

Immunization Registry Interoperability Summit September 21-24, 2010 - Scottsdale, Arizona

Executive Summary

Introduction

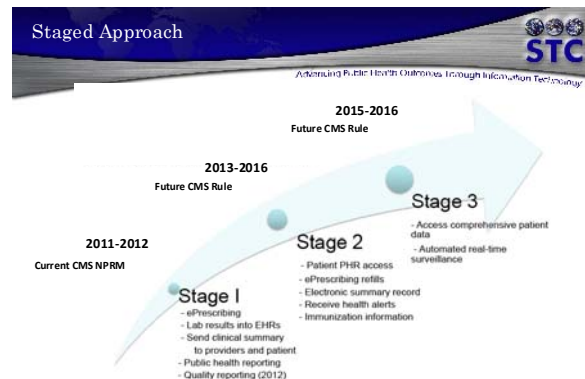
An unprecedented effort is underway to automate Electronic Health Records (EHR) and Health Information Exchange (HIE), Fueled by federally funded initiatives, health care providers and hospitals are adopting EMRs and interfacing with a variety of public health data systems, including Immunization Registries which themselves have been the recipients of recent federal Interoperability grants. Because of the need for close coordination to achieve maximum data quality and interfaces with incentivized providers, STC held a two-day Immunization Registry Interoperability Summit. Thirty-one (32) attendees representing seven (7) state immunization registry programs (Alaska, Arizona, Idaho, Louisiana, Mississippi, Wyoming, and Washington state), the Indian Health Service (IHS), and four commercial Electronic Health Record (HER) firms (NextGen, eClinicalWorks, Cerner, and Medicity) convened to chart a course toward implementing and sustaining secure data exchange with providers and other sources of information content relevant to registry operations and program objectives.

1: Immunization Information Systems – The Interoperability Challenge

To qualify for federal incentives health care providers must procure certified EHR system and achieve Meaningful Use objectives from a menu of required and optional categories. If they elect (or are required) to interface with a state immunization registry they must perform at least one test submission in accordance with the applicable state-designated standard format. However, most registries today desire high-quality bidirectional data to support reconciliation of shot records and vaccine inventories. Four “players” have roles in achieving this objective – 1) Immunization Information Systems (IIS), 2) private and public providers, 3) Health Information Exchanges (HIE), and 4) Electronic Health Record (EHR) vendors.

Summit participants discussed four realities that these players must navigate:

- Providers now using ASCII files (56 out of 58 sources in one state) need to be converted to HL7.
- Providers commonly use batch file uploads rather than bidirectional interfaces to update shot history and forecast and receive vaccine inventory. Vendor fees for real-time interfaces are often expensive.
- Interfacing is a manual, resource-intensive process that needs to be automated as much as possible. Its implementation should be more configurable and robust to ensure data quality.
- There is a need to proactively communicate with providers regarding their data exchange status, quality and outcomes.



Many states have received federal Immunization Interoperability grants. Among their objectives, these grants aim to improve the completeness of immunization histories available to clinicians, improve timeliness of data submissions to registries, improve the quality of IIS coverage assessments, improve the quality of data available to other public health systems, reduce extra immunization, and to achieve a saving of time and resources. Outcomes measurement is also a key feature of these grants – examples include increasing the number of available interfaces by 45%, increasing the number of reported transactions by 10%, and increasing the number of transactions reported within 30 days or less by 25%. In pursuing these outcomes, Summit participants discussed five expected impacts. First, the **volume of interfaces** will increase. Second, **data quality** will be affected. Third, there will be a need to **improve**

infrastructure. Fourth, there will be a need to **demonstrate positive health outcomes.** Fifth, Meaningful Use and Interoperability activities will demand **more time and resources** from IIS programs

2: Registry Improvements Designed to Meet the Challenges

STC staff and Summit participants discussed a series of functional enhancements to registries designed to address each of the five impact areas.

Enhancement 1: HL7 2.5 Upgrade (Export)

Registry upgraded to the new HL7 2.5.1 standard, offering the ability to leverage improved support for VFC eligibility tracking, contraindications, inventory, deletions, and forecasting exchanges, as well as improved data exchange and corresponding quality checks and audit trails are.

Enhancement 2: HL7 2.5 Upgrade (Bidirectional)

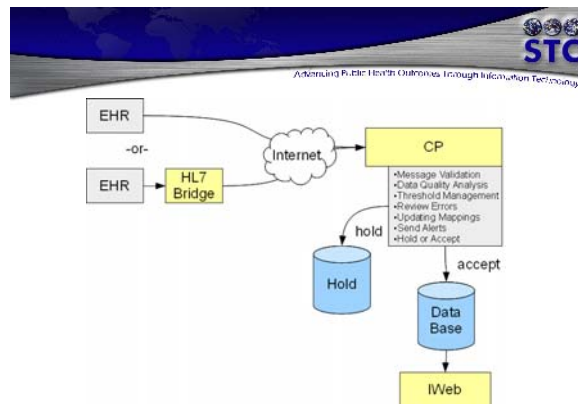
Adds support for bidirectional exchange, resulting in improved HL7 logging, notifications, and overall maintenance. Also included would be improved configuration and support for Reciprocal Batch Update, more robust logging, a user-friendly display, and notification of connection errors.

Enhancement 3: Data Quality Monitoring and Reporting

Allows automation of data quality monitoring in conjunction with the HL7 import process, and implements MIROW best-practices related to field-level and record-level data validations during “pre-staging”. Also included would be provisions for automated reporting and feedback for the importing provider.

Enhancement 4: Exchange Staging – (file level validation)

Allows for “staging” of incoming messages and/or resubmitting previously submitted data. Logic would be implemented to establish acceptable data quality thresholds and “accept” or “reject” behavior on inbound messages. The staging process ensures that bad or questionable data is not loaded into the registry, improving the accuracy and completeness of registry content.



Enhancement 5: Reciprocal Batch Update Process

Bolsters the reciprocal HL7 messaging to include robust logging and error reporting, improved performance for record location and retrieval, and improved recovery when transmission problems occur. An additional enhancement would include implementation of optional automated or unsolicited updates as an ongoing process.

Product 1: HL7 Communication Platform (HL7-CP)

The HL7 Communication Platform is designed to provide a Web enabled HL7 interface and testing platform for state immunization registries. This separates the HL7 interface from the general registry application and processes for improved performance and more flexibility in applying updates/changes to the HL7 feature set, resulting in improved timeliness of imports. Queries can obtain data either from the production database or the Data Mart.

Product 2: Vendor/Provider Management Tool

An adjunct to keeping track of the vendors used by providers. It is critical for state programs to have a tool to manage the process of vendor data exchange. The tool should provide real-time status of each vendor/provider interface. This module would include the ability to track status, contacts, actions and project notes.

Product 3: Real-Time Reporting System

Designed to monitor the day to day daily exchanges between the providers and the IIS, it includes tools that capture the HL7 audit and quality data, integrates the provider feedback process into an automated report back system, automates the alerts as well as provides data to the registry Dashboard. This also generates Meaningful Use reports and automates the sending of this information to providers, vendors, and state public health programs. This product would also support the setting of rules for alerting as well as the feeds to link to management dashboards with specific Meaningful Use criteria data.

Product 4: Automated Vendor Exchange Test System

The Automated Vendor Exchange Test System is a stand-alone system which is designed to establish the initial bi-directional exchanges with each vendor, test these links, provide vendor education and support and certify the link as being state specific IIS ready. The system uses automated on-line self paced tools to allow vendors to validate their exchange components before contacting states. This allows vendors to actively drive a substantial portion of the testing process through automated file feedback and decision making tools.

3. Interfaces and Data Exchange – One State’s Experience

Summit participants heard a presentation Margo Harris, Washington State Child Profile Immunization Registry data exchange specialist., sharing her own state’s experience with HL7, EHRs and HIE data exchanges. Washington State is an Opt-Out state and a lifetime registry with 90% provider enrollment (voluntary) and 100% public enrolment statewide with no legislation. Among their biggest problems: Vendors seek and expect message architecture validation – two said that was the Registry’s job. Washington State has a validation tool, in their HL7 application and they expect vendors to have a validation mechanism as well. Additionally, the move of a provider to production is often seen by the provider and many vendors as a final step – however, there are continuing needs that require provider and vendor commitments. Among the challenges faced by the registry are the availability of staff resources, expertise and funds – a comprehensive testing process to scrutinize incoming exchange messages, which is inherently an intensely manual process, requires sustained effort, support and tools. Washington state developed a 2-page “pre-certification” checklist that tells providers and vendors what they need to do to interface and the state’s expectations once they are in production. Additional challenges include vendors who just want to send a few test messages (often a poor predictor of how well a live interface is going to work), and disconnects regarding user data entry issues which can significantly affect data quality and completeness. A state-specific HL7 Guide is a good idea. Registry application enhancements to support quality and accurate performance are needed, with “smart” feedback, like an alert when an interface has failed.

4. Registry Data Exchange – The EHR/HIE Vendor Perspective

Summit participants heard about initiatives, expectations and challenges from four Electronic Health Record and Health Information Exchange vendors as well as a representative from the Indian Health Service (IHS). Many vendors would like “corporate-level” test files, however considerable further standardization would need to occur as a prerequisite. This approach would also not lessen the importance of continued testing and communications between vendors, providers, and state registries. Opinions differed regarding the extent of and responsibility for the “enforcement” of data validation rules within an EHR or HIE. The notion of joint state immunization data exchange guides was advanced – this would be a “plan” between EHR and HIE vendors, registry application vendors, and state immunization programs and would outline all requirements, expectations, and standards for structure, testing, and ongoing maintenance. Vendor participants commented on the need to train providers in data entry workflow and mandatory fields, however because there is a cost to training it was suggested that a joint guide to such training be produced between vendors and state registry programs. There was also discussion of establishing certain mandatory fields within registries nationwide. Also discussed was the need for technical collaboration. An example concerned EHR user entry screens. It was suggested that if providers and EHR designers knew how public health thinks and is accustomed to doing data entry, the UI could be redesigned to accommodate the data flow or work flow of the provider.

5. Registry Data Exchange Within a State HIE – A State’s Perspective

Joe Surkin presented a brief overview of the changes Mississippi is making to support their HIE, an initiative that has been 20 years in the making. The MS Board of Health is authorized to make the rules and regulations stipulating how data can be exchanged electronically, in compliance with existing state law. Billing and hospital discharge data were the initial guides to the HIE’s development. MS uses Rhapsody as an integration engine. Rhapsody facilitates one data feed coming in from multiple sources through to the Health Department. Data value validity checks (72 of them) are made during the data mapping of records - 99.5% are accurate and 95% are complete. Mississippi is adding more data sources such as trauma data. Joe also described the Mississippi Department of Health data system, a large data repository with a Rhapsody processor included. “Views” are provided to Programs, such as Asthma, Birth Defects, and the Immunization Registry. Between 1.5 to 3.0 million people’s data are being moved to the new patient records system. Rhapsody also directs screens for TB, eHARS, STD-MIS, Epi Tracks (disease surveillance and reporting), and Lead Screening. Immunizations will come into Rhapsody connect from outside providers via the Immunization Repository. MS allows de-identified aggregate forms of medical data to be disseminated for summary population studies. Researchers can get data access for a fee from the MS Data Use Council. STC and the MS Department of Health joined forces in 2009.

6. Summary Observations and Next Steps

Summit participants discussed strategies for leveraging Interoperability grants to obtain and maximize functional improvements in common registry applications in order to fulfill grant objectives and sustain long-term data exchange efforts. Attention was directed to understanding the process flows, from initial discovery through to provider data exchange “go-live” – this was recognized to be a complicated but necessary series of cycles, typically lasting between 3 to 6 months. Summit participants also discussed a number of lessons learned and possible next steps, among which were the following representative issues:

- Providers perform varying amount of Quality Assurance before exchanging data – this is sometimes hard for immunization registries to influence or control.
- Even if all of the vendor-partners are “known” or have been in production before, the full process of validation and testing must occur for each interface established. This is due to variations in software versions and provider use, as well as turnover among involved vendor or provider staff.
- A joint State Implementation Guide that accounts for Vendor (product) and state Immunization Program requirements was suggested as a beneficial collaborative activity.
- Because registry and EHR/HIE field mapping may vary state to state, there was perceived to be a need for a universal Data Dictionary with unambiguous definitions of each field in the messages.
- Some EHR and HIE vendors indicated a willingness to share their data exchange checklist with state immunization programs, and indicated that some states respond in-kind in an effort to reconcile differences.
- Some vendors are often surprised that the state immunization program “passes” their transport file but that their exchanges later “fail” due to errors caused by user data entry issues.
- Participants felt that workflow, training and user data entry issues are what need focus – how we make the provider care about how they use the products and the information and value they get back in return. An example is inventory decrementing.
- Because in many states about 30% of providers give 80% to 90% of the shots, initial data exchange efforts can be prioritized to achieve high-volume results and establish standards more rapidly.
- In spite of incentives, many providers remain interested in manual data entry. This allows them to become comfortable to participate in an EHR or HIE. Immunization data is a small part of a full EHR record and that is a good jumping off point for many providers.

7. Conclusion

There are unprecedented opportunities to create new approaches to data exchanges between EHR/HIE systems and state Immunization Registries. Health care providers are an integral participant and an important beneficiary. Early attention to automating and standardizing data quality, validation, error-alerts, and population outcomes measurements will help ensure that the investments made today continue to produce rewards long into the future.