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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.

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President's Report

Last year at this time, we were all gearing up for the massive ordering, distribution, and tracking of Novel H1N1 vaccine. Thankfully, we survived that challenge! As so often happens with challenges, we found an opportunity to show off what IIS can do. The capability of IIS throughout the nation to innovate and respond to public and community health provider needs' was profound. Now, we have another challenge - and another opportunity. I'm sure you've all heard of Meaningful Use by now, though you may not be sure how it will impact your IIS. That is the focus of this issue of Snapshots – so keep reading to learn all about it!

On another note - AIRA is well into the final stages of its transition to a new organizational and management structure. Beginning October 1st, the AIRA Board will contract with an association management company, Hauck & Associates, to provide administrative infrastructure for AIRA. The existing membership database and website will be transferred to Hauck for management, and a seamless transition is anticipated. The search for an Executive Director with subject matter expertise in Immunization Information Systems began in August and is nearing completion.

This transition is the culmination of a year-long comprehensive planning process conducted by the Board. I thank the AIRA Board members for their many, many extra hours of work devoted to this process. I am grateful to have such a well-informed, experienced, and dedicated Board of Directors.

I also extend heartfelt thanks to the current AIRA staff who have done a wonderful job in supporting our organization over the years. Cindy, Ina, and Angie, thank you so much for your hard work and dedication to AIRA, and to your flexibility in working through the transitional activities with me and the Board.

To the entire IIS community, thank you for your continuing support as we work together toward our common goal of a healthy, fully immunized community.

If you have questions about the upcoming changes, please don't hesitate to contact our Board President, Sherry Riddick, or any other Board members. You may also want to review AIRA's Strategic Plan at: www.immregistries.org/pdf/AIRA_Strategic_Plan_2010_2013_app04212010.pdf.

Best wishes,
Sherry Riddick
AIRA Board President

H1N1 UPDATE FROM CALIFORNIA –

Taking a Test Drive: How H1N1 Created New Opportunities to Increase Provider Participation in the Immunization Registry

When providers in California signed up to receive H1N1 vaccine, they were informed via the CalPanFlu.org website how to report vaccine usage. Data entry into the California Immunization Registry (CAIR) was "strongly encouraged" and would help notify patients who needed a second dose of vaccine. However, providers who did not use CAIR were given the option to report directly via the CalPanFlu.org website each week. Since the CAIR software had only been introduced to providers in the Inland Empire region in the previous three months, staff wanted to capitalize on the opportunities presented by the H1N1 campaign to increase provider participation.

Marketing an immunization information system (IIS) to providers under normal circumstances can be challenging. It is not uncommon to hear someone at the provider's office claim "I don't have time" or "we don't have enough staff," even after hearing about how the IIS can save the office time and money. With a pandemic event like H1N1, provider offices can become overwhelmed by calls from concerned patients and parents. The "no time, no staff" response to the registry may go from being a mere objection to a reality. Therefore, it is important to take this into account when developing strategies to market the registry.

CAIR Inland Empire regional staff promoted the H1N1 vaccination campaign as an opportunity to "test drive" the system. The concept behind a test drive is simple: it is a no-hassle way to try out a product and see whether it meets the consumer's needs. There is no long-term commitment implied when a consumer agrees to a test drive. He may not even be in the market for a new car, for example, but after sitting behind that wheel, he has to have it.

The first step in the CAIR Inland Empire test drive was to accelerate the enrollment and training process. Regional staff understood that for this campaign, account set-up would

occur as soon as the paper work was received. Training was streamlined and targeted specifically to the needs of the H1N1 campaign, which reduced the total training time from just over 2 hours to 45 minutes. The next step was to notify eligible providers. A simplified mass marketing campaign was directed to all providers who signed up to receive H1N1 vaccine. Providers were separated into groups: those who had been trained on the previous registry software but had not yet transitioned to CAIR, and those who had never participated in the registry. Letters were faxed to each group outlining the benefits of using CAIR to report H1N1 doses. Providers new to the registry were also sent enrollment forms, and all providers received user account forms. Providers were instructed to fax completed forms to CAIR Inland Empire.

Without additional follow-up by staff, 20% (22) of the providers who signed up for H1N1 vaccine but had never participated in the immunization registry decided to accept a “test drive.” The average wait time from the start of the enrollment process until training was completed was five days. Thirty percent were enrolled and trained on the same day, and 90% were trained within two weeks. During training, provider offices were told that after that they would be contacted at the conclusion of the H1N1 campaign to provide feedback on CAIR use. It was acknowledged that if they liked using CAIR, they could receive additional training on CAIR.

Of the 22 providers who signed up during the campaign, 21 (95%) consistently reported their H1N1 dosage via CAIR. A total of 3,561 H1N1 vaccinations were entered. Thirteen (62%) of the providers entered more than 100 H1N1 immunizations, with two of those providers entering more than 500 each.

The providers who participated in the test drive were contacted in mid-April and asked questions about CAIR use. Positive and negative experiences were documented. The comments were overwhelmingly positive. Ninety-five percent (95%) of providers test-driving the immunization registry to track doses of H1N1 vaccine administered liked using CAIR. Some of these providers do not routinely give immunizations (they were OB/GYN offices and normally refer patients to their primary provider), so only 81% stated they would like to use CAIR routinely. Only one negative comment was received, and it was from the only provider who was trained but never used CAIR – in other words, never took the system “for a spin.”

Based on the results achieved with this campaign, a “test drive” strategy was an excellent way to introduce immunization registry participation to providers who were not using CAIR. The H1N1 campaign was an opportunity to gain participation without the fear of a long-term commitment. When the providers had the opportunity to use CAIR to record the doses of H1N1 they administered, they were able to see how the program could benefit them in other areas. More importantly, they were able to experience a shorter learning curve by focusing their activities on one vaccine. This, in turn, led to increased confidence that they would be able to expand registry use to other vaccines administered. At the same time, CAIR staff were able to identify any challenges faced by each provider office and provide customized follow-up to turn a simple “test drive” into a long-term commitment.

Letty Cherry Kreger (CAIR Inland Empire)

Meaningful Use and IIS

INTRODUCTION

CMS has launched a new program aimed at improving the meaningful use of health information technology among providers and hospitals funded by the HITECH act, a component of the ARRA legislation. The Medicare and Medicaid Programs Electronic Health Record Incentive Program Final Rule1 (July 2010), contains the following objective and measure relative to IIS in its Stage 1 (beginning in 2011) criteria for Meaningful Use (pp. 202, 230):

> **EP/Eligible Hospital Objective:** Capability to submit electronic data to immunization registries or Immunization Information Systems and actual submission in accordance with applicable law and practice.
>
> **EP/Eligible Hospital Measure:** Performed at least one test of certified EHR technology's capacity to submit electronic data to immunization registries and follow up submission if the test is successful (unless none of the immunization registries to which the EP, eligible hospital or CAH submits such information have the capacity to receive the information electronically).

This item was included in a "menu set" of objectives from which providers and hospitals can choose for achieving meaningful use. Providers and hospitals must choose at least one of three public health objectives (immunization is one of these three choices).

It is also worth noting that immunization administration and status is a component of the quality measures required for reporting through the program. Though the Final Rule recognizes that the infrastructure to support HIEs is still developing, there is an expectation that, as the program proceeds, expectations for submission of immunization information to public health agencies via HIE will increase. *Retrieval* of immunization from an IIS to an EHR-S may also become important over the next several years. States should begin planning now for the development of these capacities within the capabilities of their IIS.

TECHNICAL STANDARDS

The Final Rule for *Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology*[2] (July 2010) identified the following standards for immunization data exchange (p. 208):

> Electronic submission to immunization registries. (1) Standard. HL7 2.3.1 (incorporated by reference in §170.299). Implementation specifications.
> Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol Implementation Guide Version 2.2 (incorporated by reference in §170.299).
> (2) Standard. HL7 2.5.1 (incorporated by reference in §170.299). Implementation specifications. HL7 2.5.1 Implementation Guide for Immunization Messaging Release 1.0 (incorporated by reference in §170.299).

[1] http://www.ofr.gov/OFRUpload/OFRData/2010-17207_PI.pdf
[2] http://www.ofr.gov/OFRUpload/OFRData/2010-17210_PI.pdf

ONC also states that, "We encourage migration to this newer implementation specification and believe that it will likely advance interoperability across the country and improve query capabilities" (ONC FR, p. 95).

For terminology (p. 209),

> Immunizations. Standard. HL7 Standard Code Set CVX - Vaccines Administered, July 30, 2009 version (incorporated by reference in §170.299).

Security standards are included in the ONC Final Rule as well.

ADDITIONAL TECHNICAL RESOURCES

Organizations

- American Immunization Registry Association (AIRA): http://www.immregistries.org/
- Centers for Disease Control and Prevention National Center of Immunization and Respiratory Diseases (CDC NCIRD) Immunization Information System home page: http://www.cdc.gov/vaccines/programs/iis/default.htm

Technical Documents

- AIRA Model Interstate Immunization Information Sharing Statute: *http://www.immregistries.org/docs/Model_interstate_izdata_sharing_statute_012505.doc*
- HITSP Immunization and Response Management Interoperability Specification (IS10): *http://www.hitsp.org/InteroperabilitySet_Details.aspx?MasterIS=true&InteroperabilityId=363&PrefixAlpha=1&APrefix=IS&PrefixNumeric=10*
- HL7 Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the HL7 Standard Protocol (*http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide.pdf*) and companion AIRA Immunization Information Systems Codebook: Guide to Code Sets and Data Definitions for Registry Data Sharing Using HL7 (*http://www.immregistries.org/docs/IIS_Data_codebook_060309.xls*)
- HL7 Version 2.5.1: Implementation Guide for Immunization Messaging (*http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7-guide2010-508.pdf*)
- IHE Immunization Content (IC) Supplement (*http://www.ihe.net/Technical_Framework/upload/IHE_PCC_Immunization_Content_IC_Supplement_TI_-2009-08-10.pdf*)
- Indian Health Service Working Together on Data Exchange: A Guide to IHS and SIIS Interfaces (*http://www.immregistries.org/pdf/IHS_Interface_Guide.pdf*)
- NHIN Direct immunization user story (*http://nhindirect.org/Primary+care+provider+sends+patient+immunization+data+to+public+health*)
- ONC/AHIC Immunizations & Response Management Use Case (*http://www.hhs.gov/healthit/usecases/respmgmt.html*)
- CDC PHIN/Public Health Information Network (*http://www.cdc.gov/phin/*)

Other Resources

- CDC Morbidity and Mortality Weekly Report (MMWR) Progress in Immunization Information Systems, 2008, February 12, 2010 (*http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5905a3.htm?s_cid=mm5905a3_e%0d%0a*)
- Hinman, A and D Ross, *Immunization Registries Can Be Building Blocks for National Health Information Systems,* Health Affairs, 29, no. 4 (2010): 676-682. (*http://content.healthaffairs.org/cgi/content/full/29/4/676?ijkey=GH9RmlBCqfpKA&keytype=ref&siteid=healthaff*)

Noam Arzt (HLN)

Public Health is Ready to Meet the Meaningful Use Challenge

Modernization of the national health technology environment is occurring through a variety of investments in the health sector. A focus on prevention to minimize the risk of disease and support health care cost containment, sharing of patient medical records, and technology initiatives in home health care are just a few of the areas where modernization is occurring. Public health stands to gain significantly from new data sources to support real or near real time surveillance, disease management, intervention assessments, and population health initiatives.

This has been recognized by the evolving meaningful use criteria established to ensure the investments in HIT produce the desired results. Population health meaningful use criteria are included, notably in the sharing of immunization records and information, electronic laboratory data exchange, and syndromic surveillance for early warning and disease detection.

The question becomes, is public health ready? The answer is yes. Not only are they ready, there are many examples across the U.S. in which the public health informatics sector represents current best practices in health information exchange. Public health technology has evolved significantly from 2001 when investments were made to improve the early warning and disease surveillance and reporting areas as a result of outbreaks such as SARS and bioterrorism concerns. In the preceding years prior to the investments for preparedness, the national public health information environment grew significantly through the leadership of the CDC National Immunization Program which facilitated the modernization of statewide immunization systems to reduce the risk of vaccine preventable diseases in children.

Modernization of the public health infrastructure is far from complete, however within the current Meaningful Use Criteria under HIT programs, it is remarkable that the three key areas in which public health technology has grown the most significantly are immunizations, disease reporting, and surveillance. Public health is not only ready in these areas to participate actively in HIE initiatives, they are likely to be one of the key success factors and potential partners for justifying sustainability.

Mike Popovich (STC)

A Snapshot of the ALERT IIS: One State's Preparation for Meaningful Use

After fourteen years of managing a successful but aging homegrown registry, ALERT IIS, a program of Oregon FamilyNet, is moving to a new platform. The original IIS requirements were finalized in 2008 and since then, changes in the immunization world have expanded Oregon's core requirements substantially; a legislated lifespan expansion, a requirement for pharmacists to participate in the IIS, and the arrival of the H1N1 pandemic have all driven modifications in our original requirements as our new system is being constructed. However, the change most affecting Oregon and our plans for the future is the final publication of the Meaningful Use rules and the associated growth and emphasis on Health Information Exchange (HIE).

In July, the Centers for Medicare and Medicaid Services (CMS) published the final rules to implement the provisions of the American Recovery and Reinvestment Act (ARRA) of 2009, allowing for incentive payments to medical providers for the meaningful use of certified EMR technology. Submission of electronic data to IIS appears as a menu objective, with the measure being to perform at least one test and follow-up test of submission to an IIS capable of receiving electronic data. This rule change brings with it a new stream of resources for health systems and EMR vendors alike, and it is critical that IIS are ready to respond.

Currently, approximately 80% of Oregon's IIS data is submitted electronically; however, a large proportion of these data are pulled from billing and claims systems. Within the subset of clinics and health systems submitting data directly from EMRs, approximately half use HL7 messaging, while the rest use text and delimited files. As we prepare to roll onto Oregon's new IIS this winter (a customized version of the Wisconsin Immunization Registry, or WIR system), we are positioning ourselves to maximize new technology while attempting to lessen the burden to providers of the transition both to the new IIS and to achieving meaningful use criteria. Our strategy moving forward is multifaceted and phased:

1) Leverage a web service transport mechanism built by Hewlett Packard (HP) and the Wisconsin Immunization Registry to serve as the highway for HL7 transfer; modify web service to meet Oregon standards.
2) Provide technical assistance to EMR vendors and health systems to modify their systems to gather key data elements (e.g., vaccine eligibility data by dose, priority group information for pandemic response, client email address to utilize to lower the cost/increase the efficiency of reminder/recall).
3) Provide technical assistance to EMR vendors and health systems to submit data via HL7 with expressed preference for realtime, 2.5.1 messaging.
4) Support bidirectional exchange and EMR system modifications to allow for the receipt of immunization and forecast data into the provider EMR.
5) Collaborate with Oregon's Health Information Technology Oversight Council (HITOC) to align goals toward statewide HIE.

To date, participating providers have been excited and anxious to partner with the ALERT IIS in establishing and meeting Meaningful Use criteria. Oregon's additional focus on improved vaccine accountability should allow us to move over time toward a vaccine replenishment model for state supplied vaccine. Transitioning to HL7 messaging and secure transport of messages is

relatively attainable; however, questions remain about how best to operationalize these changes, particularly with a national perspective;

- How can we generalize EMR/IIS interface enhancements across different instances of the same EMR systems?
- How can we leverage these enhancements to benefit IIS in diverse states interfacing with the same EMR?
- How can meaningful use improve our capacity for interstate data exchange among IIS?

These and other questions will need to be explored and answered as we all move forward together toward health information exchange. Given the IIS community's history and experience with HIE, it is critical that we have a place at the table to share our experience and to help create our new era of information exchange.

Mary Beth Kurilo (OR)

CIR Web Service Executive Summary

The Citywide Immunization Registry (CIR) has built web services to enable real-time querying and reporting of immunization information. These services are based on the HL7 2.3.1 immunization query and update messages and were designed for use by EMR/EHR systems and other data exchange partners.

The query service requires that a data exchange partner to submit as much identifying information as possible, to help CIR uniquely identify the patient. CIR then takes all of those values and combines them into a number of exact database queries in an attempt to find a single record that matches. If an exact match cannot be found, a probabilistic search is performed and if a single record is found to match above a 97% threshold, the record is returned to the partner. Also returned is the decision support recommendations for valid/invalid shots, along with the date when the next vaccine is due for each of the ACIP recommended vaccine series. This information helps fill in missing information at the data exchange partner and enables them to take advantage of the CIR's implementation of the immunization schedule without having to implement or maintain it in their own system.

The update service also requires that partners submit as much information as possible and it only uses the probabilistic search to uniquely identify the patient record. Historical and new immunization information that is reported through this message is either added to the existing CIR record or a new patient record is created. Using this service allows the healthcare facility to comply with state and local immunization reporting laws while also enabling CIR to return accurate decision support, based on the patient's date of birth and the full immunization history.

Currently, the Columbia Presbyterian network of hospitals and clinics are the only ones using these services to query immunization information in their immunization registry, EZ Vac. When a patient is seen by a healthcare provider, Columbia gives the user the option of querying the CIR in real-time and storing the full immunization history in EZ Vac. Columbia also queries all EZ Vac records on a quarterly basis, to make sure that they have the full immunization history while performing quality assurance measures. Columbia has file-based processes in place for reporting immunization information to CIR and development on service-based reporting started

recently. Other EMR/EHR systems that are actively adding this functionality for their clients are eClinicalWorks, MDLand, and Office Practicum.

These services enable bi-directional exchange of immunization information with the CIR, while the healthcare staff goes through their normal workflow using their EHR/EMR. The data entry occurs once within the site's electronic system and the vaccines administered are automatically reported to the immunization registry. By using the query service, the healthcare facility gains the full immunization history reported by sites outside of their network and the decision support recommendations, based on the ACIP immunization schedule, all within their EMR/EHR.

Angel Aponte (NYC)

Success of IIS-Centric Configuration in Maine

IIS and EMR interoperability has been an ongoing project for over five years here in the State of Maine. It started in 2004, when it was identified that our legacy system was not scalable and a new alternative would have to be found. Part of that redeployment effort included data exchange between the IIS and EMRs as a major aspect of the five year deliverables. Due to funding restrictions, the goal of data exchange with the IIS was to establish an HTTPS transport method and to use the HL7 specification as the standard. Both unsolicited outbound (IIS-Centric) and inbound (EMR-Centric) were to be made available in the order of stakeholder preference, and Query/Response functionality also implemented for ad hoc client look-ups.

Stakeholders were engaged and the various business implications to each workflow were discussed and a decision made. For those providers who have been independently funding exchange they generally have had enough funds to facilitate uni-directional exchange. They effectively were required to choose a business case that meet their needs and then facilitate exchange in the manner that proves most beneficial to them.

Those factors include, but are not limited to; Client Management, State Reporting Requirements, State Supplied Inventory Management, VFC accountability and AFIX requirements. Across their practice, and not just at the client record level, they need to decide their best approach.

After much internal analysis, and prior to meaningful use money, all of our initial stakeholders chose IIS-Centric workflow. The reasons behind this decision are varied, but may be best encapsulated in these six points:

Improvement in Client Record Completeness:

Doses recorded in an EMR and then sent to the state have a high risk of being an incomplete record. It does not allow for a more complete record state within the EMR unless a second method is developed to receive data. Example: Our state-wide FQHC/RHC agency chose IIS-centric work flow. They had enough money, pre-meaningful use, to effect uni-directional workflow and had to make a choice. In their first batch from our IIS to their for their first practice group, they received 7,000 doses that had not existed in their EMR for their clients. This was done prior to meaningful use funding, but if they had stood by the literal definition, they would not have received any of those doses. The provider doing their daily work with clients would have had

incomplete records, when data was readily available and could augment client records.

Reduction in Client Extra Dosing:

With an EMR uni-directional workflow incomplete data within the EMR is more prevalent than with IIS workflow, where data is aggregated. IIS-centric workflow reduces the incidence of extra dosing by assisting in a more complete record. This more complete record results in fewer extra doses being given to kid which results in healthier kids, happier parents, reduced unnecessary office visits, reduced vaccine administration and vaccine dose cost, improved reporting and improved reminder/recall.

Improved Client Forecasting:

The IIS is maintained on an ongoing basis related to the ACIP schedule in near real time. We have a GUI interface that allows us to build and maintain the vaccine schedule and does not require application updates via a vendor and the association release schedule that applications have to adhere to. Clients managed directly in the IIS have the latest and greatest ACIP schedule dose validation and forecaster that the provider can have access to. Since the dose is being recorded within the IIS as the point of origin, the provider can be assured that the client status is immediately available to them, including dose validity and including doses not recorded within the local physicians office but also including doses recorded in practices external to their practice and hence EMR.

Integrated Vaccine Management:

Entering the VFC agreement, Cold Chain, and Vaccine administration into the IIS natively allows for automation that saves the providers a great deal of time and effort. Providers must report Cold Chain, Ordering, Administration, Reconciliation, and VFC eligibility numbers on a monthly basis. If those doses are not captured directly into the application, then the provider must rely on internal business process to meet all of those requirements and then report to the program manually. The time savings lost here well outweighs the, pre-meaningful use, expense of developing an inbound to EMR exchange.

Integrated VFC fulfillment:

Dose administration data and yearly annual VFC agreement renewals are subject to the CDC VFC requirements. Entering the doses natively into the IIS allows for automation that automatically assigns VFC eligibility for all Medicaid clients on a nightly basis. VFC status for Medicaid clients are automatically made available to providers and their VFC status assigned. Additional VFC, and non-VFC categories may also be tracked and then will be auto-tabulated for reporting to the CDC on behalf of the practice and the State

Integrated AFIX Tools:

The system has the ability to generate AFIX reports, and to export data into a format compatible with import into the CDC CASA application. Providers have immediate access to those tools and may use those tools on an ongoing basis, while a potentially more complete data set than their EMR. In our initial JADs related to Exchange workflow, providers who saw the CASA functionality and their rates improvement from data sharing asked when the data would also be in their EMR for a compete record. Again demonstrating that the IIS tends to be a more complete client data repository and that IIS-Centric workflow results in improved client records for both system.

In the end, the benefits of entering the data into the IIS and having the data flow down to their EMR was determined the best approach to meet their client and business needs. They chose to

pay for and implement the solution that was most cost effective for their agency, that better served the needs of the practice, and that resulted in a more complete client record within the EMR.

Improving the quality of their EHR through the addition of an HTTPS-HL7 receiving module (or other method) serves the same purpose as creating an EMR outbound interface. It results in data being received instead of transmitted. But, by proxy they included an entirely new set of immunization tools seamlessly with their EMR without having to create an entirely new module. They extended the functionality of their public health practice by using a tool (the IIS) custom designed to meet their immunization needs, while improving their client record base at the same time. All while providing a long term cost savings.

The providers independently chose the IIS workflow and expended their own capitol to make it happen. I see no greater endorsement than that.

Shawn Box (ME)

Meaningful Use Innovation in San Diego

In challenge lies the opportunity for innovation. California imposes no legal mandate for its diverse, HMO-dominated healthcare community to participate in Immunization Information Systems. Many California counties have the population equivalent of a medium- to large-sized state; thus, California IIS governance is more complex than in most other states; county-based IIS receive CDC support only indirectly through the state. Perhaps influenced by these factors, the San Diego Regional Immunization Registry (SDIR) has always been willing to innovate. Now SDIR's willingness to innovate may put them in a position to contribute at a community level to Meaningful Use solutions that may generalize to other parts of the U.S.

SDIR seeded its IIS with many elements which we now see as providing building blocks for broader community health information exchange. These include a Master Person Index (MPI), and a web service-based vaccine forecast which is available to other U.S. registries, as well as directly to patients – for example, on Google Health. Some of these software modules have already been leveraged for other County purposes. SDIR's Master Person Index, for example, is used by the County-funded Safety Net Connect project. Safety Net Connect is a network of San Diego hospitals and community clinics cooperating to find medical homes and affordable care to individuals who present in emergency rooms for non-emergency care.

By helping providers fulfill as many MU criteria as possible at a low incremental cost, such sharing of infrastructure may encourage providers to fulfill all three population health Meaningful Use criteria, of which IIS reporting is just one. Solutions that allow providers to fulfill as many criteria as possible at once will find even more long-term success. Now that San Diego has been selected by the Office of the National Coordinator as a Beacon Community, community-wide cooperation dominates the thinking in San Diego.

Alean Kirnak (Software Partners)

Linking Electronic Medical Record Systems with Statewide Immunization Information Systems – A Practical Approach

Nearly eighteen years ago, the Centers for Disease Control and Prevention (CDC), established a national objective to develop population based tracking systems that captured the immunization histories of children.[3] In the late 1990s there were few electronic links between a state IIS and any other health record systems. Neither data standards nor communication protocols existed for the electronic sharing of birth data and immunization systems. By 2008, nearly 80% of the 53 state and city information systems completing the IIS Annual assessment reported that they use electronic links to Vital Record Systems.[4]

Electronic exchange of birth data opened the door to utilize electronic health information from other key third-party sources like encounter data from provider Practice Management Systems,[5] claims data from Medicaid and other third party health insurers. Electronic data exchange between 1998 and 2005 were typically one-way transactions which resulted in the need to create unified data standards. In the past few years the HL7 standards were established and adopted. This factor significantly moved the data exchange processes with IIS forward. The American Recovery and Reinvestment Act of 2009 (Recovery Act) has accelerated interest in data exchange to a new level.

The Recovery Act provides significant funding opportunities to providers who demonstrate the Meaningful Use of certified EHR technology. These dollar incentives are for eligible providers and hospitals that adopt, implement or upgrade certified EMR technology or for Meaningful Use in the first year of their participation in the program and demonstrating Meaningful Use during each of five subsequent years.[6] The fourth health outcome policy to measure Meaningful Use is to improve population and public health. As it applies to providers' EMRs it means that the application must be able to submit electronic data to IIS and actual submission where required and accepted.[7]

Health Level Seven (HL7)[8], an accredited, nationally-recognized standard for electronic data exchange for clinical and administrative messages in healthcare environments, is CDC's current standard for sending immunization records[9].

These standards for HL7 messaging were used to facilitate data exchange between the Washington, Arizona and Idaho State IIS. The outcome of this project proved this method to be both cost-effective and efficient. Most discussions about state-to-state communication continue to revolve around the complexity of sharing data with systems whose messages are non-standard,

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[3] Healthy People 2010 Objective #1-32; http://www.healthypeople.gov/

[4] Centers for Disease Control and Prevention, 2008 Immunization Information System annual report; http://www2a.cdc.gov/nip/registry/IISAR/IISAR_DATA_2008.xls

[5] All Kids Count, Documentation of Immunization from Billing Data and Chart Abstract: Implications for a Large Health System Reporting Billing Data to a State Immunization Registry, http://www.allkidscount.org/iz/ppoint/kallenbach/abstract.html

[6] Centers for Medicaid and Medicare Services, US Department of Health and Human Services, DEFINITION OF MEANINGFUL USE OF CERTIFIED ELECTRONIC HEALTH RECORDS (EHR) TECHNOLOGY, http://www.cms.hhs.gov/apps/media/press/factsheet

[7] Federal Register, January 13, 2010 (Volume 75, Number 8); http://edocket.access.gpo.gov/2010/E9-31217.htm

[8] Health Level Seven, www.hl7.org

[9] CIRSET. Transport of immunization HL7 transactions over the Internet using secure HTTP, version 1.0, http://www.cirset.org,

lack of funds to facilitate the data exchange and achieving a mutually acceptable data sharing agreement between the states.

More interest and attention has focused on capturing immunization encounters from a provider's Electronic Medical Record (EMR) system. The Recovery Act funding has caused EMR vendors to demonstrate interoperability capabilities with state IIS systems. As a result, public health has the long-sought opportunity to establish what state IIS systems need from their applications for successful patient immunization data exchange between systems.

The following section describes the proven processes that increase the likelihood of a successful linkage with EMR provider solutions and a state IIS.

STEP 1: INVESTIGATION PHASE:

Interview the Provider

- Ensure the provider's practice will commit leadership staff to the process
- Identify both the technical and clinical person(s) who will participate in the testing and implementation
- Hold an official kick-off meeting call with provider and IIS staff to outline the steps in the process
    - Describe data quality testing process
    - Estimate anticipated length of time till data exchange will go LIVE
- Validate the quantity of the immunization data in the EMR
    - Identify length of time the practice has been using the EMR
    - Identify where the immunization legacy data resides
- Clarify how patient confidentiality will be maintained throughout testing
- Clarify how the electronic data exchange impacts the continued use of reporting functionality in the IIS

Interview the EMR vendor

- Provide the IIS data specifications to the EMR vendor
- Identify the technical staff person who will assist with data testing
- Hold a conference call with the EMR technical staff
    - Have the vendor demonstrate the EMR application
        - Identify how the users populate demographic and immunization fields. Note free text version selection lists.
        - Establish the EMR's data exchange capabilities (send or send and receive)
        - Identify the IIS required and highly desirable data fields
        - Establish what triggers data to be exported from the EMR
        - If the EMR can receive data from IIS, what method is used to deduplicate vaccinations in the EMR application
        - Identify how the EMR manages patients who Opt Out and Opt In capabilities
        - Identify how / if the EMR supports Vaccine For Children (VFC) status information at the vaccination and/or patient level
    - Allow EMR vendor staff to ask questions about the IIS and the data exchange process
    - Establish what data format the EMR will send

STEP 2. TESTING PHASE

Technical Testing

1. Mock data is used to evaluate the expected data set, the HL7 message segments and file formatting.
2. LIVE patient records are necessary to validate and understand:
    - Data adheres to the IIS validation criteria, i.e. no vaccinations before the patient's data of birth, etc.
    - The frequency that the date fields are populated and the triggers to send data
    - File size should be at least 1,000 patients with immunization records to identify random issues.
    - Multiple test files are needed to ensure clean, accurate and complete data. Three to six test exchanges on average are usually required.

In some cases, the provider will not have access to a technical specialist to support the generation of test files and the exchange if the EMR vendor does not assist. In some cases this is a cost to the practice. As such, the IIS team should have a support plan in place for both the technical effort and possible funding.

Data Quality Testing

1. Validate the quality and quantity of immunization data in the EMR
    - Review accuracy of current CPT / CVX codes in the EMR
        - Ensure combination vaccines are being documented when they are being administered by the provider
        - The vaccine names the user sees in the EMR application may not match the underlying codes.
    - Ensure EMR supports documenting contraindication to or history of disease;
        - Providers may document administration of vaccine to substitute for the ability to mark contraindications / history of disease.
    - Review what vaccination related fields are being populated and if they are being populated consistently, include vaccinator, vaccine manufacturer, and vaccine lot number.
    - If state is an Opt In IIS, ensure consent field is being populated.
    - Select 50+ random patients from the electronic file to compare the demographic and immunization data against what is viewable in the EMR.
        - Compare data in the electronic file against what the clinician sees in the EMR for discrepancies.
        - Discrepancies may require the vendor correct technical malfunctions, change the application to support staff workflow/needs and retrain clinical staff in the appropriate use of the EMR application so that documentation practices support the interface design.
    - Vendor provides a clean test file to IIS to load and process in their test environment.

After the IIS accepts the test file, the provider's EMR is ready for LIVE data exchange.

STEP 3: IMPLEMENTATION PHASE

- Formally certify a LIVE interface exists and is operational between EMR and IIS.

- Establish the provider's ongoing responsibilities for the data exchange.
    - Frequency of data files upload to the IIS.
        - Train at least two staff to manage this task
        - If data files are automatically uploaded, assign staff who will confirm successful data file transmission;
    - Establish how the CPT/CVX codes in EMR application will be kept current.
        - Who's responsibility – vendor or provider staff
    - If the EMR is receiving data from the IIS ensure that duplicate vaccines are not appearing in the EMR.
- IIS should perform intermittent data quality checks on data exchange.

LESSONS LEARNED

The following are lessons learned and warnings. First and foremost, each data exchange is unique even with the same EMR application and/or version.

- HL7 data exchange can give the IIS and the provider a false sense of security. The provider needs to understand that transferred files are completely and accurately tested and that this process can be lengthy. No assumptions can be made in any phase of the process.
- Changes made to the provider's application (upgrades, server changes, configuration settings, etc.) may cause the links to fail or some data to no longer be correct.
- EMR vendor CPT / CVX codes must be kept updated.
    - EMR vendor's CPT/CVX code updates vary by company and the frequency of update can impact accuracy.
        - Updates may only occur when and if the provider deems necessary. EMR vendors may dispatch regular updates but providers are not required to update their systems.
        - Updates may only come in new releases; Providers may not update to the newest release in a timely manner.
    - Discontinued vaccine codes may be used for administered vaccines.
    - Vaccine lists in the EMR are not comprehensive.
- EMR vaccines viewable in the EMR may not match what is in the underlying code.
- Users will find a way to record data in the EMR if the application does not support it. Two common examples:
    - Users select a Td when they are giving Tdap because this code is not in the EMR.
    - Users record that a Varicella vaccine was administered because they had no ability to document Chicken Pox history.
- HL7 data files may contain CPT codes, CVX codes, or both.
- All vaccines do not have both a CPT code and CVX code.
- Manual file uploads are subject to failure or interruption.
    - Staff changes or lack of ownership for data exchange put data uploads at risk.
- Data considered mandatory by the IIS may not be mandatory data fields in the EMR and as requirements increase on the IIS for data this data may not be in the EMRs.
- Some EMR fields are free text format which are highly subject to error especially when involving vaccine lot numbers.

- Not all EMRs contain Guardian information. Some have Next of Kin or Guarantor (person responsible for the bill) fields vs. Guardian information; Not all IIS will accept these fields in lieu of Guarantor.
- EMRs may be fully integrated with provider billing. Changes to EMR vaccine codes may impact provider billing. Disrupted billing or erroneous billing puts the provider at legal and monetary risk.

Electronic health information exchange will continue to expand rapidly with provider's EMRs and Health Information Exchange (HIE) efforts. Public health has the opportunity to leverage these data exchange opportunities to set ensure that vendor's applications provide a high level of data quality. In the public health arena, the value of bi-directional exchange of patient records has been evident but it also supplies a significant benefit to the community. Lessons learned such as those discussed can support the provider's effort to improve the quality of patient care while assist the IIS to achieve their public health goals. The ultimate benefit is derived for the user, the patient, the patient's family and the community at large through the use of quality data.

Janet Balog, Mike Garcia and John May (STC)

Summit on Public Health Readiness for Meaningful Use

Thirty public health leaders from across the country gathered on August 9, 2010 to develop an action plan to ensure public health agency readiness for Stage I Meaningful Use requirements. The participants represented seven different divisions within the CDC, as well as ASTHO, NACCHO, CSTE, APHL, ISDS, ONC, and PHII. The meeting was co-sponsored by the Joint Public Health Informatics Taskforce (JPHIT) and the Public Health Informatics Institute.

AIRA was invited but there wasn't sufficient lead time to find a IIS manager who could travel on such short notice. Garry Urquhart, CDC/NCIRD/IISSB provided an update on what is known about IIS readiness for Meaningful Use and likely barriers.

The discussion addressed these key questions:

- What do state and local health departments need to do to be ready for 2011 Meaningful Use requirements?
- How ready are health departments for 2011 requirements?
- What are the known barriers to readiness?
- What is our action plan for rapidly improving readiness by April 1, 2011?

The output from the day was a draft action plan that delineated both what state and local health departments will need to do under the Meaningful Use program, and the activities that CDC, JPHIT and the various public health associations can collaboratively undertake to support health departments in preparing for Meaningful Use. That action plan was jointly developed, and needs to be jointly implemented if it is to be effective and be realistically achievable within a very short timeframe.

Common themes from the day's discussion included:

- The Meaningful Use program and other initiatives enacted under the HITECH Act

present tremendous opportunities for public health and for population health improvement. But they come at a time of strained governmental budgets and dwindling workforces. If public health is not able to respond rapidly to ensure readiness for the 2011 requirements, we may lose the opportunity to leverage these initiatives to improve the way data flows to and from health departments in the future, as well as the ability to use health information technology to support improvements in population health. Thus, the HITECH initiatives are ultimately as much about transformation of the public health sector as of the healthcare sector.

- The Meaningful Use program challenges public health to respond as a coordinated, unified local-state-federal enterprise. Learning from the most advanced states to develop a roadmap of the best or most promising practices to guide those not as advanced will be critical to ensure success. It will also require coordinated policy and financial support from the CDC.
- A convergence of policy, people, ideas, funding, strategies and communication is required to respond effectively to these opportunities. Public health cannot afford to respond in the usual way, program-by-program and agency-by-agency. Action will have to be carried out within an overall coordinated framework of priority actions, supported by practical tools and consistent messages, and implemented by staff knowledgeable about HITECH and health reform initiatives.

The next steps for finalizing and implementing the action plan include:

- Vetting the draft plan with all of the summit participants, the organizations and associations represented at the meeting, as well as other organizations critical to successful implementation.
- Crafting a comprehensive communication strategy and plan.
- Creating a series of informational materials and practical tools for states to use in assessing their own readiness and in planning their response.

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