The '411' of MIROW: Navigation to Implementation

Presentation Objective

- This session will provide
  - A detailed overview of a few of the best practice guides for immunization information system operations
  - User testimonials about leveraging these guides in various jurisdictions

What is MIROW?

- The Modeling of Immunization Registry Operations Workgroup
  - 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.

Typical Structure of the MIROW Documents

- Principles: provide a high level direction that helps to guide the development of business rules

- Business rules: represent specific requirements and decision-making logic for various aspects of the topic

- Domain Model: describes the main concepts, terms, and definitions related to the topic
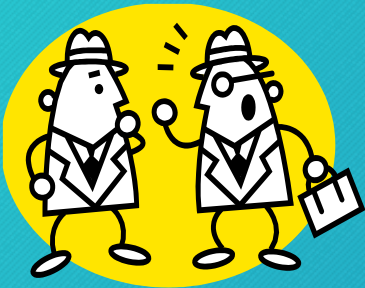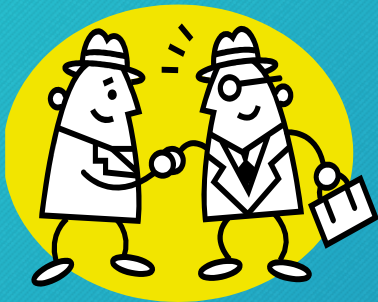
MIROW Efforts in Context
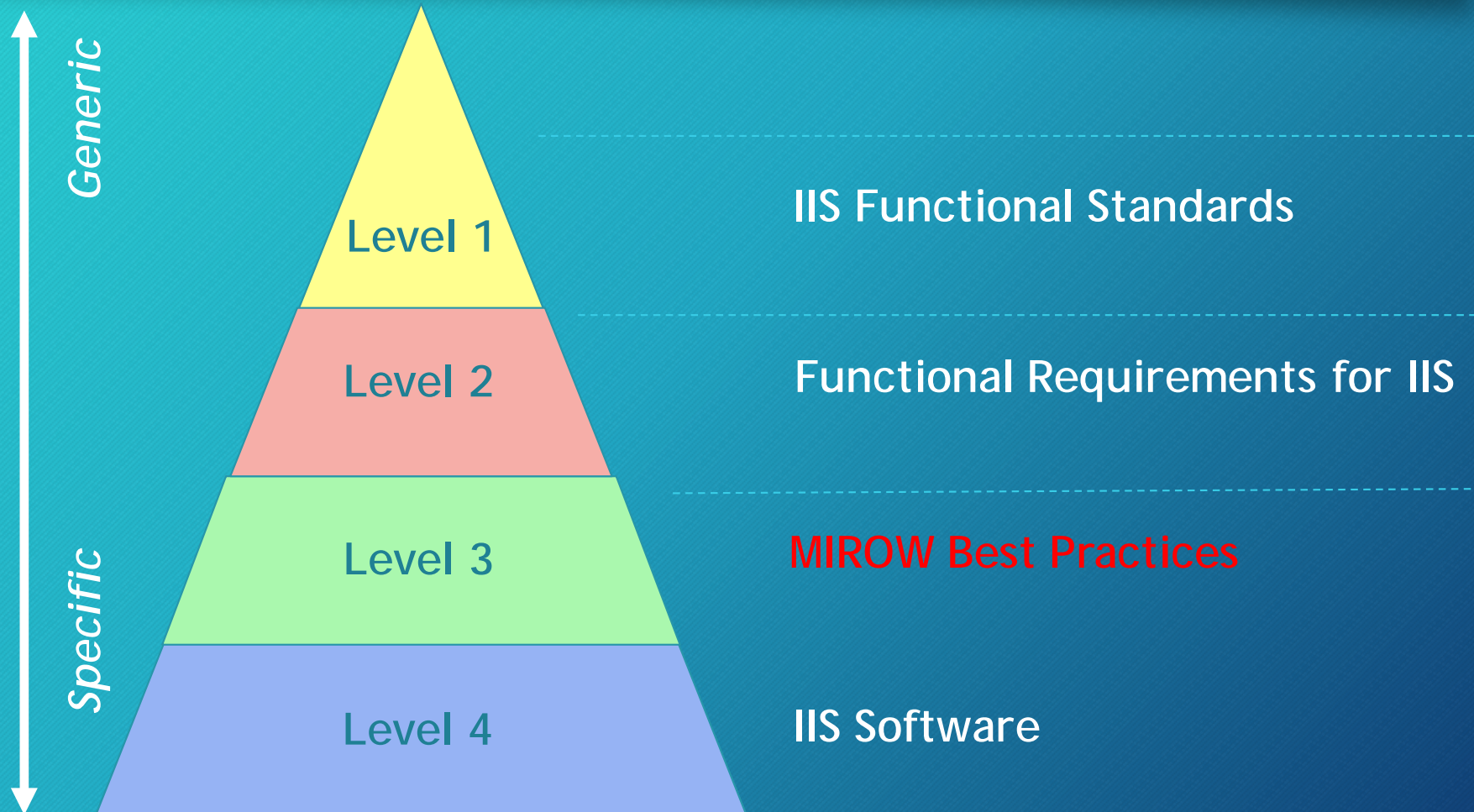
The MIROW Process
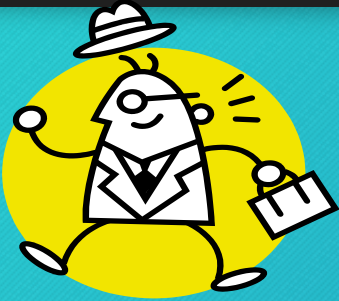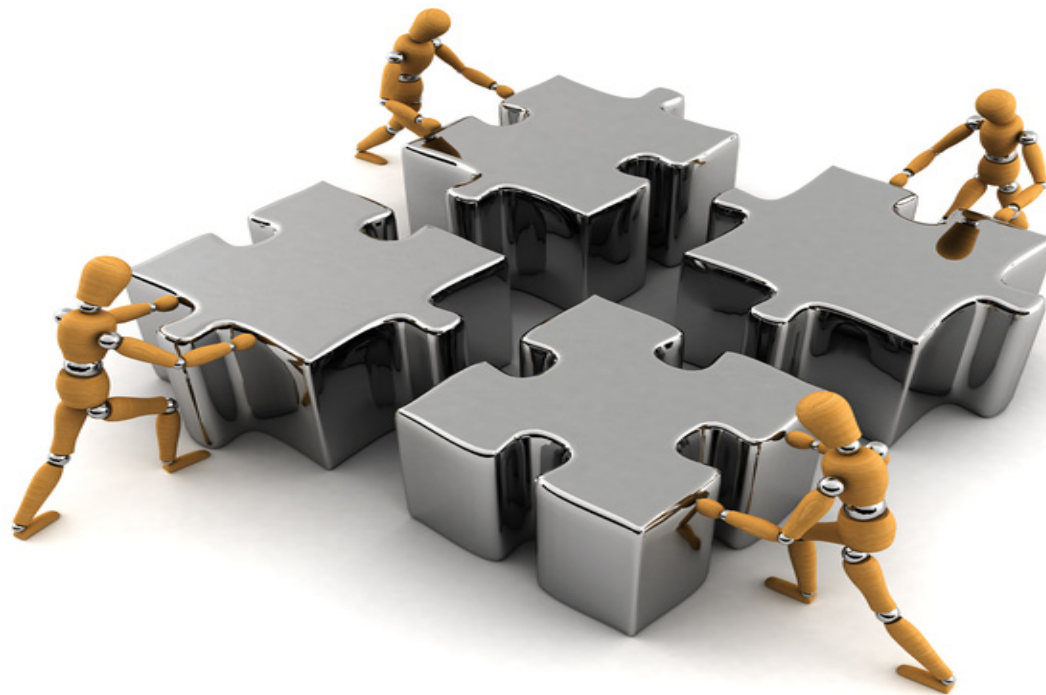
Brainstorming

Discussing

Reaching Consensus

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

The MIROW Process – YES!

The Buy-In!

"That's just great. I discover the cure for the common cold and all you can do is criticize."

Available MIROW Guides

| IIS-VAERS Collaboration	Patient Status (MOGE)	Vaccination Level Deduplication	Data Quality: Incoming Data	Reminder/Recall	Patient Eligibility	Inventory Management	Data Quality: Selected Aspects	Patient Active/Inactive Status	
29	11	52	45	82	52	68	63	27	# of key recommendations in each guide
2005	2005	2006	2008	2009	2011	2012	2013	2015	Year of Publication

Vaccination Level Deduplication in Immunization Information Systems
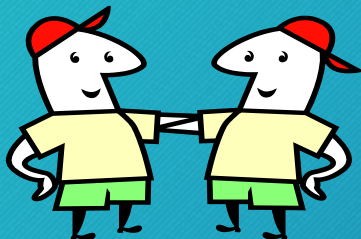
Deduplication can be Daunting ....

Deduplication: Scope of the Guide

- Deduplication of immunization records is a two-fold problem that includes deduplication

    - at the vaccination event level (e.g. two records describe the same immunization)
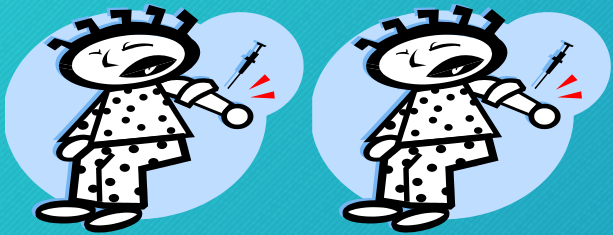
        This is in scope

    - at the demographic/patient level (e.g. two records describe the same patient)

        This is out of scope

Why Vaccine Deduplication?

- Create and maintain an accurate and timely record of an individual's immunizations
- More accurately forecast vaccine administration in accordance with Advisory Committee on Immunization Practices (ACIP) recommendations

Changes in Data Coming into the IIS

- IIS often receive vaccination data from multiple sources
- Frequently contain multiple records for the same vaccination event.
- Do similar records = same vaccination event?
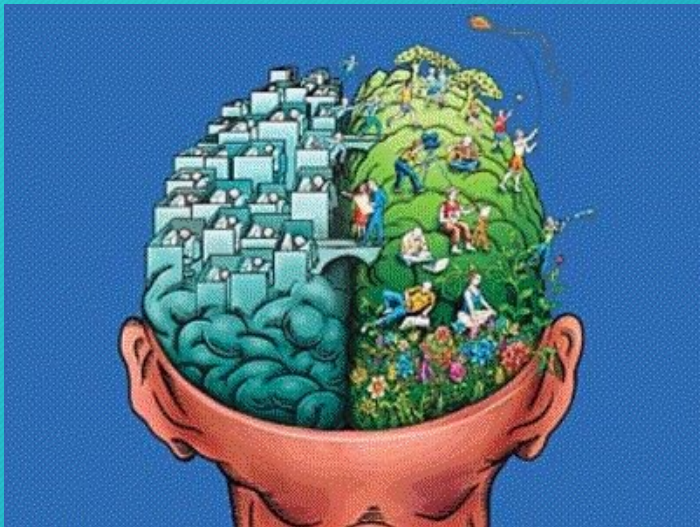- What to do with these duplicates?

Incoming Data Issues ….

"Can I borrow those kittens for an hour? I want to freak out the people who had me spayed."

S.GROSS

Why is this guide important?

- Inconsistency across immunization information systems (IIS)

- Uniform alignment of the vaccination level deduplication processes across different immunization information systems

Consistent Practices Across IIS is key….

Second dates are trickier. They ask the same questions as on the first date, looking for inconsistencies.

Vaccination level deduplication can be addressed in three phases:

Phase 1. SELECTION: Identify and group multiple vaccination records that potentially belong to the same vaccination event.

Phase 2. EVALUATION: Evaluate pairs of potentially duplicate immunization records for match/differ decisions.

- Results in three possible outcomes:
  - records match (are duplicates)
  - they differ
  - don't know

Phase 3. RESOLUTION: Produce a 'BEST' record to represent the vaccination.

Selection Phase: Principles and Business Rules (Excerpt)

- P04 We would like to be more inclusive than exclusive.
- BR02 A record for the vaccination event must be compared with all and any of the vaccination event records with the same Vaccine – Family/Group.
- BR03 Identical records should not be selected for deduplication.

Evaluation Phase: Principles and Business Rules (Excerpt)

- P11: If vaccination encounter dates are different in records under evaluation, the proximity of these dates has to be taken in consideration.

- BR09: Records selected for evaluation at the

  Selection phase should be considered different

  until proven to be duplicates.

- BR10: If vaccine lot numbers are different in evaluated records, these records are most likely to be different (not duplicates).

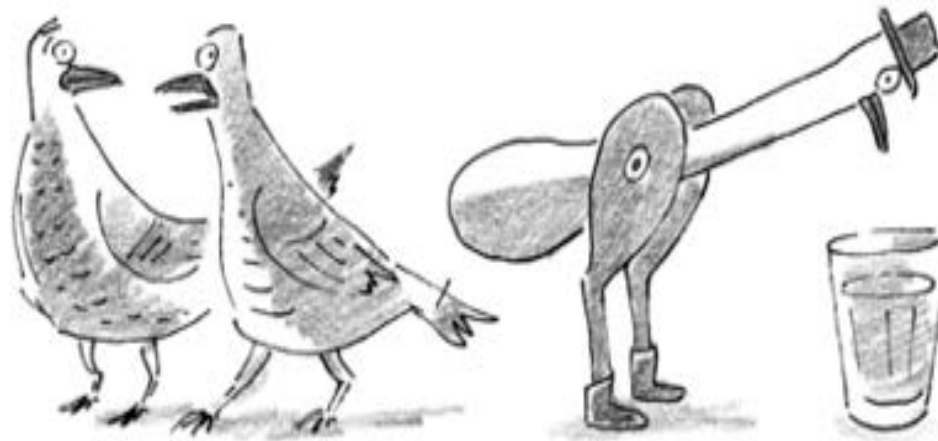# Resolution Phase: Principles and Business Rules (Excerpt)

- P10:   The degree of confidence should be taken into consideration

- BR20:   The record with the highest level of confidence should be selected

- BR21:   The record with more complete data should be selected
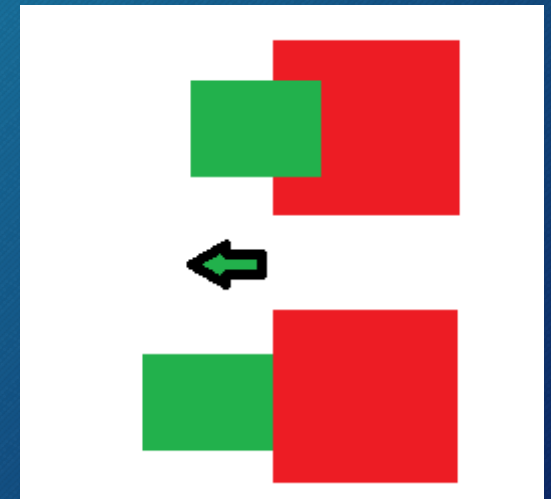
Resolution: Not a Duplicate Record

"Try to forget him. He's focussed on one thing, and it's not you and it never will be you."

Testimonials: Direct Uses of the Guide*

- 16/25 indicated the guide was helpful
- 9 programs used guide to develop/refine
     existing vaccination-level deduplication algorithm
- 1 program used guide for potential future changes
- 8 programs used guide in planning features of a new IIS
- 3 programs used guide as internal reference on
     best practices
- 3 programs used guide to develop manual deduplication decision-making processes

*Immunization Registry Operational Guidelines Evaluation – Final Report

Figure 2: Direct Uses of Vaccination-Level Deduplication Guide (n=45)
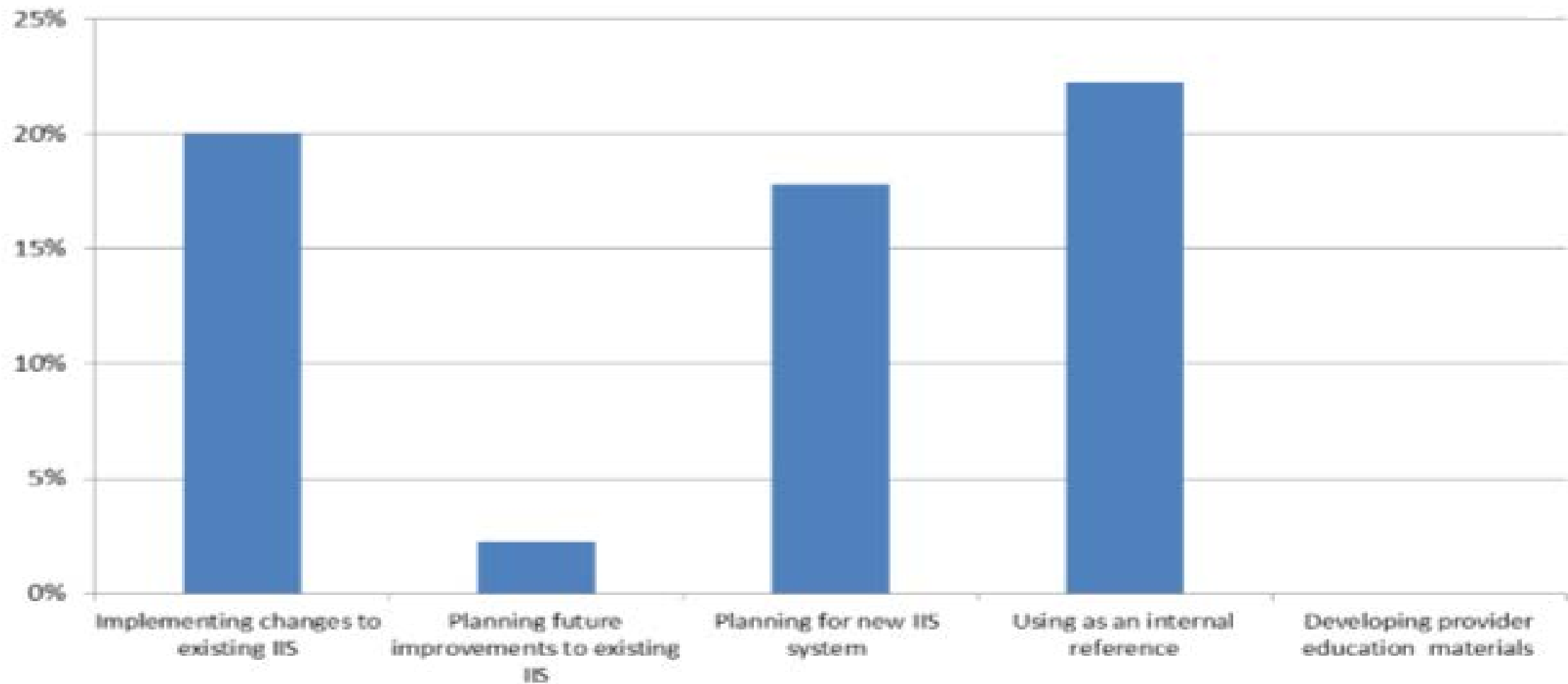
Use of Guide in Massachusetts

- MIIS Developers use all MIROW Guides when starting any requirements effort
- Used Guide when defining deduplication algorithm
  - Sequential Approach to Evaluation
- Applied guidelines in the Guide to assign confidence level to a record
- MIIS Staff applied most principles and business rules in developing its process for de-duplicating vaccinations
- MIIS applies a 10-day window for deduplication

Don't be Complacent!

"I finally feel I can accept the things I'm too lazy to change."

Data Quality Assurance:
Incoming data
Selected aspects

Why Data Quality Assurance?

- Electronic data exchange and the ongoing Meaningful Use initiative

- Resulting increase in IIS-EHR collaborations

- IIS and IIS partners need data quality assurance guidelines

Data Quality Assurance MIROW Guides

	Chapter 3: DQA: Incoming data	Chapter 7: DQA: Selected Aspects
Publication date	February 2008	May 2013
Main topic areas	• Develop principles and business rules for incoming DQA • Describe healthcare providers' precertification process	• Develop domain model & diagram • Reporting facility identification management • Review & update business rules from Chapter 3
Number of principles	13	2
Number of business rules	32	27 + 27 updated business rules from Chapter 3
Number of general recommendations	0	7

DQA: Incoming data

Steps to pre-certifying submitters

1. Submitter produces a sample file
2. IIS examines the sample file
3. IIS staff person compares the sample file to the medical chart
4. IIS periodically examines a subset of IIS data

DQA: Incoming data

Pre-load validation
- Inspect incoming data reported by certified submitters to ensure high quality BEFORE loading it into the system
- Thirteen principles used to validated immunization data
  - Consistency principle
  - Accuracy principle

Huh. Every one of our customers has a birthday in April. What are the odds of that?

Data quality sense tingling.
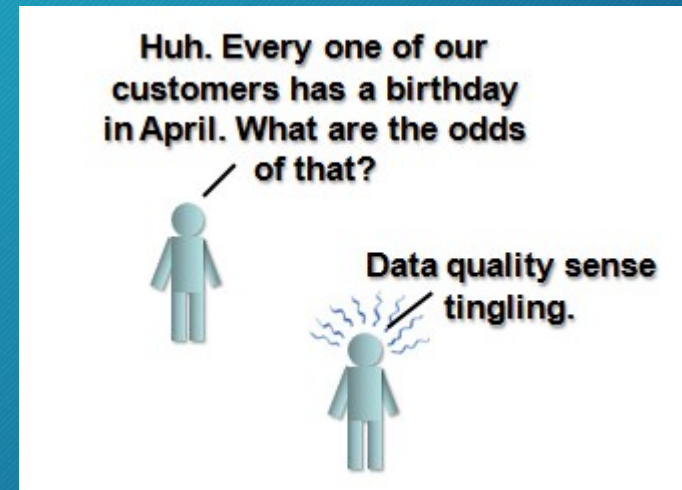
DQA: Selected aspects

- Facility identification management
- Roles of organizations
  - Vaccinator
  - Recorder
  - Submitter

DQA: Selected aspects

- Principles for facility identification management:
  - IIS should be consistent in the approaches followed for facility identification management. (P801)
  - IIS should clearly document the approaches followed for facility identification management (P802)

- HL7 considerations
  - Enable submission of two organizations per message
  - Recommended use of MSH-22: responsible sending organization

MIROW Guide evaluation: incoming data quality guide

Bar chart axis: 0% to 90%

Legend:
- Programs reported Familiarity (n = 35)
- Programs reported direct use (n = 26)
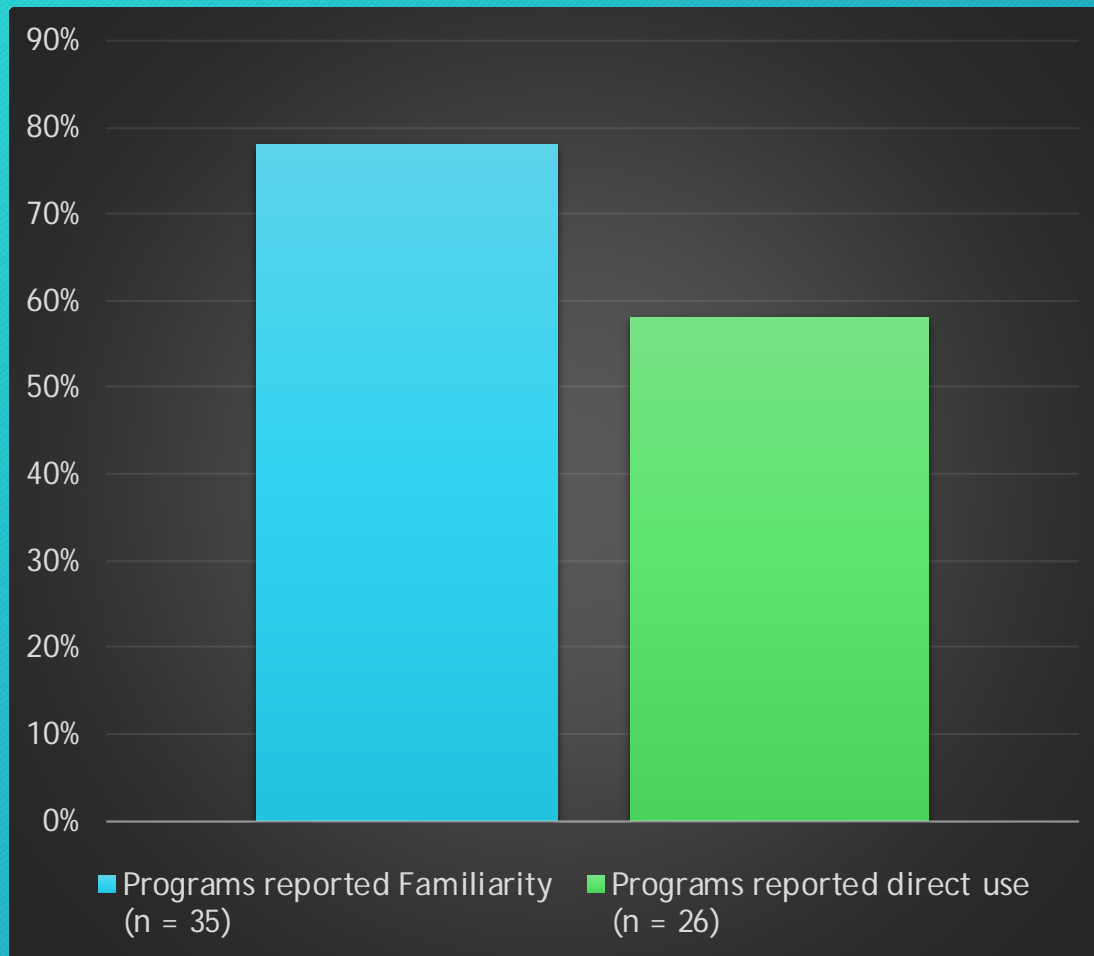
- Four programs were unsure whether this guide had been used

MIROW Guide evaluation: incoming data quality guide
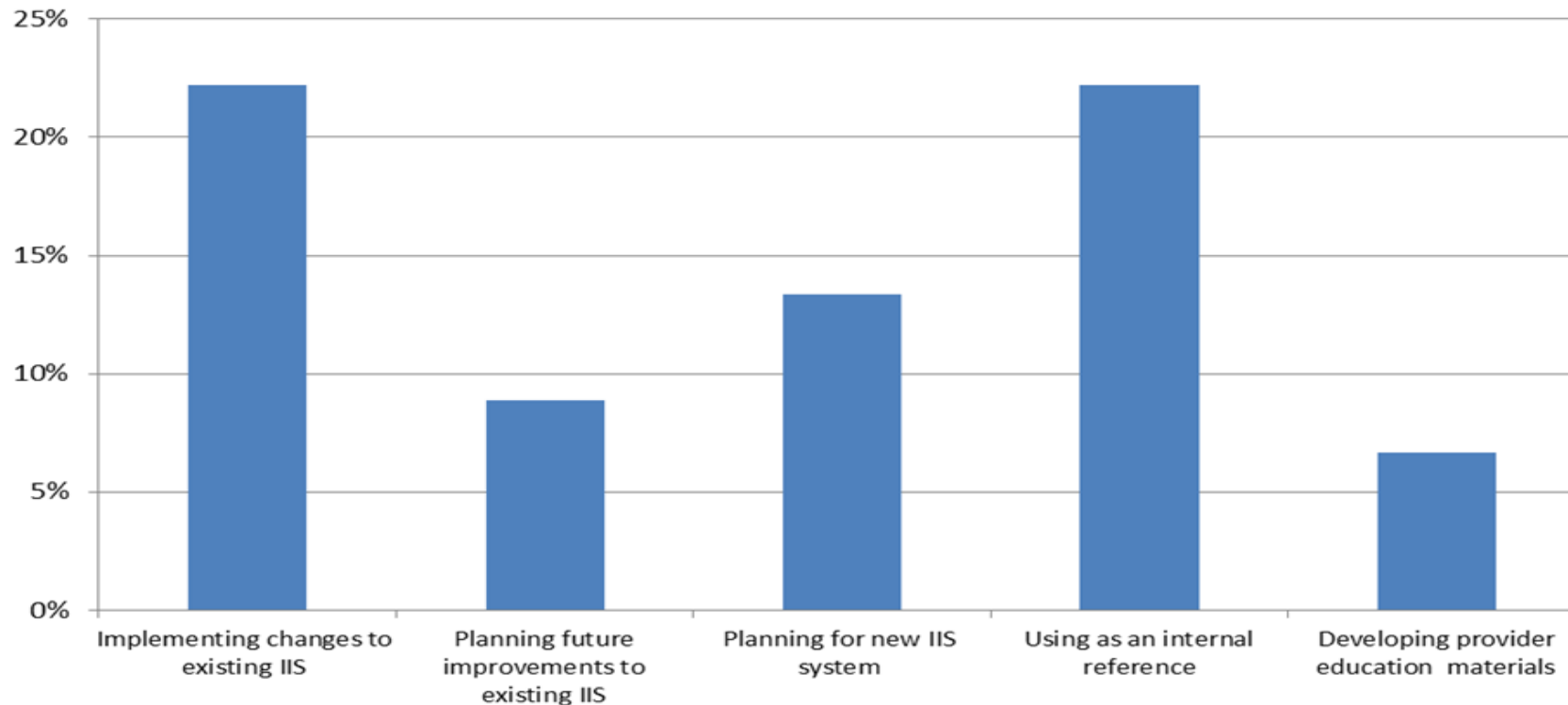
MIROW Guide evaluation: incoming data quality guide

Positive impacts:

- "Using the guide has tremendously enhanced our ability to catch problems early, which has greatly reduced having to back out large quantities of data to clean up and reinsert"

- "As a new IIS manager, it would have been hard to understand what business rules were needed in the system without the guide. Using the guide saved time by making it easier to create business rules and helped to validate some of what had already been doing already"

Use cases of DQA

- Kansas key improvements: Incoming data
  - Gap analysis
  - Provider data quality report
  - Internal data quality monitoring procedures developed

- Washington key improvements: Incoming data
  - Data loading quality
  - Policy and procedure documentation
  - Follow up on provider data quality

Use Cases DQA

- Oregon: Incoming data
  - Gap analysis using both DQA guides and AIRA self assessment tool
  - ALERT IIS Data Quality Protocol
  - Develop queries, reports and score card to assess data quality
- Oregon: Selected aspects
  - Gap analysis
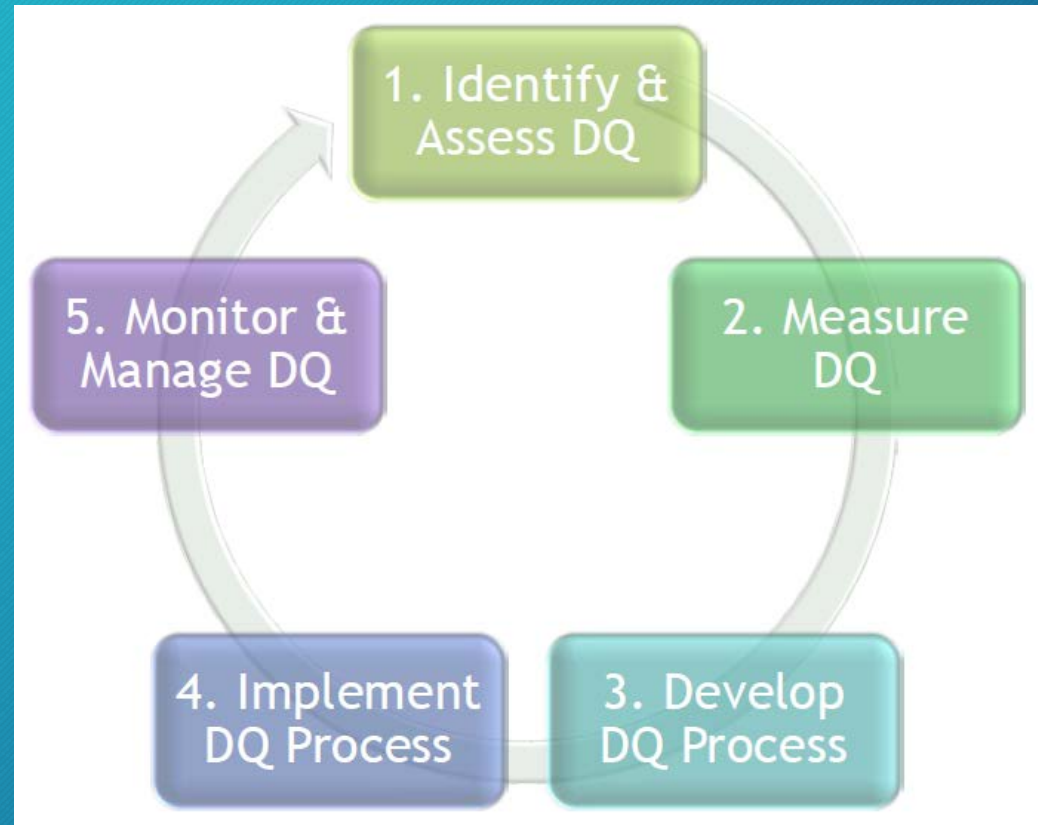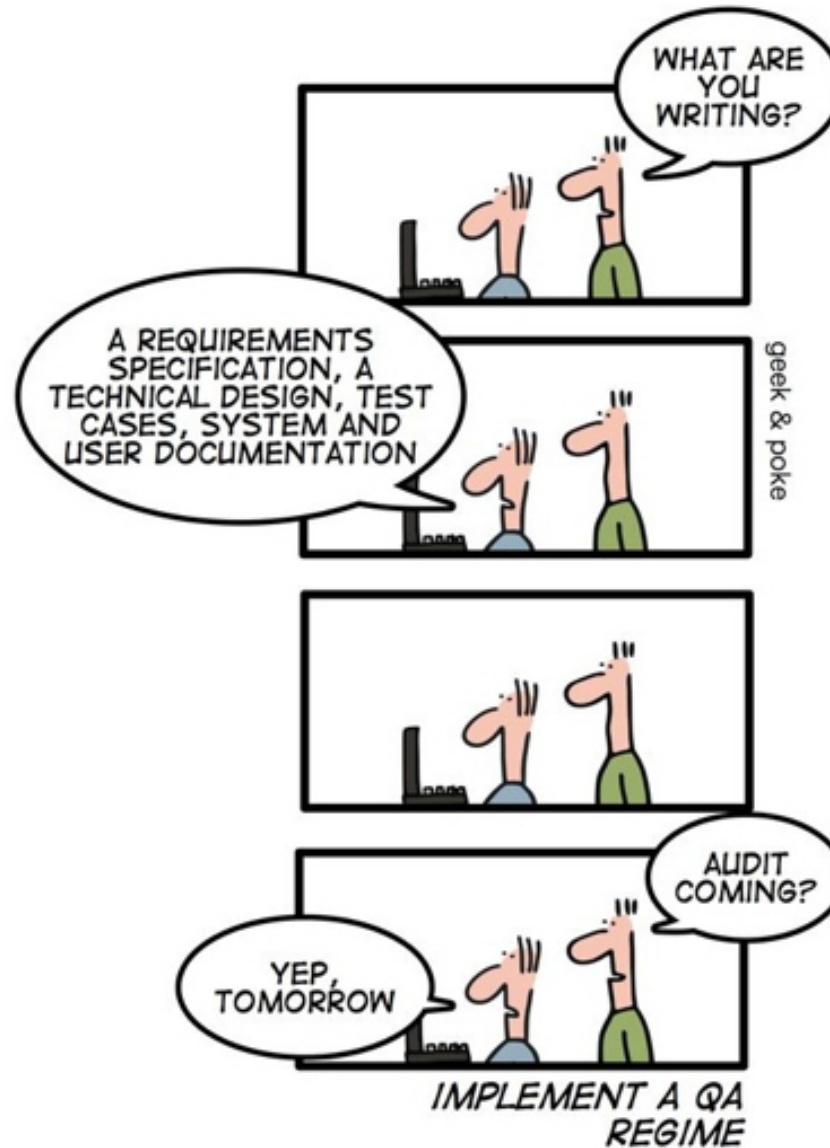
Management of Patient Active/Inactive Status in Immunization Information Systems:

Replacement of 2005 Guidelines

Management of PAIS in IIS

- Work began in early 2014
- Face-to-face meeting held June 2014

- ...but why *replace* an existing guide?

MIROW Guide Evaluation

- Immunization Registry Operational Guidelines Evaluation = IROGE ☺

- Needed feedback
  - Do the guides help?
  - Should we keep doing this?

- Guidelines in Action

IROGE

The 2005 PAIS Guide…

"…was very helpful for working with our state IT in developing the ability to capture patient status…"

"…provides a good starting point for considering the larger issue of denominator management."

"…provided the impetus for discussions between IIS and VFC Program staff on patient status…," helping them realize the impact of patient status on coverage rates.

IROGE: 2005 PAIS Guide

- Request for Proposal (RFP)
- Scope of Work (SOW)
- Upper Management
- Educational Materials
- Technical Staff
- Future IIS Development

IROGE: 2005 PAIS Guide

- Overall, positive feedback!

- Areas to improve
  - Patient active with more than one provider
  - One-time vaccinators
  - Geographic jurisdiction status
  - Electronic data Exchange

Management of PAIS in IIS Guide

Defines:

5 Patient Statuses at the Provider Organization (PO) Level

and

5 Patient Statuses at the Geographic (GJ) Jurisdiction Level

Provider Org.

- Active
- Inactive, with the following reason codes:
  - No longer a patient
  - Lost to follow-up
  - Unspecified
- Deceased

Geograph. Juris.

- Active
- Inactive, with the following reason codes:
  - Outside jurisdiction
- Unknown, with the following reason codes:
  - No address - no vaccination
  - No activity for extended period of time
- Deceased

Management of PAIS in IIS – New Concept

- Newly addressed concept

1-1
vs.
1-Many (1-M)

Management of PAIS in IIS - Principles

Principle 302

- Patient Status should be maintained in a hierarchical manner, ensuring a responsible party.

Principle 303

- A more rigid approach should be used when assigning PAIS at the geographic jurisdiction level as a "safety net" provision for the populace.

Management of PAIS in IIS - Principles

Principle 306

- Identification of an individual as a patient of a provider organization may be done...
  - Directly (when...)
  - Indirectly (when...)

Principle 307

- Identification of an individual as NOT a patient of a provider organization may be done...
  - Directly (when...)
  - Indirectly (when...)

Management of PAIS in IIS – Business Rules

Business Rule 401

- Establishes nomenclature for statuses at the PO Level:
  - Active
  - Inactive, with reason codes:
    - No longer a patient
    - Lost to follow-up
    - Unspecified
  - Deceased

Business Rule 411

- Establishes nomenclature for statuses at the GJ Level:
  - Active
  - Inactive, with reason codes:
    - Outside jurisdiction
  - Unknown, with reason codes:
    - No address – no vaccination
    - No activity for extended period of time
  - Deceased

Management of PAIS in IIS – Business Rules

Business Rule 402A

- For 1-1 approach, consider patient Active if:
  - PO directly identified individual as patient
  - PO indirectly identified individual as a patient
    - Conducted most recent (acceptable) event
    - Created a new record in IIS by submitting demographic-only or historical-only data

Business Rule 402B

- For 1-M approach, consider patient Active if:
  - PO directly identified individual as patient
  - PO indirectly identified individual as a patient
    - Conducted most recent (acceptable) event
    - Created a new OR updated existing record in IIS by submitting demographic-only or historical-only data

Management of PAIS in IIS – Decision Tables

Assessment Report – PO Level

CONDITIONS	Scenario A	Scenario B
Patient status at the provider organization level	Active	Deceased Inactive
ACTIONS		
1. Include in provider organization assessment report[1]	X	
1. Exclude from provider organization assessment report		X

Management of PAIS in IIS – Scenarios

Scenario 101

Patient moved out of state, but uses in-state provider organization

- Patient moved out of the state

- Patient continues to use services of a provider organization within the state

Resolution

Status:

- Patient status at the geographic level (state) should be set to "Inactive: Outside jurisdiction"

- Patient status at the provider organization level should be set to "Active" with that in-state provider organization

Consequences:

- Patient should be excluded from the geographic jurisdiction (state) reminder-recalls and assessments

- Patient should be included in the provider organization reminder-recalls and assessments.

Remarks

- See P310 "Out of state" patients

- See BR413 Inactive status at the geographic jurisdiction level with the reason code "Outside jurisdiction"

- See BR402A and BR402B. Active status at the provider organization level

Management of PAIS in IIS – Scenarios

Scenario 103

Patient address not known, patient receives services within state

- Patient address is not known, and

- Patient receives services from a provider organization within the state, Provider Org A

Resolution

Status:

- Patient status at the geographic jurisdiction level (state) should be set to "Active"

- Patient status at the provider organization level should be set to "Active" with Provider Org A

Consequences:

- Patient should be included in the geographic jurisdiction (state) reminder-recalls and assessments

- Patient should be included in Provider Org A provider organization reminder-recalls and assessments

Remarks

- See BR412, Active status at the geographic jurisdiction level and P303, 'Avoid having people "fall through the cracks'

- See BR402A and BR402B. Active status at the provider organization level

I can't believe we do this for a living ….

" I can't believe we do this for a living. "

MIROW Guide Development

- What's next for MIROW?

MIROW Guide Development 2015 - 2016

Problem
- Change is rapid/rampant
  - A lot of work
  - Lengthy timeline
- Subject Matter Experts (SME's) have less time to share

Trial Resolution
- Reduce pre-/post-meeting work (teleconferences)
- Hired paid SME's
  - Scope/Domain Model/Materials
  - Prep volunteer SME's
- Volunteer SME's
  - Comment pre-/post-meeting
  - 1 teleconference
  - Face-to-face meeting
  - Internal review process

The Time is NOW for Applying MIROW Guidelines

"Could you come back in a few months? Our plate is rather full at the moment."

Note: Humorous inserts throughout this presentation were borrowed from the New Yorker magazine, the Dilbert Comic Strip by Scott Adams, and Geek and Poke

The '411' of MIROW: Navigation to Implementation

Questions?

MIROW "411" Contributors

Lisa McKeown

Senior Program Analyst

National Association of County & City Health Officials (NACCHO)

(202) 783-1418

lmckeown@naccho.org

Debra Warren

IIS Manager

Massachusetts IIS (MIIS)

(617) 983-6762

debra.warren@state.ma.us

Amanda Harris

IIS Manager

Nevada WebIZ

(775) 684-4258

asharris@health.nv.gov

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