Arizona Patient Deduplication ~ Going Beyond the Automated Function

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Arizona Immunization Information System
(ASIIS)

September 19, 2012

Immunization System Deduplication

With any Immunization Information System, deduplication of patient records is a challenge.

In Arizona we use the Scientific Technologies corporations (STC) product, which has very robust deduplication algorithm.

However, we found that the automated algorithm does not always identify all the duplicate records.

Lots of Duplicate and Fragmented Records

- ASIIS is a mature registry established in the 1990s

- Automated de-dup algorithm was improved over time

- Differing and incomplete records prevent accurate matching
  - Ex: Provider conducts improper search of patient records

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External Reports

— An in-house programmer developed external reports that identify duplicate records that the algorithm missed

— These reports identify patient records that may match as Definite, Probable, Possible

- ❑ Bad names
- ❑ Gender
- ❑ MOGE
- ❑ Inactive users
- ❑ Vaccine specific
  - ❑ MMR
  - ❑ HPV
  - ❑ Wrong date
  - ❑ Unknown or IG

Large Clean-up Initiative

➢ Contracted with IIS vendor helped us to hire, house and run payroll for temporary staff
➢ Hired 7 individuals technically skilled, with more experience and good work history
➢ ASIIS staff trained and spent time between offices.
➢ ASIIS staff and vendor staff provided continuous coaching, help desk assistance and quality control.
➢ Project implemented September 2011 and completed December 2011
➢ Benchmarking used IIS Annual report format. Ran data elements:
    -every two weeks
    -at the end of all sub-projects

The results were impressive and substantially improved both vaccine rates and completion rates.

The project was well worth doing.

Problem 1: Age Groups

Numerous reports and comparisons are based on age groups so this is a critical area to correct.

A large amount of duplicate records caused:
- -lower completion rates
- -higher record count than actual population
- -unreliable numbers in report outcome

Every record in each age group, Birth through 19 years was individually reviewed for possible matches and possible bad merges within 8 weeks.

The results were

Age Group - Results

Approximately 38,000 rows were generated for the reports
With an average of a 5% duplicate rate, this equated to about
74,000 records reviewed

This was completed in less than 2 months time
Reduction in over 17,000 adolescents (11-18) ---- ASIIS has
over 900,000

<u>Examples of results</u>:

% of 19-35 month olds with the 431331* immunization
series completed increased by 4.39%, and the 4313314**
completion rate increased by 4.40%.
% of 19-35 month olds with 2 Hepatitis A vaccines
increased by 6.82%
% of 11-12 year olds with at least one dose of flu increased
by 17.12%
% of 13-17 year olds with at least one dose of flu increased
by 17.32%
% of 11-12 year olds with one dose of meningococcal
vaccine increased by 5.99%
% of 11-12 year old females with 3 doses of HPV vaccine
increased by 5.74%

These increases are **huge** when you think of the numbers that
it takes for any sort of change when we are looking at
thousands of records.

Often we set annual goals of a 1-2% increase.

Problem 2: Gender

ASIIS had a higher than normal percentage of incorrect gender assignments.
- Ex: 15% of records had no gender

The problem surfaced when we began running HPV uptake reports.

Incorrect Gender field had higher negative impact than realized:
- Gender specific inquiries were not reliable.
- Indicated inappropriate use of VFC vaccine
- Core elements not being met/submitted
- HPV being administered to males

Gender con't

2 causes were identified and 2 fixes were necessary to improve data quality of this field.

Causes
1. Manual movement of the scroll bar
2. Incorrect field location in DTT or HL7 uploads

Fixes
1. A pop-up notice now appears when the gender has been changed on a record
2. Electronic files are verified prior to upload

Gender example in IIS

[demonstration of cause #1]

female is selected as the sex of the patient

Patient Demographics Edit

First Name:	PATIENT	Race:	White / Black or African American / Hispanic
Middle Name:		Ethnicity:	--select--
Last Name:	DEMONSTRATION	Language:	--select--
Suffix:	--none--	SSN:	_ - _ - _
Birth Date:	06/09/2012	Medicaid #:	
Birth File #:		Multiple Birth:	--selec-- of --selec--
Sex:	--select--	Inactive	--select--
Mother Maiden Name:	--select-- / FEMALE / MALE / OTHER / UNKNOWN	VFC Status:	AHCCCS
Military:		Block Recall:	☐
Comments:			

mouse is moved across screen toward scroll bar
and then moved downward

Gender example in IIS con't

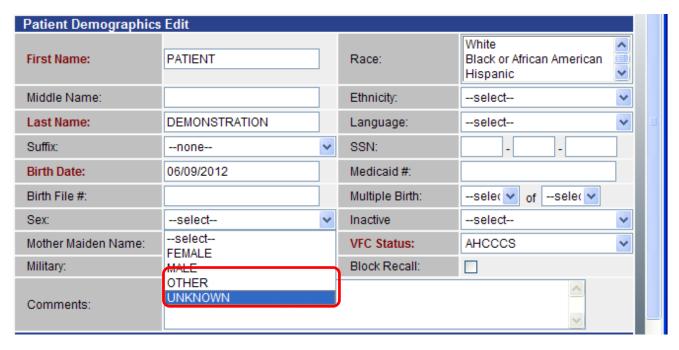Causing the sex of the patient to move downward as well, landing on 'other' or 'unknown' and changing the original selection . . .

Patient Demographics Edit

First Name:	PATIENT	Race:	White / Black or African American / Hispanic
Middle Name:		Ethnicity:	--select--
Last Name:	DEMONSTRATION	Language:	--select--
Suffix:	--none--	SSN:	- -
Birth Date:	06/09/2012	Medicaid #:	
Birth File #:		Multiple Birth:	--sele of --sele
Sex:	--select--	Inactive:	--select--
Mother Maiden Name:	--select-- / FEMALE / MALE	VFC Status:	AHCCCS
Military:	OTHER	Block Recall:	☐
Comments:	UNKNOWN		

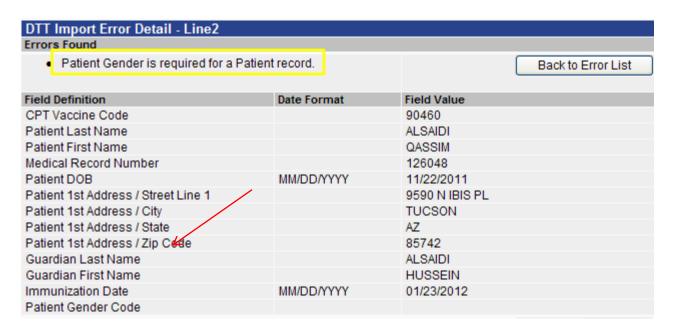. . .User saves without realizing a change has been made.

The fix: now anytime sex is changed on a patient record a **pop-up warning** appears !

Gender example in DTT file

[demonstration of cause #2]

When gender is not included on DTT (billing) file, an error message now appears

DTT Import Error Detail - Line2		
Errors Found		
• Patient Gender is required for a Patient record.		Back to Error List

Field Definition	Date Format	Field Value
CPT Vaccine Code		90460
Patient Last Name		ALSAIDI
Patient First Name		QASSIM
Medical Record Number		126048
Patient DOB	MM/DD/YYYY	11/22/2011
Patient 1st Address / Street Line 1		9590 N IBIS PL
Patient 1st Address / City		TUCSON
Patient 1st Address / State		AZ
Patient 1st Address / Zip Code		85742
Guardian Last Name		ALSAIDI
Guardian First Name		HUSSEIN
Immunization Date	MM/DD/YYYY	01/23/2012
Patient Gender Code		

ASIIS staff work with provider or billing vendor to update DTT file to include gender.

Gender is included on next import

Project 3:   Bad Merges

ASIIS identified numerous records that had been incorrectly merged together causing:

- records to "disappear"

- return of incorrect data on reciprocal feeds

- incorrect vaccination events and forecasting

- system to compile non-matching records

- users to question reliability of IIS data

- extra work on providers offices, time spent:

-searching / investigating
-calling ASIIS
-follow-up
-sometimes even needing to call
  patient back for correct immunizations

Bad Merges con't

2 issues were found that contributed to the cause, 3 actually • • •

1. "Baby" record submissions
2. Large communities with limited last names among non-familial members
3. Multiple records on 1 patient with different information submitted at different times

We did not have time to complete this project, but this gave us a good indication that bad merges were occurring with IHS sites, in particular, along with other sites.

     -Local hospital reporting vs. Vital Record reporting vs. practice reporting

To help remedy the problem:
• Adjusted deduplication algorithm
• Cleaned up records from years prior

Quality Assurance Steps

- Written procedures with decision trees

- Intense group training on each project

- Individual training and coaching

- Spot checking of records

- Daily/weekly reports run for accuracy and tracking progress

- Help Desk available by phone or email

- Close oversight when issues detected

LESSONS LEARNED

❖ Plan ahead for internal/external concerns
❖ Decide on limitations and expectations for temp staff: attendance, performance
  ❖ -pay attention to the time of year
  ❖ -ensure they know who to talk to about what (ie. . Payroll vs. question in system)
❖ Have reports created prior to project start-date
❖ Know what will be tracked and monitored for both work progress, work quality and employee productivity
❖ Have pre-set follow-up meeting dates with vendor to check status and ensure all is going well.
  ❖ -Noise level, hours, personalities
  ❖ -want to keep a good report (so maybe can do it all again)

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Thank you, for your time.

If you would like to contact ASIIS regarding this, please call:

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