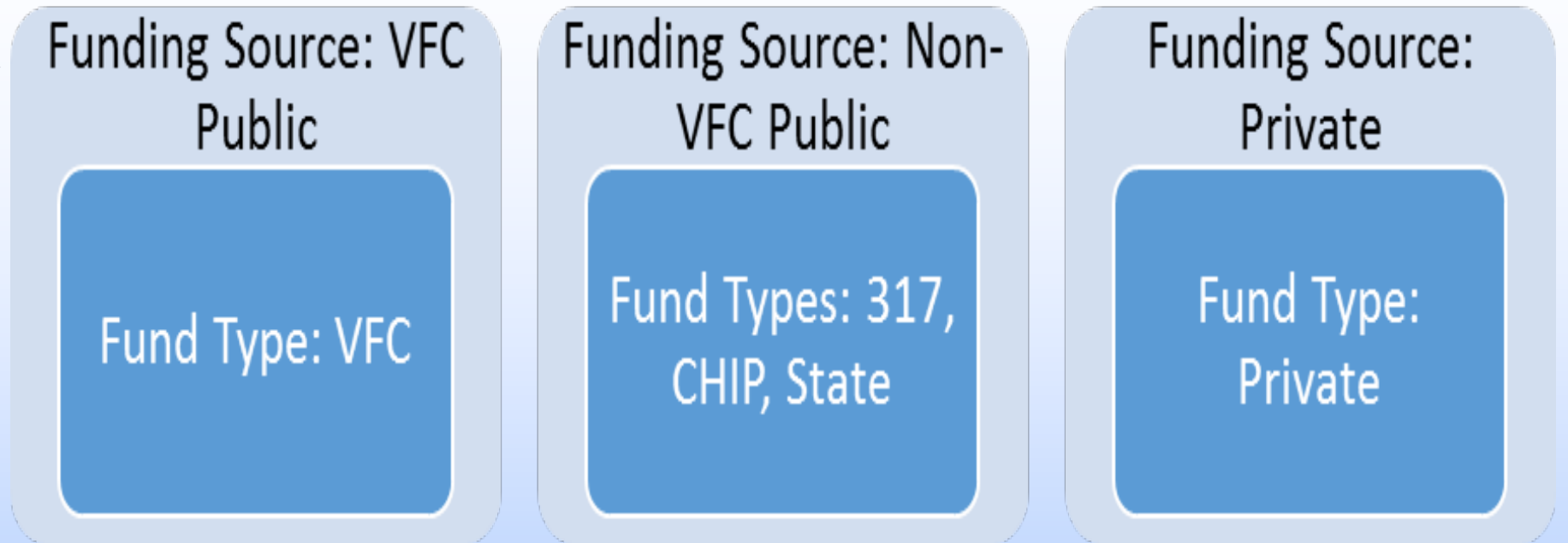
- ▶ Describes the way vaccine stocks are physically separated in the provider organization's storage unit.
- ▶ Depending on the awardee's requirements,
 - ▶ the provider organization may need to separate the vaccines by fund type or
 - ▶ may be allowed to have less specific categories (e.g., VFC public, non-VFC public and private).





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.



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

Fund Types: VFC,
317, CHIP, State

Funding Source:
Private

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.

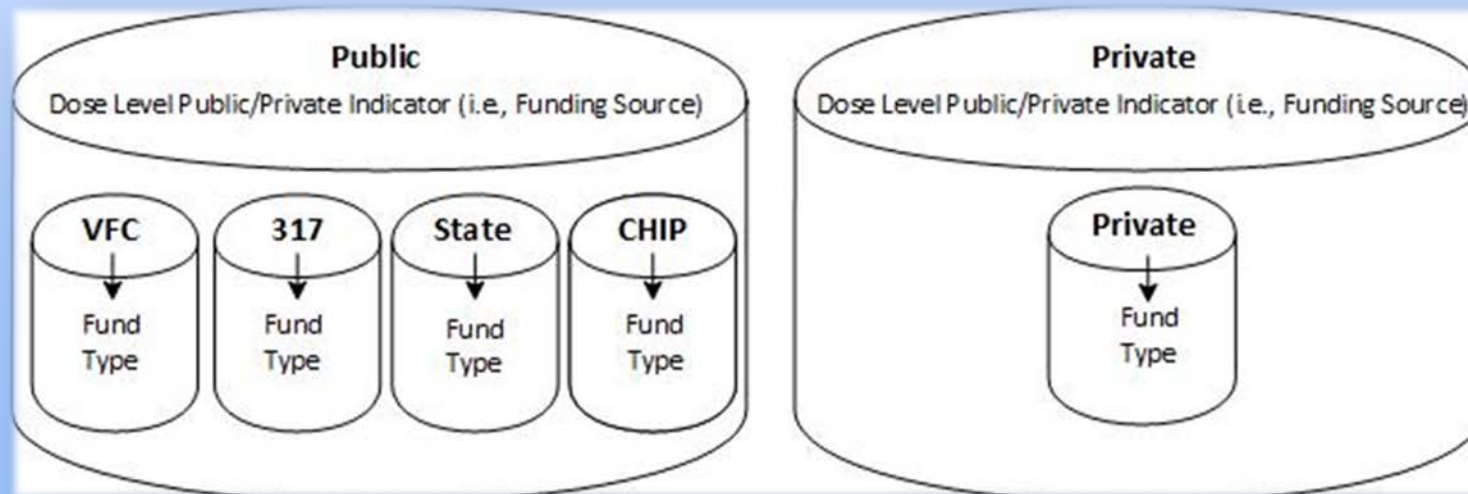
Dose Level Eligibility

- ▶ 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



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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 2012

- ▶ 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

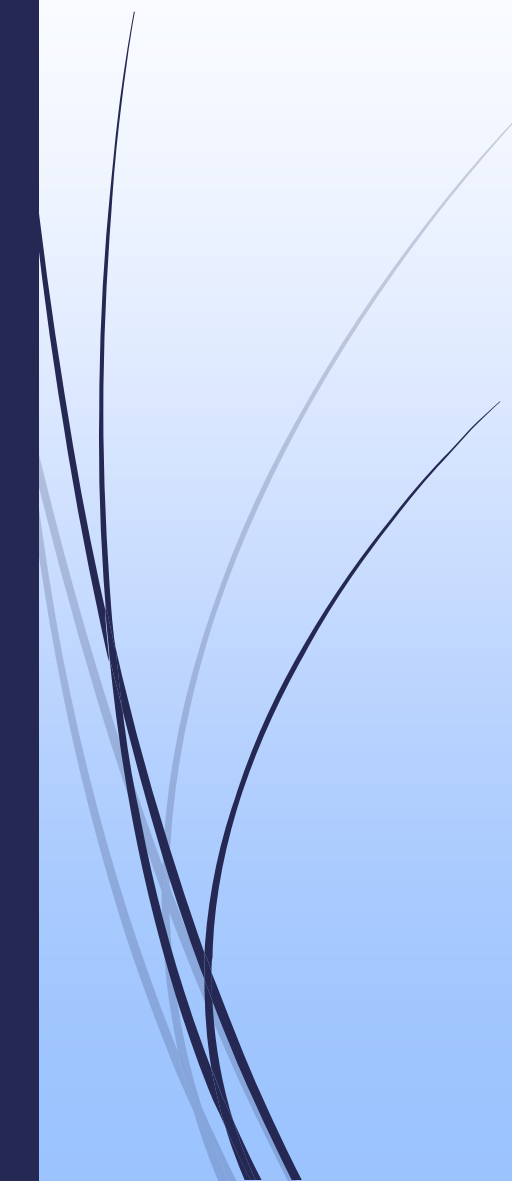


Key Data Elements

- ▶ 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

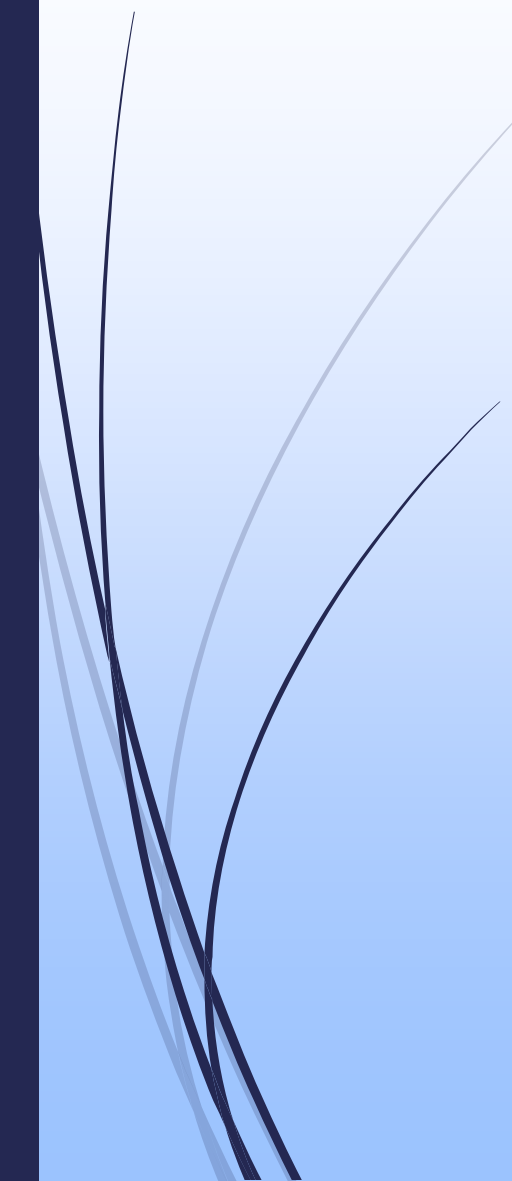


Data Quality

- ▶ 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.
- 

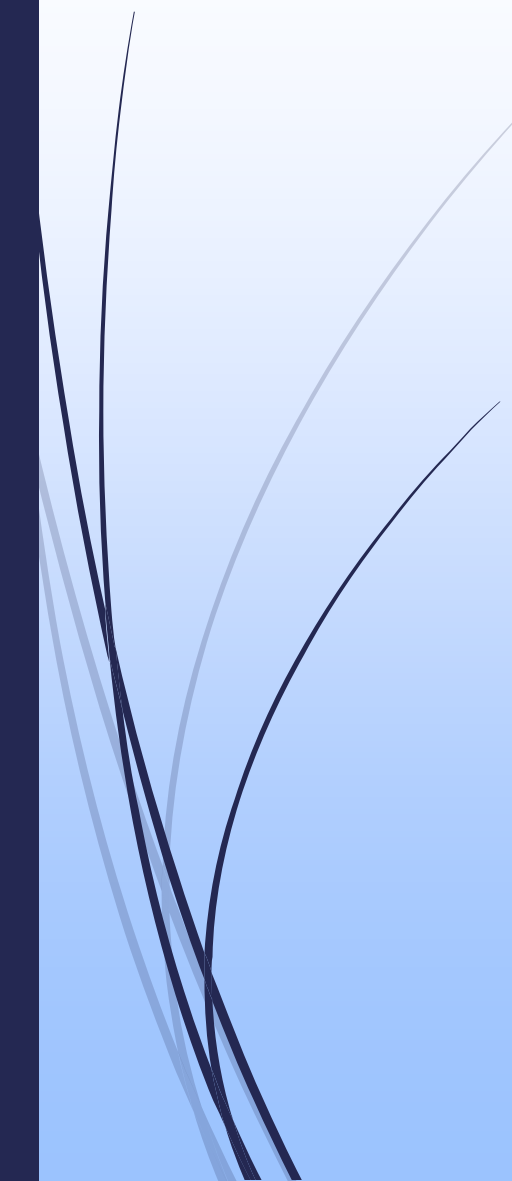


Electronic Health Record (EHR)

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

Future Enhancements

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





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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 NJIS.
- ▶ 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

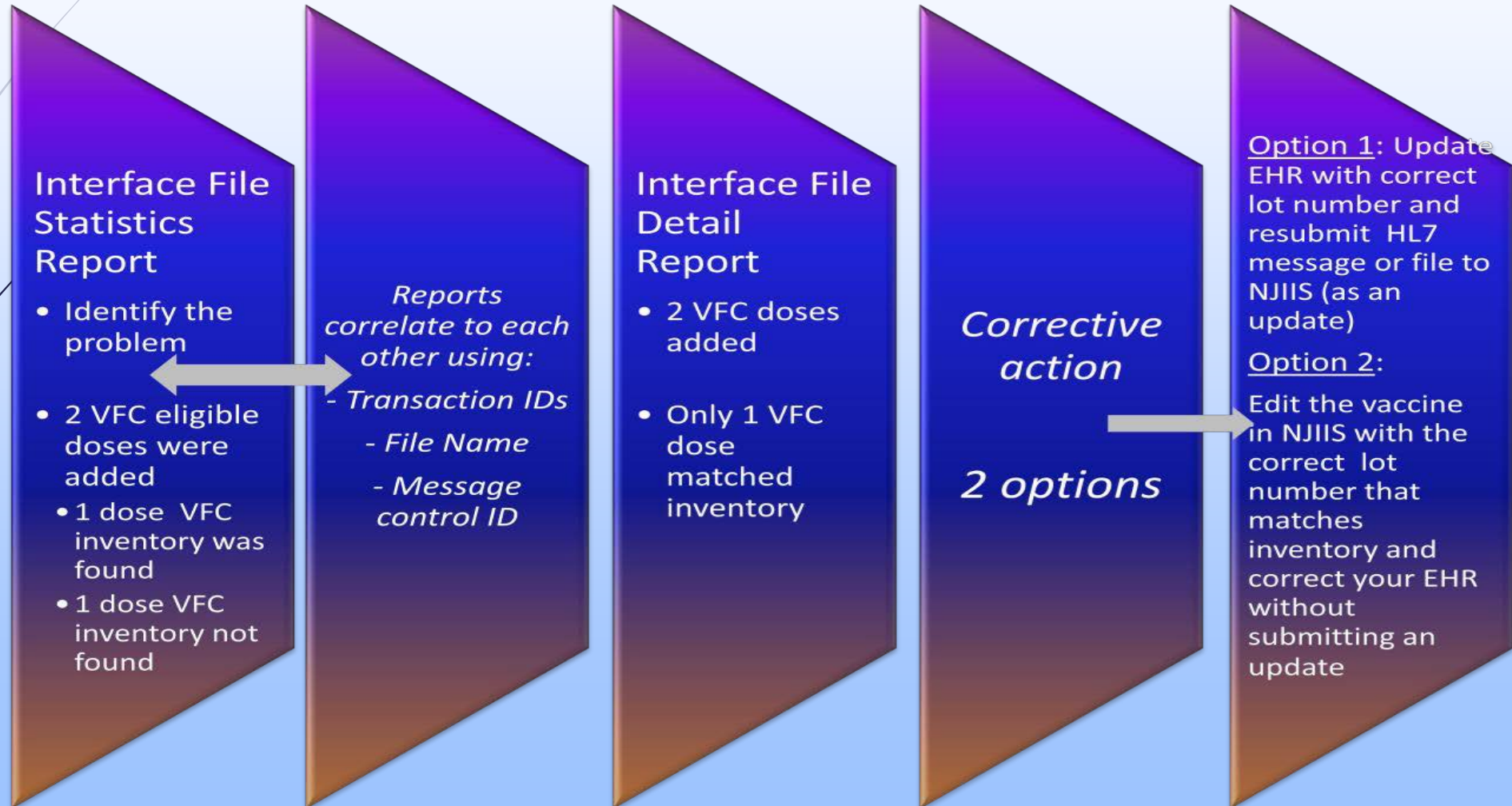


Data Quality (cont'd)

- ▶ 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 NJIS

Scenario: VFC Dose Added into Patient Record but Inventory not Decremented

Reason: Incorrect lot number reported



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





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
- ▶ NJIS 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 NJIS Trainer and NJIS Interoperability Coordinator
 - ▶ Regional interface workshops – in-person training for practices requiring extra help
 - ▶ Pre-requisite is interface webinar training
 - ▶ Minimum of 4 NJIS 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 2014 MIROW Workshop
- External Reviewers
- Technical Editor at CDC





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Read MIROW recommendations documents and
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Q & A

