Identity Management Beyond the EHR: The Match Game with the SSA

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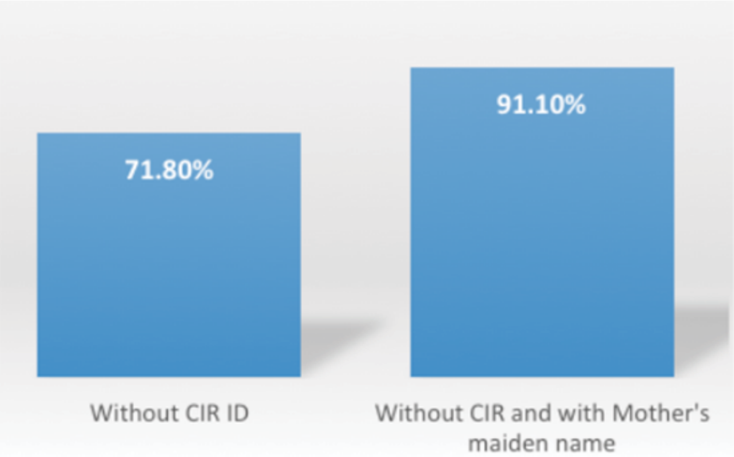
Children's HealthSM of Dallas (Children's Health) is the leading pediatric health system in north Texas and the eighth-largest pediatric healthcare provider in the nation. In the fall of 2012, Children's Health began to exchange data electronically with the Social Security Administration (SSA) using the Sequoia Project's eHealth Exchange. The eHealth Exchange is a network of federal agencies and private and public healthcare organizations in which exchange partners securely share clinical information using a standardized interoperability approach. The commitment to vendor-neutral standards for interoperability was a significant factor in Children's Health's decision to exchange data using the eHealth Exchange. This partnership with the SSA has shown great benefits (see Table 1 below for further details on these benefits).

Table 1: Electronic Exchange Benefits Table

SOCIAL SECURITY ADMNISTRATION	PATIENT	HEALTHCARE PROVIDER
Eliminating administrative barriers and related costs	Improved patient satisfaction	Eliminating administrative barriers and related costs
More efficient claims processing	Faster eligibility determination response	Fewer disability requests processed manually
Faster claims turnaround	Essential medical benefits	Release of Information (ROI) staff can process more complex requests for information
		Increase in paid claims

Since go-live of the exchange project in November 2012, the annual average query response rate for Children's Health was 75 percent. The SSA defines response rate as records received by total number of queries sent. The health information management (HIM) team at Children's Health was confident this rate could be improved based on a study by New York City's CityWide Immunization Registry (CIR). Figure 1 below shows CIR had improved its patient matching rates by 20 percent in a pediatric population when no unique identifier was available for matching. The success was achieved by increasing additional data for the patient matching.[2] This study gave Children's Health's HIM team confidence that they could also improve match rates on queries that have no Social Security number (SSN) available for matching.

Figure 1: NYC CityWide Immunization Registry (CIR) Match Rates



The Sequoia Project's report, "A Framework for Cross Organizational Patient Identity Management," served as a roadmap to support efforts to improve Children's Health match rates.[3] In the report, a case study was performed in the framework that achieved a patient match rate of 95 percent. One of the major factors in achieving this rate was the collaboration between external exchange partners regarding standardized data formats. The framework developed some best practices to improve matching rates. Those include agreeing with trading partners on data standardizations and expecting no less than a 90 percent match rate across organizations.

What is the Sequoia Project?

"The Sequoia Project is a non-profit 501c3 chartered to advance implementation of secure, interoperable nationwide health data sharing. The Sequoia Project supports health IT interoperability initiatives, most notably: eHealth Exchange, a rapidly growing community of exchange partners who share information under a common trust framework and a common set of rules; and Carequality, a public-private collaborative effort to build consensus among existing data sharing networks regarding technical specifications and best practices."[1]

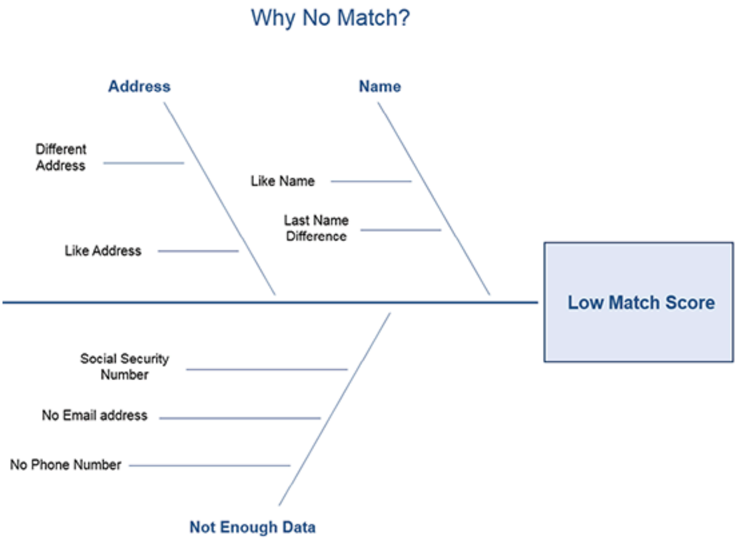
Scrub-a-Dub the Data

After reviewing both the New York City CIR match rates and the Sequoia report, Children's Health had to determine how to improve the SSA matching rate. To analyze and improve a true patient matching rate, the SSA's response rate could not be used for the purposes of this project. The SSA response rate is the number of records received divided by the total number of queries. There are two reasons why the response rate is inappropriate for a patient match rate at Children's Health. SSA assumes the queried electronic health record (EHR) has the common patient, and all queried patients have consented to participate in an electronic exchange. HIM performed data cleansing on SSA baseline and result data. The SSA data only included queries of confirmed common patients. Children's Health did this by manually reviewing its master patient index (MPI) for queries that did not produce a weight for a common patient. Unconfirmed patients in the MPI were excluded. Consent participation status was not a factor in any of the queries.

Data for Patient Matching

SSA standard data fields used in queries for matching included: full name, date of birth (DOB), sex, address, and SSN. Children's Health performed a review of its patient data elements and found that all elements used by SSA were available to them. The project focused on the impact of additional elements such as phone number and email addresses that were captured by Children's Health with availability for matching but not utilized by SSA. An analysis revealed that if SSA provided the patient's phone number and email address, then the scores would surpass minimum requirements allowing a match. Since phone numbers and email addresses are collected during the registration process and are easily available, Children's Health HIM leaders met with SSA to discuss including this information in their query for records.

Figure 2: SSA Root Cause Analysis



HIM performed quantitative data analysis that focused on unsuccessful SSA matches returning a suggested patient but not scoring the minimum threshold weight. Queries that failed minimum match score (within one to two points of matching) were included in the analysis. Figure 2 above shows how the SSA root cause analysis of this cohort shed light on data issues and why the cohort did not meet the minimum threshold weight. Some of the reasons include:

1. No matching address. Address is a key data element used in matching. The analysis showed a lack of matching on addresses in this subset cohort.

    - Complete different address. Patient had not updated current address with Children's Health.
        - Results in no score for address
    - Like address. 111 Easy TRL APT 101 versus 111 Easy Trail
        - Results in a lower score for a like address

2. Name difference. Hyphenated last names or the last name variations of a hyphenated last name resulted in a lower score for a like name. For example:

    - Jose Gomez
    - Jose GomezSmith
    - Jose Ramirez
    - Jose Ramirez-Smith

3. Lack of a SSN. The SSA sends the full SSN in its queries, but many patients do not give their SSN to healthcare providers. Pediatric patients may not have a SSN on admission or their parents may not have the child's SSN readily available during the registration process. The opportunity to match patients who did not have an SSN collected was difficult.

4. Lack of email. The data that was sent from the SSA did not contain an email address. Children's Health had this data available for matching on many of the queries.

5. Lack of phone number. The data that was sent from the SSA did not contain a phone number. Children's Health had this data available for match on many of the queries.

Data Analysis Results

In the first quarter of 2017, Children's Health presented the results of its data analysis of the opportunity match group to SSA. The SSA was convinced that additional data would help but needed time to evaluate:

1. If the data was routinely collected
2. If the collection of the data would require a change in the SSA application process
3. If technology infrastructure would support sending the additional data elements

At a meeting conducted during the second quarter of 2017, the SSA confirmed that the phone number and email address are captured, stored as a part their processes, and that its technology infrastructure could support the exchange of the additional data. SSA communicated that the phone number and email address data elements would be included in data matching requests in late August 2017.

Figure 3

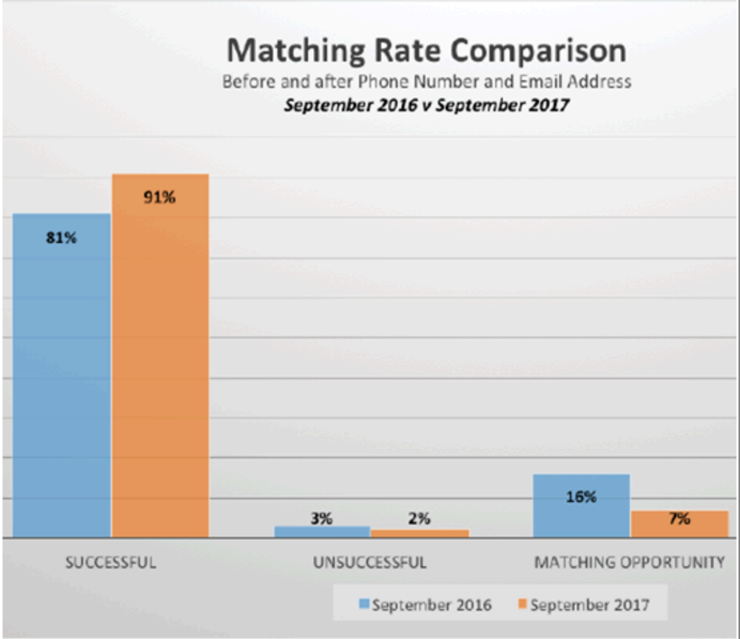
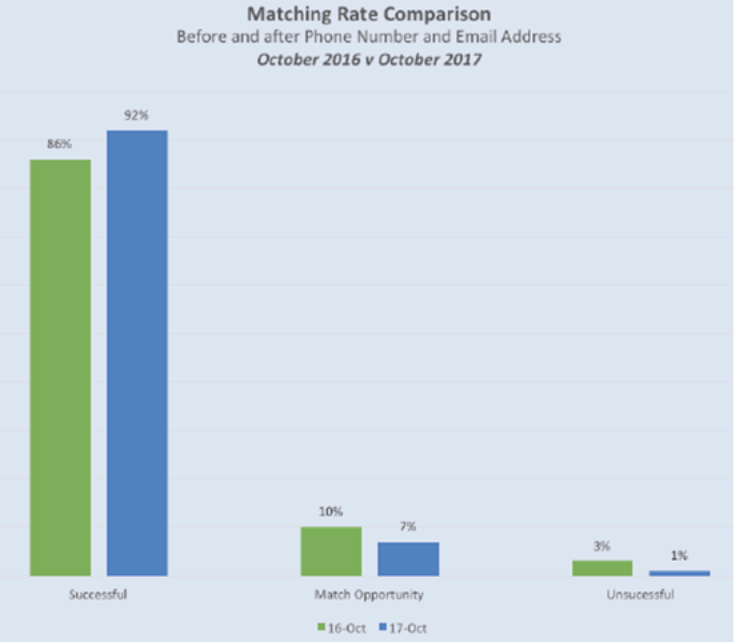


Figure 4



September 2017 data showed the additional data elements had a positive impact on successful matches. Matching increased to 91 percent from 81 percent (see Figure 3 above). The benefits of the 10 percent increase include:

- On average, 33 patients per month had a disability determination in days instead of weeks.
- The ROI team now has eight more hours per month to focus on higher-level functions.

Children's Health's partnership with SSA has shown that HIM is valued as a partner and that changes can occur with collaboration and supporting data.

Nationally, organizations that exchange data with the SSA using Sequoia Project's eHealth Exchange will reap the benefits of this improvement in using standardized data sets that include phone number and email address in patient matching algorithms. This journey is not over for Children's Health, since the organization still has a seven percent opportunity for matching. An analysis that is planned for a future date will study the impact of matching in multiple births.

Moving Forward

HIM professionals are skilled at quantitative data analysis, data comprehensiveness, and identity management. Health information exchange (HIE) is growing beyond healthcare providers to payers, insurance companies, and public health agencies. The primary data source of health information is now the EHR. HIM professionals are responsible for the quality, protection, and delivery of health information contained in the EHR. HIM's core professional responsibilities have expanded beyond the walls of the EHR. Identity management is now internal and external to the medical record.

Non-healthcare exchange partners need the expertise of HIM professionals to achieve interoperability and optimization of HIE. HIM professionals are uniquely positioned to take the lead to educate data exchange partners on data standards and identity management to achieve interoperability of health information exchange.

Notes

1. Heflin, Eric et al. "A Framework for Cross-Organizational Patient Identity Management." November 10, 2015. http://sequoiaproject.org/wp-content/uploads/2015/11/The-Sequoia-Project-Framework-for-Patient-Identity-Management.pdf.
2. Mandel, Hannah et al. "Health Level 7 Web Service Search Success Rates in New York City's Citywide Immunization Registry." NYC Health. www.immregistries.org/resources/iis-meetings/4A_Hannah_Mandel.pdf.
3. Heflin, Eric et al. "A Framework for Cross-Organizational Patient Identity Management."
4. Mandel, Hannah et al. "Health Level 7 Web Service Search Success Rates in New York City's Citywide Immunization Registry."

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