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Learning from Each Other:
Best Practices in the IIS Community

David Lyalin, Ph. D., Public Health Analyst
On behalf of the Modeling Immunization Registry Workgroup (MIROW)
Steering Committee of the American Immunization Registry Association (AIRA)

National Immunization Conference
May 15, 2018
Overview

• Basics
• Creating Best Practices in the IIS Community
• Usage & Evaluation of Best Practice Recommendations
• Join us
What are Immunization Information Systems (IIS)?

- They are confidential, population-based, computerized databases that record all immunization doses administered by participating providers to persons residing within a given geopolitical area.
Modeling of Immunization Registry Operations Workgroup (MIROW)

• An American Immunization Registry Association (AIRA) steering committee

• Purpose: Develop a best practice operational improvement guidebook and to promote the implementation of best practices in the IIS community
What is a best practice?

• “A superior method or innovative approach that consistently exceeds the standard level of performance as determined by expert review, evidence of significant improvement vs. the standard approach, consistently superior results, or agreement of multiple sources.”

• Simply speaking, a best practice for IIS is the agreed-upon "most superior way" to perform a particular routine operation(s)
Best Practice Recommendations

• Operational standards
• Include:
  • An overview of the topic
  • Principles, business rules, and general recommendations
  • Various models, such as business process models, state transition models, and others
  • Terms and definitions
  • Implementation considerations
Roles for Creating Best Practice Guides

- Business analysis and development process support provided by IISBB/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
Progression of Collaborative Work

As-Is model
- Documenting understandings of how exactly the current program operations work
- What is working well and what isn’t, as well as discussions of improvement options

To-Be model
- Agreed-upon program requirements that should be implemented
Past Topics

2005
- IIS-Vaccine Adverse Event Reporting System Collaboration

2006
- Vaccination Level Deduplication

2008
- Reminder/Recall

2009
- Patient Eligibility for the VFC Program and Grantee Immunization Programs

2011
- Inventory Management

2012
- Data Quality Assurance – Selected Aspects

2013
- Management of Patient Active/Inactive Status in IIS

2015
- Decrementing Inventory via Electronic Data Exchange

2016
- Data Quality Assurance – Selected Aspects

2017
- Consolidating Demographic Record and Vaccination Event Record
## Key Elements of the MIROW Process

<table>
<thead>
<tr>
<th>Actionable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
</tr>
<tr>
<td>Structured business analysis techniques</td>
</tr>
<tr>
<td>Technology independent</td>
</tr>
<tr>
<td>Decision-making agility</td>
</tr>
<tr>
<td>Strategically balanced experts</td>
</tr>
<tr>
<td>Consensus</td>
</tr>
<tr>
<td>Transparency</td>
</tr>
</tbody>
</table>
# Business analysis models

<table>
<thead>
<tr>
<th>Analysis Area</th>
<th>Models</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>Venn diagram, context diagram, process diagram, use case diagram, text</td>
<td>Structure boundaries of the project: what is in, what is out</td>
</tr>
<tr>
<td>Decision</td>
<td>Principles, business rules, and decision tables</td>
<td>Document high-level policies, institutional knowledge, and operational-level decision making</td>
</tr>
<tr>
<td>Process</td>
<td>Use cases (structured description of operational scenarios) and a variety of process diagrams</td>
<td>Describe processes and process participants</td>
</tr>
<tr>
<td>Events</td>
<td>State/event diagram</td>
<td>Helps to analyze events that lead to change of statuses for various public health concepts (e.g., patient status)</td>
</tr>
<tr>
<td>Terms</td>
<td>Domain diagram (High-level class diagram, conceptual-level entity-relationship diagram), table of terms and definitions</td>
<td>Defines main concepts and their relationships, provides vocabulary (terms and definitions)</td>
</tr>
</tbody>
</table>
End Products

• Full guides
• Mini-guides
• Presentations
• Access MIROW documents:
  • AIRA website: http://www.immregistries.org/mirow.html
  • CDC website: http://www.cdc.gov/vaccines/programs/iis/activities/mirow.html
2014 Evaluation

- Child Health Evaluation and Research (CHEAR) Unit of the University of Michigan
- Evaluation to assess the degree to which the first three MIROW guides published have impacted IIS operations
- Results:
  - Most IIS programs were familiar with these guides and the majority have directly used one or more of them
  - Programs that directly used the guides reported them to be helpful and found implementation to have many positive impacts

2017 Evaluation

- Evaluation by AIRA
What Can You Do?

• For the IIS staff
  ▪ Learn more about the MIROW Guides
  ▪ Use the MIROW Guides to support your work
  ▪ Give us feedback about the MIROW guides
  ▪ Promote the use of best practices in the IIS and immunization communities
  ▪ Apply to be a volunteer for a MIROW workgroup

• For others
  ▪ Implement a similar approach in your program
Questions?  David Lyalin: dil8@cdc.gov

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Warren Williams, Elaine Lowery, Amanda Harris, Catherine Reed, Elizabeth Parilla, and David Lyalin

On behalf of the Modeling Immunization Registry Workgroup (MIROW) Steering Committee of the American Immunization Registry Association (AIRA)

For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Web Based Immunization Reports for Public Health Programs

May 15, 2018
National Immunization Conference
Atlanta, Georgia
KIDSNET Background

- Integrated child health information system
- State Confidentiality laws allow for sharing to coordinate care
- Web access limited based on roles
KIDSNET Vision

All RI children receive appropriate and timely preventive healthcare as a result of access to and utilization of comprehensive data on preventive health services by authorized users.
KIDSNET Data Contributors

Newborn Screening
Hearing, Bloodspot, CCHD
Immunization Providers
Lead Program
Early Intervention
Developmental Screening
Head Start
RI Department of Education
Foster Care

Vital Records
Diagnostic Follow-up Clinics
Family Visiting Programs
WIC
Asthma
Birth Defects
Cedar Family Centers
Oral Health
Insurers
Additional Data Users

• Maternal and Child Health Programs
• Schools
• Child Care
• Academic Research Partners
• Managed Care Organizations
# Immunization Web Screen

## Child Information - 04/30/2018

- **Name:** NEMO X BEST
- **KIDSNET ID:** 7345193
- **Date Of Birth:** 09/14/2010
- **Age:** 7y 7m
- **Gender:** MALE
- **KIDSNET Status:** ACTIVE
- **PCP:** TEST PEDIATRIC PRACTICE
- **Parent/Guardian:** STU PICKLES
- **Date of birth:** 01/01/1970

## School Requirements:
- **K:** 
- **7th:** 
- **8th:** 
- **9th:** 
- **12th:** 

(as of 8/1/2017)

## Change Immunization History

<table>
<thead>
<tr>
<th>Valid Doses</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>NEXT DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hepatitis B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>End of Series Reached</td>
</tr>
<tr>
<td>3 valid doses</td>
<td>09/16/2010 Hexp ped/adsl 6m 2d</td>
<td>11/16/2010 DTaP-HeptB-IPV 2m 2d</td>
<td>02/08/2011 DTaP-HeptB-IPV 4m 25d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DTaP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>See Tdap below</td>
</tr>
<tr>
<td>3 valid doses</td>
<td>11/16/2010 DTaP-HeptB-IPV 2m 2d</td>
<td>02/08/2011 DTaP-HeptB-IPV 4m 25d</td>
<td>04/12/2011 DTaP-HeptB-IPV 6m 29d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pneumo</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Childhood Series Complete</td>
</tr>
<tr>
<td>3 valid doses</td>
<td>11/16/2010 Prevnar 13 2m 2d</td>
<td>02/08/2011 Prevnar 13 4m 25d</td>
<td>04/12/2011 Prevnar 13 6m 29d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Polio</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Past Due Dose 4</td>
</tr>
<tr>
<td>3 valid doses</td>
<td>11/16/2010 DTaP-HeptB-IPV 2m 2d</td>
<td>02/08/2011 DTaP-HeptB-IPV 4m 25d</td>
<td>04/12/2011 DTaP-HeptB-IPV 6m 29d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hib</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>End of Series Reached</td>
</tr>
<tr>
<td>2 valid doses</td>
<td>11/16/2010 Hib PRP-T 2m 2d</td>
<td>02/08/2011 Hib PRP-T 4m 25d</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rotavirus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>End of Series Reached</td>
</tr>
<tr>
<td>3 valid doses</td>
<td>11/16/2010 Rotarix 2m 2d</td>
<td>02/08/2011 Rotarix 4m 25d</td>
<td>04/12/2011 Rotarix 6m 29d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MMR</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Past Due</td>
</tr>
<tr>
<td>0 valid doses</td>
<td>09/08/2011 MMR/IV 11m 25d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Provider Reports

Practice Reports

Available Reports

1. Patient List Report
2. Developmental Screening - Due Now Report
3. Lead Screening Report - Children Without a Lead Screening
4. Lead Screening Report - Children Due for Second Lead Screening
5. Lead Report - Children with results ≥ Sup/dl
6. School Eligible Report
7. Immunization Report
8. Newborn Hearing Screening Report
9. Newborn Summary Report
10. Immunizations Submitted to KIDSNET By Other Providers
11. Immunization Coverage Report

Seasonal Reports

Seasonal Influenza - Children Due For Shot #1 Report
Seasonal Influenza - Children Due Now or Due Soon For Shot #2 Report
Expanding Access: From Screens to Reports

- Schools
- Family Visiting Agencies
- Early Intervention Programs
- WIC
- Cedar Family Center
- Head Start

“I know this seems tedious and out of date, but it’s just how we’ve always done it.”
From PAIS to Enrollment Status

- Schools – Monthly roster data - RI Department of Education
- Data files indicating child enrollment by Agency
  - Family Visiting Agencies
  - Early Intervention Programs
  - WIC
  - Cedar Family Center
  - Head Start
Linking Users to Reports

- Agreements by User Groups
- Link User Groups to Agencies
- Limit Report Access by Agency
Provider Report Access Expanded

• Patient List Report
• Lead Screening Report – Children Without a Lead Screening
• Lead screening Report – Children Due for Second Lead Screening
• Lead Report – Children with results $ \geq 5 \text{ug/dl}$
• Immunization Report
• Newborn Hearing Screening Report
• Newborn Summary Report
• Seasonal Influenza Reports (2)
### Immunization Report

**Children who Appear to be Past Due Or Missing Immunizations**

<table>
<thead>
<tr>
<th>Child Name</th>
<th>Date Of Birth</th>
<th>KIDSNET Id</th>
<th>Vaccine Groups Overdue</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNEEZY DARAGOM</td>
<td>02/22/2009</td>
<td>6124286</td>
<td>HepA</td>
</tr>
<tr>
<td>KING J COLE</td>
<td>08/05/2012</td>
<td>7551390</td>
<td>Polio, HepB, DTaP/Tdap, Varicella, MMR, HepA</td>
</tr>
<tr>
<td>APPLE J CORE</td>
<td>09/07/2011</td>
<td>7547051</td>
<td>Varicella, DTaP/Tdap, HepA, MMR, HepB, Polio</td>
</tr>
<tr>
<td>SPRING DAY</td>
<td>08/01/2006</td>
<td>7528653</td>
<td>HepB, DTaP/Tdap, MMR, Polio, Varicella</td>
</tr>
</tbody>
</table>
Access Expanded – New Reports

• Schools
  • Immunization Compliance - Aggregate
  • Immunization Compliance – Student List

• Head Start
  • WIC
  • Lead reports
New Reports Schools - Aggregate

Welcome to KIDSNET

School Nurse Reports

District: New Shoreham
School: ALL
Requirements: K
Grade: ALL
(for school year 2017-2018)
Vaccine Group: ALL
(Reset Vaccine Group)
Status: ALL

Report Date: 04/30/2018
Type of Report: Aggregate or Student List

Download: Click here to Download

<table>
<thead>
<tr>
<th>Compliance Status</th>
<th>Number of children</th>
<th>Percent of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement not met</td>
<td>74</td>
<td>61.67</td>
</tr>
<tr>
<td>KIDSNET data not available</td>
<td>9</td>
<td>7.50</td>
</tr>
<tr>
<td>Met requirements</td>
<td>37</td>
<td>30.83</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>
Requirement Not Met

- Children who have data missing in KIDSNET
- Children who are missing required immunizations
- Children with medical exemptions
- Children with religious exemptions
KIDSNET Data Not Available

• Enrollment information from Department of Education
  • Unable to match with KIDSNET name/DOB
  • Child is not in KIDSNET
• Child is Blocked
  • Parental request to block
  • Unable to provide notification
Permission to provide information to KIDSNET

KIDSNET is a Department of Health information system containing healthcare information, including immunization and lead screening records. The information is shared with authorized healthcare professionals like school nurses and doctors to help assure that children are up to date on immunizations and other preventive health services. Signing this form gives your school nurse permission to share your address and/or immunization information with KIDSNET to help coordinate your health care and assure you have met the immunization requirements for school entry.

I, __________________________, hereby consent and grant to

(name)

______________________________ permission to provide

(name of school)

(check all that apply)

_____ Address

_____ Immunization information

to the Rhode Island Department of Health, KIDSNET Program, 3 Capitol Hill, Providence, RI 02908 for the purpose of health care coordination, including correspondence with parents or guardians and assuring that all healthcare providers responsible for verifying immunization status have complete and accurate information:

Student Name: __________________________

Mailing Address: __________________________

In signing this consent form, the student and/or the student’s parent or legal guardian agrees to permit the release of these records.

Signature of Parent/legal Guardian   Signature of Student
(for students under age 18)   (for students 18+ years of age)
## School Nurse Reports

**District:** New Shoreham  
**School:** ALL  
**Requirements:** K  
**Grade:** 7  
**Vaccine Group:** ALL  
**Status:** ALL  
**Report Date:** 04/30/2018  
**Type of Report:** Aggregate or Student List  

**Download** [Click here to Download](#)  

<table>
<thead>
<tr>
<th>Name</th>
<th>DOB</th>
<th>KN ID</th>
<th>PCP</th>
<th>PCP Phone</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTHUR, WART</td>
<td>03/07/2005</td>
<td>506527</td>
<td>WAKEFIELD PEDIATRICS</td>
<td>4017838008</td>
<td>Not met (VZV), Met (HepB, MMR, Polio, DTaP)</td>
</tr>
<tr>
<td>BABA, ALI</td>
<td>06/13/2005</td>
<td>607290</td>
<td>NARRAGANSETT BAY PEDIATRICS</td>
<td>4017895924</td>
<td>Not met (none); Met (HepB, MMR, Polio, VZV, DTaP)</td>
</tr>
<tr>
<td>CRICKET, JIMMY</td>
<td>03/06/2005</td>
<td>505857</td>
<td>BLOCK ISLAND MEDICAL CENTER</td>
<td>4014692075</td>
<td>Not met (HepB, VZV, DTaP, MMR, Polio); Met (none)</td>
</tr>
<tr>
<td>KIDS, SUNDANCE</td>
<td>10/07/2003</td>
<td>137564</td>
<td>BLOCK ISLAND MEDICAL CENTER</td>
<td>4014082075</td>
<td>Not met (HepB, VZV, DTaP, MMR, Polio); Met (none)</td>
</tr>
<tr>
<td>STRIFE, RAJAH</td>
<td>11/10/2004</td>
<td>434831</td>
<td>SOUTH COUNTY PEDIATRIC GROUP</td>
<td>4017896492</td>
<td>Not met (HepB, MMR, Polio, VZV, DTaP); Met (none)</td>
</tr>
<tr>
<td>LORE, FOLK</td>
<td>06/06/2005</td>
<td>807538</td>
<td>ANCHOR PEDIATRICS</td>
<td>4017938476</td>
<td>Not met (none); Met (HepB, MMR, Polio, VZV, DTaP)</td>
</tr>
<tr>
<td>MIM, MADAM</td>
<td>10/01/2004</td>
<td>420363</td>
<td>WESTERLY PEDIATRICS</td>
<td>4015983229</td>
<td>Not met (none); Met (HepB, MMR, Polio, VZV, DTaP)</td>
</tr>
<tr>
<td>PORTER, ARCHIMEDES</td>
<td>09/07/2005</td>
<td>7288820</td>
<td>BLOCK ISLAND MEDICAL CENTER</td>
<td>4014082075</td>
<td>Not met (Polio, MMR, VZV, DTaP, HepB); Met (none)</td>
</tr>
<tr>
<td>LEADER, KERCHAK</td>
<td>09/09/2005</td>
<td>709433</td>
<td>NARRAGANSETT BAY PEDIATRICS</td>
<td>4017895924</td>
<td>Not met (MMR, VZV); Met (HepB, Polio, DTaP)</td>
</tr>
</tbody>
</table>
Benefits of Expanded Access

- Allows agencies to monitor primary care service delivery
- Engages partners in disease prevention/immunization efforts
- Improves care coordination
- Provides lists of children out of compliance
- Improves follow-up
- Schools – school regulation enforcement
- Schools – assist with survey response
Future Report Development

- Newborn screening reports – linkage prior to PCP immunization
- Provider list – Patient Active/Inactive status update
- AFIX enhancement – noncompliance listings
- Private/Religious school reports
- Lead report data for schools
- AFIX-like reports to non-providers