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AIRA AMERICAN IMMUNIZATION REGISTRY ASSOCIATION
Immunization Information Systems for a New Era

SnapShots

Immunization Information System News From the American Immunization Registry Association

Welcome to SnapShots, the American Immunization Registry Association's newsletter about the progress, best practices, and accomplishments of immunization information systems across the country. We invite you to share news about your IIS. Contact us at info@immregistries.org or (212) 676-2325 with information about a successful programmatic or technical innovation, major accomplishment, or milestone that your registry has reached. SnapShots is sent to subscribers quarterly and posted on AIRA's web site: www.immregistries.org.

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FROM THE PRESIDENT

This special edition of Snapshots focuses on data – data quality, data use, and data exchange. Data is such a plain little word, yet so dear to the hearts of those of us who work with IIS. Where would we be without our data? This issue of Snapshots is rich with examples of how our peers have worked to improve and use the data in their systems. Many thanks to the folks who contributed articles to this most informative issue.

The National Immunization Conference draws near. I hope to see many of you there – at AIRA's Preconference Workshops, Ad Hoc Sessions, Reception, and, oh yes, at the regular conference sessions too! Please seek me out to share with me ideas about how AIRA can best meet your needs.

Thanks to all of you who participate in AIRA workgroups and committees. Your active participation is essential to the organization's success. Do not hesitate to contact me or Cindy Sutliff, AIRA Executive Director, if you are interested in getting more involved in any of our activities.

Warmest regards,

Sherry Riddick (WA), AIRA President

NEW JERSEY IIS EXCEEDS GOAL FOR DATA ACCURACY

New Jersey's Registry Act proposed Administrative Rules will mandate providers who administer immunizations to children under the age of seven to report shots administered in the New Jersey Immunization Information System (NJIIS) by December 2011. In our efforts to ensure data integrity of the NJIIS the New Jersey Department of Health and Senior Services Vaccine Preventable Disease Program (NJDHSS-VPDP) implemented a Quality Assurance division. The Program also understands that data integrity is critical as we move forward with interstate data sharing. The division established standards and guidelines to effectively perform medical record audits of the provider's direct data entry and electronic uploads to ensure that immunization data submitted to NJIIS is accurate and complete when compared to the patient's clinical data documented in the provider's medical record. This initiative has enabled the program to identify the system's accuracy and completion rates, which supports the data integrity of the system and assist in increasing provider's participation and utilization.

The VPD Program partnered with Northern and Central New Jersey Maternal and Child Health Consortia for QA Specialists to perform NJIIS QA activities. The QA standards and guidelines are based on AIRA's "Data Quality Assurance In Immunization Information Systems: Incoming Data". This resource provided the division with clearly defined and measurable objectives and means to evaluate data quality. Our goal is to ensure the accuracy of NJIIS data at 95 percent for direct data entry and 80% for electronic data uploads.

The NJIIS QA Specialists collects immunization information from healthcare provider medical records and compares the medical records data to the immunization information in the NJIIS, audit findings such as data entry errors, invalid and omitted shots, recommended corrective measures, and other feedback is sent to healthcare providers. Our OITS technical team developed new Random Selection report which is a major enhancement, the Immunization History on Demand report format was developed specifically for QA and an enhanced Providers' Memo feature was developed to allow QA staff to monitor the progress of the provider's data.

According to Dorothy Williams McCall, NJSIIS Coordinator, the Program feels more confident in promoting the NJIIS as a creditable tool in assessing immunization coverage rates for our Program, providers and public health partners. Since implementation of the quality assurance division the NJIIS has exceeded it's goal of a 95% accuracy rate , approximately 4,775 medical records was audited and more than 95,000 shots from providers statewide have been reviewed. Audit results indicate that NJIIS has less than a 2% error rate (98% accuracy rate) and an incompletion rate of 18%. We are extremely proud of both our IIS product and the IIS team that works to make NJIIS a national model that our Program can be proud and appreciate.

Dorothy Williams McCall (NJ)

THE OREGON ALERT PRE-CERTIFICATION PROCESS: PINPOINTING THE DATA PROBLEMS AHEAD OF OUR PARTNERS

"If you don't have time to do it right, when will you have time to do it over?" With that thought in mind, the Oregon Immunization Alert IIS has implemented a new pre-certification process based on recommendations from the AIRA-MIROW document on incoming data quality. With technical staff time in short supply as we move toward implementing a new IIS software which includes data migration and new scannable technology, we decided to pilot a new process that involves receiving a test file from the clinic, importing it directly into Microsoft Access, and creating queries to check for issues in three major areas. The areas Oregon is looking closely at are validation and completeness of data, logical and expected data values, and ACIP related recommendations.

Some of the anomalies we uncovered during the process include the following:

- Two clinics were sending us all of their business partner demographics as if they were patient records. This was discovered when we checked for name frequency, as both sites had indicators in the last name field.
- For one clinic, it was discovered that the encounter date, which was what we had been expecting to be the date our process would pick up as the immunization date, was in fact the date the child was seen in the office. However, when

the clinic reported histories, we were prepared to pick up the encounter date when the actual date of service for histories was included in the file in another field. This issue was discovered when checking for multiple doses of the same antigen given on a particular day.

- In another interesting case, we discovered a large number of immunizations administered before the date of birth. This led to the vendor discovering a whole region of data that did not have a patient identifier unique to all other regions. This was causing the incorrect immunizations to be attributed to the established patient. Catching this issue in a timely way saved the clinic significant money by ensuring the fix was made while the vendor was still on contract.
- Finally, one anomaly that seemed to affect multiple clinics was missing values in their electronic medical records' internal vaccine tables. We created a series table, including the vaccine name and CVX we expected to be reported. Some sites had expired or not yet approved CVX codes attached to current vaccines. More often, sites were missing one or more vaccines completely. When we checked their vaccine order histories, the sites often had the vaccine in stock, so we were able to remedy those incomplete setups right away.

The feedback was presented to clinics on an excel spreadsheet via secure transmission. The format used was a two page workbook, with the first page indicating the type of check being performed, a count of how many records were affected in the file, and a hyperlink to the second page which contained the actual patient information including ID, name, DOB, vaccine and encounter date with the data in question. Once the clinic had the information in front of them, a phone conversation took place to discuss the contents of the report.

Initially most clinics were pleased to receive the feedback. However, the benefit of the precert report was not clear to all staff in all clinics, so establishing an appropriate clinic contact took effort, if it was established at all. Many clinics were overwhelmed by the number of fields included in the patient examples on sheet two. We discovered that in some cases clinical staff do not have access to the ID that is being sent by the vendor, so the field was useless and confusing for them. There was also a technology barrier for several people with the Excel spreadsheet and they were unable to navigate the pages. Often times when the issues were ACIP recommendations-related, the technical staff which had done the work to produce and transmit the file to us did not want to accept responsibility for passing the information on to the clinical staff.

Future modifications to the process, based on feedback from providers include the following:

- We will include the minimum information a clinic needs to look up a patient.
- Because many staff voiced that they would likely print the spreadsheet, the feedback may be better organized in a text document.
- In the future, we hope to share the pre-cert report with the clinic's health educator so that broader data quality themes may be addressed at an AFIX feedback or site visit.
- We will establish both clinical and technical quality contacts to address the appropriate sections of the pre-cert report.

The vendor of the clinic will also play a role in the ease of creating a feedback loop when it is the vendor that is responsible for creating the extraction report for the clinic. Responsive vendors helped with troubleshoot coding issues and creating fixes. However, we found that other vendors posed a barrier to improving data quality in some clinics, especially around the issue of VFC coding.

Oregon's data quality staff will spend the next year honing the pre-cert report based on feedback and observation. It appeared that clinics with a smaller number of problematic data elements were most likely to make a change within the clinic that prevented this error from arising again in following files. However, clinics with problems in all areas did not. Because of this, suggestions to the clinic regarding prioritization of what to address first might be useful.

Amber Wilson and Heather Crawford (OR)

MOVING FROM DATA *QUANTITY* TO DATA *QUALITY*: DEVELOPMENT OF WASHINGTON STATE'S IMMUNIZATION REGISTRY DATA QUALITY PLAN

Washington State's Health Promotion and Immunization Registry system – CHILD Profile - began in 1993. In July 1998 the system began expanding from a few counties to the entire state. Without a mandate for participation, this proved very challenging and an emphasis was placed on getting data from wherever we could – health plans, Medicaid, billing systems, and directly from provider data entry where possible. Efforts of staff focused on provider recruitment, training, and building the database. Data quality activities were more reactive than proactive. As issues were identified with problem data, then action was taken. CHILD Profile lacked a coherent plan and strategy for ensuring and improving on data quality. By 2007, with 78% of providers participating in the Registry, it was clear that we needed to shift our focus and become more proactive with data quality assurance processes.

A Data Quality Coordinator was hired to lead the QA efforts. Developing a Data Quality Plan was one of her charges. Interviews with Registry and Health Promotion staff were conducted to understand the current data quality issues, and formed the foundation for the Data Quality Plan. Top priorities were defined; objectives, strategies and a timeline were developed. The highest priorities were to improve, standardize, and document processes for:

- Manual Deduplication
- HL7 and flat file batch data loading
- Resolution of patient records with ambiguous IDs (provider use of same patient ID, but discrepancies in demographic information)

A few of the specific activities that were initiated and/or completed were:

- Development of protocols for reviewing data submissions for existing providers and those new to the Registry. Useful reports include a Vaccination Breakdown report and a Vaccination Data Quality Detail report. When data problems are identified, the training staff then follow-up with the providers.
- Trainers promote the change from a quantity focus to a quality focus in Provider trainings.
- Training documents were revised and improved to assist users in selecting the most appropriate vaccine types and CPT codes (for batch data providers).
- Research was conducted on submission trends of current providers that send HL7 and flat file data and from that an educational document was created to encourage appropriate frequency of submissions based on the size of the practice that was submitting data.

After documenting the existing flat file batch and HL7 processes, the AIRA Best Practice guide on Data Quality Assurance in IIS was reviewed in depth and used to improve current processes. We subsequently revised the way we instruct providers to create the data files, and we added a preload process for reviewing batch files and developed new data quality checks to conduct prior to loading new data into Production.

Developing and implementing the Data Quality Plan has helped transform our data quality practices into "best practice." Keys to our success have included:

- ✓ Having a staff person dedicated to Data Quality efforts and who is a resource for other staff encountering data problems.
- ✓ Involving all staff in the analysis of issues and in the development of the Data Quality Plan and updated procedures.
- ✓ Documenting issues in a central location to see connections between different issues, and to better trouble-shoot.
- ✓ Encouraging providers to use the Vaccine Data Quality Report for self-monitoring of data quality.
- ✓ Making Data Quality a priority to focus on in all areas of the Registry.

It has been a full year of working on the Plan and a lot has been accomplished. It is now time to review the Data Quality Plan, see where we are and what we need to work on this coming year.

Jodi Warren (WA)

UTILIZING IIS BEST PRACTICE DOCUMENTS TO EVALUATE AND IMPROVE DATA QUALITY ASSURANCE – THE KANSAS WAY!

Although Kansas is considered young in terms of IIS, data quality has been of high importance throughout its infancy and continues to grow as new data is added to the system. We follow the motto that accurate, complete, and timely data in the IIS promote participation among providers and higher participation among provider's results in more complete records for patients. In order for a provider to have confidence in the data within the IIS, it must be a true reflection of what has actually transpired in the medical practice. We feel it is not only the responsibility of the IIS but also the submitters to ensure the reliability of the data held in the IIS. With this guidance we continue to reach out for new and innovative ways to improve data quality checks for the system.

Recently we reviewed the "Data Quality Assurance in Immunization Information Systems: Incoming Data" document published by the AIRA Modeling of Immunization Registry Operations Workgroup (AIRA-MIROW). The AIRA-MIROW Steering Committee gathered a group of subject matter experts (SMEs) from across the country to discuss and develop best practice recommendations for data quality in IIS. This document helped layout best practice principles, business rules, and recommendations for pre-certification and providers' profiles. An assessment tool was developed in response to the document so that an IIS could use it to determine which of the best practice recommendations they follow. The Kansas Immunization Registry (KSWebIZ) was the first to use this tool. We used the assessment tool as a GAP analysis method to see what recommendations we followed or met and which ones we didn't.

Of the recommended principles that were assessed 73% are currently followed. The main barrier to not meeting all the recommended principles is the difference between user type requirements. We can set different, more restrictive requirements in the IIS for direct entry providers but not necessarily for interface providers. An example of this is for the *Consistency principle: The conditions (criteria) for validating data items should be the same regardless of how these data items have been reported to an IIS.* KSWebIZ can restrict direct entry providers from administering inappropriate vaccines according to age, gender, or expiration date but we cannot restrict them from happening from the interface sites.

As for the business rules, KSWebIZ fully meets 80% of the Priority Group A rules and overall fully meets 56% and partially meets another 23% of all rules. Again the main reason for not fully meeting some of these business rules are the way we treat electronic interface data requirements. For an example *Business Rule 111: Adverse reactions reported on administered vaccines should be identified for tracking and following up.* Data can be captured on adverse reactions from direct entry users of the IIS but some of this data is not shared from all interface providers.

The Precertification and Provider's Profile section also left a bit of a GAP for us in that we fully meet 58% and partially meet 17% of the recommendations. Some of these recommendations include: *1) IIS uses profiles for providers' practices to identify systemic problems such as: miscoding issues, missing vaccine codes, systematic data entry errors, etc. and 2) IIS users profiles for providers' practices to identify unusual but accurate patterns that are due to temporary shortages, a shift in the provider population, or unusual clinical practice.* We felt that some system enhancements would need to be developed to incorporate these checks.

In order to fill the "gaps" to fully meet all recommendations we have developed a new *Data Quality Provider Profile Report.* This report reviews data completeness, timeliness, accuracy, and HL7 status (HL7 recommendations were not from this chapter but something we needed also in our state). This gives us the ability to check how things are going in each provider site at any given time (but for consistency will be run monthly). For the completeness section we compared the data fields (i.e. patient's name, race, ethnicity, vaccination manufacturer, etc) from their total roster of active patients to their total roster of active patients since they went live. This would allow a difference in data completeness to appear for legacy data versus that from directly inputting into the IIS. The timeliness section reports how long it takes a provider generally to submit data to the IIS. From this we will be able to do comparisons across provider types (i.e. private vs. public provider sites) and then within a provider site

see trends which might tell us of staff turnover/change or the need for additional training. The accuracy section assesses vaccination events according to the ACIP recommendations (i.e. patients with more than 2 DTaP vaccinations before 4 months of age, patients with Boostrix vaccinations before 10 years of age, etc). If a patient meets one of these criteria they will be flagged for follow-up to determine if a patient is at risk or needs additional vaccinations, etc. The HL7 section will give us a quick snapshot of how many queries, updates, and/or errors occurred for a provider site during the month. This is just a preliminary report that will help us see if a provider is updating the IIS in accordance to their vaccination volume to assure all data is reported to the IIS.

In conclusions both the AIRA-MIROW chapter and the assessment tool proved to be a great asset to have when trying to assess the data quality standards and protocols for KSWebIZ. It has helped us define what rules and checks we wanted to establish within the IIS and validated the things we were already doing.

Nichole Lambrecht (KS)

GOT DATA! DATA REVIEW AND QUALITY IMPROVEMENT ACTIVITIES IN CAIR/SDIR

Here in Southern California, "Got Sand?" is a frequent bumper sticker seen on the freeway. In AIRA circles, the "Got PROW" buttons that circulated at the 2006 National Immunization Conference (NIC) was a sought-after souvenir for registry managers. Well, I would like to propose that the new slogan for immunization registries in 2009 is "Got Data!." Every immunization registry has a wealth of data that can be utilized for quality assurance and improvement. Indeed, it is amazing and somewhat alarming to think of the amount of time and effort to review immunization data in patient charts before the advent of immunization information systems (IIS). The alphabet soup of immunization practice review --AFIX, HEDIS, QAR, or QPR—has certainly been super concentrated and enriched by the use of IIS data. Immunization program managers have a mountain of immunization data at their fingertips which is just waiting for the appropriate questions to be asked.

Indeed, registries have the data that immunization programs can analyze in order to better define problems which can be addressed through interventions. Sometimes, the only problem is formulating the right questions and prioritizing the work to be run. Most frequently performed are the data entry type questions that can be answered by counts. These types of counts are done regularly to track how the growth (by number of immunization records) of the registry is progressing. However, the kind of data that local public health officers, immunization program coordinators and physicians want to know involves more than just record counts. The recent MMRW publication on the rise in Hib disease in Montana has motivated our immunization program manager to want to know what is happening with young children completeness in the Hib series in their registry's area. What do providers want out of the IIS? SDIR has responded to local providers' requests to find of the status of HPV coverage in their young female patient population so that they can perform reminder/recall activities. Another request by providers to the registry has been to identify their adolescent patients who are missing the second dose of MMR and varicella.

Routine data reports are also important to review regularly to identify trends and issue in vaccine lot management and immunization decision-making. The San Diego Regional Immunization Registry (SDIR), part of the California Immunization Registry (CAIR) has developed a "Provider Profile" report that compiles registry data specific to a provider facility on a number of general and specific indicators for a specified reporting period and population. The purpose of the general indicators is to see in a snapshot how providers are using the IIS. These indicators include: number of duplicate home records, reminder/recalls sent, patient records with no address/bad address/no phone/bad phone marked, data entry from inventory and history, untimely (greater than 30 days) and timely (less than 30 days) data entry with immunizations out of inventory.

Specific quality assurance indicators for a reporting period include:

- doses of Hep A and varicella given prior to 1995
- Hib and PCV 7 given after age five
- DTaP given after age 7, Td given before age 7, and Tdap given before age 7
- the final dose of Hep B given before 24 weeks of age
- an influenza dose given before 6 months of age

- rotavirus –1st dose given after 14 weeks of age and 3rd dose given after 8 months of age
- incomplete influenza series (two doses) for children under 9 years of age
- Td given after or at age 11 instead of Tdap
- Varicella and MMR given within 28 days of each other, but not on the same day
- Varicella given to a child under 12 months of age
- MCV4 or Tdap not being given simultaneously if both are needed, and HPV (only for females up to age 18 years)
- Number of valid doses by antigen

There are also quality assurance indicators for the entire patient population of the practice that include:

- Influenza dose 1 with no dose 2 within 8 weeks in the current season for children under 9 years
- HPV started (at least 1 dose) but not 3 doses within 18 months of dose one (up to 26 years of age)
- Hep A started (at least 1 dose) but not 2 doses within 18 months of dose 1 for all ages (if forecasting)
- Hep B started but not 3 doses within 18 months of 1st dose for all ages (if forecasting)

Not only does the Provider Profile report deliver counts of patient records where these practice issues occur, the user can also request a list of patient names and their date of birth so that each occurrence can be individually reviewed. Reviewing the patient list produced by the report can reveal several scenarios--either an immunization practice error or a data entry error. Reviewing records produced by the report also may reveal that the problem has to do with lapsed reminder/recall practices with or with not keeping up with patients' MOGE (Moved or Gone Elsewhere) status.

Immunization Program staff use the Provider Profile report to obtain the data to monitor performance measures in community clinic contracts such as duplicate records, timely data entry, the number of reminder/recalls sent, expired lots in inventory and percentage of VFC "not qualified" patients compared to the number of private purchased, non-VFC vaccine lots. Registry staff has trained new users and existing users during refresher trainings on the Provider Profile Report and report that the data generates a lot of interest.

"Got Data!" means that IIS data is extremely effective and efficient in quality assurance and improvement activities at the immunization provider and immunization program level. "Got Data 2.0 !" is the next phase of SDIR/CAIR data analysis to measure the impact of immunization assessment and IIS data entry by non-immunization providers such as WIC and TANIF staff on immunization delivery. Finding out if this data makes a difference in an individual's immunization coverage is of great interest to all involved during this time of financial challenge.

Anne Cordon (San Diego)

DATA EXCHANGE WITH EMRS - IS CLINICAL DATA ALL IMMUNIZATION INFORMATION SYSTEMS HOPED FOR?

The biggest barrier to provider participation in Immunization Information Systems (IIS) continues to be duplicate data entry. IIS has imported data from billing and Practice Management Systems (PMS) for many years because it was the best there was to offer even though there was a continuing concern about data quality from those sources. The advent of the Electronic Medical Record (EMR) eliminated the 'middle man'. Now clinicians – those who prescribed and administered the vaccines – would provide the data that IIS received. Should this new data source lessen our vigilance on data quality?

The state of Arizona's Immunization Information System (ASIIS) recently implemented ten separate HL7 data exchange projects which included private providers, community health centers and a public health entity. Each of the providers was using an EMR and was to send data one way from the EMR to ASIIS. The ten exports included seven different EMR vendors: Next Gen, iMedica, Cerner, GE Centricity, Practice Partners, eMD and EHS. Each vendor was provided the specifications for the ASIIS application and given information on the requirements to be considered a successful data import. Each practice was asked to complete an 'Export Initiation Form' for ASIIS which provided technical information about their EMR, the amount of data in the EMR and the contact information for the vendor (sales and technical) and the practice staff (clinical and information technology support). Each provider paid their vendor for the interface development cost. In

addition to the standard data set, ASIIS requested vaccine manufacturer name, vaccine lot numbers and vaccine expiration date be included in the data transferred.

The Testing Process

ASIIS designed a comprehensive testing process that not only covered the technical ability to send the data successfully from the EMR to ASIIS but it looked at the quality of the data for clinical accuracy. The steps taken were as follows: 1) The vendor was given the technical specifications for the ASIIS application; 2) The vendor sent test files to ensure the data was successfully transferred to the ASIIS development environment; 3) The list of CPT and CVX vaccine codes in the provider's application were reviewed; 4) A random sample of patients from the test file were sent to the provider. The provider was asked to pull up the patient's immunization in the EMR application, print it and send it to ASIIS to compare against the information transferred in the electronic file. 5) Once the issues in the file transfer were resolved, the electronic exchange was taken live.

Lessons Learned

Because ASIIS had designed an 'End to End' data quality testing process, several issues were identified that impacted overall data quality. Assumptions made about 4 sites using the same application were disproved. The following items should be considered in data exchange with an EMR product:

- Because providers make custom changes to their EMR application, each EMR data exchange should be considered unique. The vendor's file layout may be the same for the product and version, but custom changes made for or by the individual provider can cause technical and data quality errors. Four of the 10 provider sites used the same software product and version. Each had a server of their own with different configuration settings. The vendor made changes on each server for the data exchange to work correctly.
- Vaccine codes should be reviewed before data exchange is begun and intermittently as once the data exchange is LIVE. Vaccine codes (CPT or CVX) are not always up to date or accurate. EMR vendors' CPT/ CVX code updates vary by company. Contrary to IIS, vaccine codes updates are rarely uniformly and regularly updated. Some vendors consider the accuracy of the vaccine codes used in the system to be the provider's responsibility and only update the codes when and how the provider directs them to do so. Others dispatch regular updates for the providers but it is up to the provider to 'take' the update and see that the system is regularly updated. Still others update the codes only in new releases and it varies when or if a provider puts a release on their system.

  During the testing process ASIIS identified several vaccine code errors:

  - Discontinued vaccine codes were being used for administered vaccines
  - Vaccine codes for discontinued vaccines were being used for administered vaccine
  - Administered doses of Varicella vaccine were being used in lieu of documenting history of Varicella
  - Vaccine descriptions that appeared in the EMR were linked to the wrong vaccine code.
  - Vaccine lists in the EMR were not comprehensive. For instance Td was chosen when Tdap was being administered because there was no Tdap choice.

  Prior to testing provider files, identify who is responsible for updating the vaccine codes in the provider system. Once the data exchange is LIVE, establish who will be responsible for keeping the vaccine codes updated and how often they will review the vaccine code table in their EMR.
- IIS should specify for the vendor which vaccine code type it accepts prior to testing files. HL7 data files may contain one or both types of vaccine codes. Some vendors can send only CPT codes while other only send CVX codes. All vaccines do not have both a CPT code and a CVX codes. IIS should identify which vaccines being documented in the IIS may not be present in the electronic file or may be sent as an unidentified vaccine. The ASIIS system was able to read both CPT and CVX codes. If both sets of codes are sent, the CVX code is recognized.
- IIS should request that HL7 files be set up with automatic nightly send capabilities. Not all EMR vendors are capable of automatically sending HL7 files. Some vendors have set up the interface so that the data is routinely 'pushed' to IIS. This request should be made at the time the interface is developed so that it is included in the development cost. Staff changes in provider

offices make manual uploads subject to failure or interruption.

- All EMRs may not have fields for all the vaccine information you desire. EMRs are valuable because they generally capture complete documentation for vaccine administration but some do not have fields for vaccine expiration date or manufacturer name. Fields for lot numbers are generally available. EMRs are rarely capable of documenting how a child qualifies for VFC.
- Clinicians do not necessarily fully populate the available EMR vaccination fields. While an IIS can get the technical documentation about the application from the vendor, you do not know how or if the clinicians are consistently populating the vaccination fields that are available in the EMR. ASIIS found that clinicians who were entering data into both IIS and the EMR chose to fully populate ASIIS and were doing minimal documentation in the EMR. Lot numbers were populated part of the time but manufacturer name and expiration date were rarely populated. It is useful to have the provider's office demonstrate how they use their EMR prior to developing the interface and clarify with them what fields need to be consistently populated prior to initiating the data exchange so that test files contain all the data desired for the import.
- In some cases, an onsite visit from the IIS is useful so that clinicians understand why complete vaccination information is so valuable to the IIS.
- Most EMR systems do not have a provision to manage Opt Out or Opt In provisions. It is easier to filter data with a field that has a positive value (consented or Opt In). To filter patients who Opt Out, all patients who allow data to be contributed to IIS would have required the record to be marked with a positive value (Yes). Since this solution was impractical to manage and because so few parents Opt Out their children, ASIIS decided to allow the provider to notify them by and in turn ASIIS would manually Opt Out the patient in the IIS.
- Not all EMR products contain guardian information in their demographic section. Some EMRs have Next of Kin or Guarantor (person responsible for the bill) fields. ASIIS ultimately decided to accept these alternate fields because the guardian is usually captured in these fields and it assists in the deduplication module.

While EMRs are potentially a better source of information for data exchange, they are introduced into the office environment in various ways and disrupt usual workflow. The IIS should make no assumptions about how the EMR is being used, how the vaccine codes are maintained and what data can be garnered from them. Each provider and vendor should be carefully questioned about what the application is capable of sending to the IIS and how the application in being used in the clinically in the office setting. A thorough review of the system prior to data exchange testing and implementation will facilitate a successful export and ensure accurate data is populating the IIS.

Janet Balog (STC)

YEAR ONE FOR NYSIIS – LESSONS LEARNED

Immunization Information Systems are unique as public health tools as they require integration into the provider's day-to-day business of administering immunizations. This presents challenges to the IIS community, one in particular is the IIS requirement to apply data quality standards needed to effectively do their job but where the originator of the data may be out of their control. On the one hand, there is a drive to create "ideal" systems with near perfect data to meet the demands of public health reporting yet at the same time needing to recognize the need to create a "practical" system that can be successfully integrated into the provider's environment. New York State (NYS) has faced many of these challenges, especially in terms of data exchange, as it has moved to a new statewide web-based application over the course of the past 12 months.

In less then one year, NYS has launched data exchange with over 50 vendors or practice groups representing 191 provider practices. The New York State Immunization Information System (NYSIIS) allows for data exchange using either HL7 messages or flat file batch files. Each new vendor and each new practice needs to go through a data quality review process in order to be able to send data to NYSIIS. This topic clearly is a point of interest to the IIS community at large as evidenced by a recent MIROW chapter on "Improving the Quality of Data

Entering the IIS." What follows are some areas that one might want to consider as they approach the challenge of working with incoming data.

As discussed in the MIROW document, pre-certification and pre-load review is key to any data exchange relationship. In NYS the challenge confronted routinely is how much is enough? How does an IIS system know where to draw the line? For example, one must validate that the incoming data is using accurate CPT codes. Yet, how then do you verify that in the instance where a CPT is being reused that the sender of this data has kept that up to date and knows the difference? In NYS, we had the situation with a vendor who did not take this into account. For vaccinations of 'Td Preservative free', a CPT code of 90714 was assigned, regardless of date administered. In fact, prior to July 1, 2005, this CPT code is associated 'Typhoid-NOS'. Our current edit check would not have found it as an incoming error since technically it is still a valid CPT code. It was the providers themselves that alerted us to the problem. We are considering including this as a specific test scenario for future systems to submit during the test phase.

As we know, IIS are diligent about verifying required fields as part of the review process, ensuring the incoming data meets the format of the system and as best as one can ensure, the values are appropriate. But what about the situation when optional fields are being sent? This is a particular problem in HL7 messages. The HL7 rule is to ignore information in segments that are not expected. This is a problem if a vendor submits optional data in the wrong place. The information would be ignored and unless you knew it was coming and could make appropriate changes, your system wouldn't know and the data is lost.

The opposite situation occurs when valid data is in an optional field but was in fact incorrectly populated by the vendor's application. For example, NYS had a situation where a vendor was sending the correct type of information in the date of death field but it wasn't in fact date of death, instead the vendor was sending the date of status change in that field. Fortunately, this was caught immediately but could have been a disaster if allowed to populate the system. The challenge is not only being able to accurately review data and ensure that the data reflects what is in the patient's medical records but now it raises the question of needing to check that the way the originating system, billing or EMR, captures and handles the data is accurate as well. So not only should we do a chart review but also some form of review of the system and its capture of data.

The source of the incoming information also has significant impact on the rules to be applied. The majority of the vaccination information comes from providers using various third party systems, each requiring testing. The population information for IIS systems come from Vital Records birth information. For many projects, this may be considered to have a higher level of reliability in the data. For NYS, it was considered a 'legal document' and special considerations had to be given to the incoming information that would be rejected had it come from a third party application. One example is that the agreement with Vital Records and NYSIIS required that we accept the name as presented on the birth certificate. The first test of vital submission using the standard rules for data exchanged rejected hundreds of records due to names. A review of the records showed children from Vital Records with names of two characters that would normally be rejected based on current logic. We also found that some children had names such as 'BABYGIRL' which would normally be rejected. Because of the nature of the data source, Vital Records, rules were changed to allow for them. But now we are concerned what the impact will be on future searches for that child.

An IIS's job is to present the best information available given the variety of sources that participate while balancing needs and expectations. The key to success for IIS is balance between the public health and private providers' needs. This is done by developing a compromise that best serves both parties. Experience is the best teacher and it is only as we grow will we be able to include new data systems and provide accurate information that will improve the health of our children.

Michael Flynn (NYS)

EVALUATING IMMUNIZATION INFORMATION SYSTEMS ACTIVITIES

As part of the 2008-2012 grant cycle, all 64 immunization program grantees were required to submit an evaluation plan to CDC by August 2008 for at least one component or activity in their program. The purpose of this new requirement is to foster a culture where immunization programs

critically examine their activities to ensure that their efforts are indeed leading to intended results. The findings of the evaluations should guide programs in improving their activities, policies and resource allocation to maximize programmatic outcomes including achieving and sustaining high immunization rates.

Thirteen (20%) of grantees selected to evaluate their Immunization Information Systems (IIS) or an activity related to the IIS. Of these, 10 grantees are evaluating data quality aspects of their IIS. Evaluation activities range from increasing childhood participation in IIS, data quality measures such as completeness of records, accuracy of information in IIS, assessing coverage, provider training assessment and use of IIS, school assessments, and determining pockets-of-need. Throughout this process CDC has provided technical assistance and developed training to increase grantee capacity in program evaluation.

As of January 2009, most grantees have started implementing their plans and have indicated that they will complete their evaluations within 1-2 years (i.e. by December 2009 or 2010). CDC staff are continuing to provide technical assistance as requested and appropriate. Grantees will be required to submit a progress report in August 2009.

For more on CDC and grantee Immunization Program Evaluation activities visit our website at http://www.cdc.gov/vaccines/programs/progeval/default.htm.

Suchita Lorick and Bobby Rasulnia,
CDC/NCIRD/ISD/IISSB

Evaluation Component	Grantee	IIS or IIS-related Evaluation Activity
IIS	Arkansas	Completeness of immunization records reported by immunization providers to the Immunization Information System.
IIS	Connecticut	IIS data to evaluate and map: 1. immunization coverage by town, 2. immunization coverage in our 3 largest urban areas by zip code, and 3. registry opt-out rates.
Education & Training	Georgia	Evaluation of GRITS training CD-ROM.
IIS	Idaho	Improving Idaho Immunization Rates and Increasing the Accuracy of immunization data in IRIS.
IIS	Louisiana	Pay for performance initiative between IIS, Medicaid, & Medicaid providers.
Perinatal Hep B	Maine	Use of registry and adoption of policies and procedures by birthing hospitals.
IIS	Montana	Evaluate the efficiency of the process of extracting IIS data for AFIX assessments.
IIS	North Carolina	Evaluating the AFIX portion of our new, standardized rollout procedures for the North Carolina Immunization Registry NCIR.
Assessment	North Dakota	Validation of North Dakota's Immunization Information System using school coverage survey data.
Other	South Dakota	Evaluate the effectiveness of an incentive program aimed at 1) increasing 4th DTaP; and 2) increasing completeness rate of demographic fields in IIS.
IIS	Texas	Registry outreach aimed at increasing completeness of registry records.
IIS	West Virginia	Enrollment of WV pediatric population into WV IIS.
IIS	Wyoming	Increase the number of children under 6 years of age in the WyIR.

IIS MEET IN CHICAGO AT REGIONAL FORUM

The second AIRA regional forum was held in Chicago on January 30, 2009, for the Immunization Information System (IIS) projects in the Midwest region. Twelve people attended the forum. The regional IIS representatives came from Chicago, Illinois, Indiana, Michigan, Minnesota and Wisconsin. Staff from Missouri, Iowa and Ohio could not attend. In addition to the IIS staff present, there were three volunteer consultants acting as facilitators and one AIRA staff person.

The format for the meeting encouraged information sharing and active participation. Topics targeted for discussion were decided upon by the attendees on the planning calls. Two panel discussions were held in the morning. The topics were *Integration with Other Child Health Systems* and *Providing Access to Schools*. After lunch, two facilitated discussions were held. The topics were *Data Quality Assessment* and *HL7 Implementation*.

Consensus among the attendees was that the forum was informative and a very effective way for IIS to share their strategies and lessons learned. IIS are hungry for a national venue where they can meet with all of their colleagues from around the country.

MIROW MINI-GUIDES AVAILABLE FOR CHAPTERS ONE, TWO AND THREE

The MIROW best practice guidelines are long, detailed documents outlining principles and business rules around IIS operations. To introduce IIS to these best practice guidelines, AIRA has developed short mini-guides for each of the currently available MIROW chapters: 1 – Management of MOGE and Other Patient Designations; 2 – Vaccine Level Deduplication; and 3 – Data Quality Assurance: Incoming Data.

The MIROW documents and their mini-guides are available on the AIRA web site. http://www.immregistries.org/pubs/mirow.phtml.

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