SSM Integrated Health Technologies Clinical Data Migration

Background

When SSM Health acquired multiple legacy systems through acquisitions of inpatient and ambulatory facilities in the Shawnee, Oklahoma region, they knew a data migration was needed. SSM had begun transitioning all their hospitals to one enterprise EHR, Epic, to streamline documentation and workflow processes for physicians. A single system would minimize errors by reducing the need for double entry into EHRs, and help standardize protocols related to admissions, emergency department and referrals.

Each migration performed at an SSM affiliate was facilitated by SSM Integrated Health Technologies, the IT branch located in St. Louis that covers all the non-essential clinics, hospitals, and outpatient areas with the same IT services.

This study takes place at SSM Health Care of Oklahoma (SSM), a Catholic, not-for-profit health system serving the comprehensive health needs of communities across the Midwest. It focuses on the implementation at St. Anthony's Shawnee Hospital. The hospital itself is 100 beds, with 65 other provider clinics attached. The clinics range in location, anywhere from ten feet to thirty miles from the Shawnee Hospital. These clinics have historically run electronic health records as far as ten years back. MEDITECH 6.0 was used at the hospital, while MEDITECH/LSS was used at some clinics. Additionally, GE Centricity Ambulatory was used at the others. With the entirety of SSM Health transitioning to Epic, these clinics were challenged to integrate the historical information from these various electronic record systems into the new system.

SSM INTEGRATED HEALTH TECHNOLOGIES

SSMHealth

PROJECT OVERVIEW

GE Centricity and MEDITECH to Epic EHR Migration
- Legacy Systems
  - MEDITECH 6.0 Inpatient EHR 6.07
  - MEDITECH/LSS Ambulatory EHR 6.08
  - GE Centricity Ambulatory EMR 9.8
- Target System: Epic 2014
- CCD Extract & Import
  - Active Allergies
  - Active Medications
  - Active Problems & Problem History

Galen Responsibilities

- Legacy System Data Extraction and Evaluation
- Clinical Data Mapping
- Configuration
- Testing and Validation
- Data Import and Issue Resolution

Key Metrics

270K Immunizations	139K Patients Migrated
360K Allergies	
650K Medications	200+ Providers Migrated
600K Problems	

Migration vs. Abstraction

When SSM began their transition, the first consideration was whether to perform a migration or an abstraction. They considered hiring med and nursing students as temporary help to manually abstract the data from the source system into the target. However, the students didn't have any background on the systems. In a typical Epic go-live for SSM, the abstraction process begins about two months prior to the actual go-live date, abstracting key pieces of information and bringing them into the record. This timeline needed to be majorly adjusted if they were to utilize the students because of the learning curve. Another issue was the potential for human error and lack of audit trail associated with manual data abstraction. The systems are constantly evolving, and so the fidelity of the data could be questioned.

When SSM considered data migration strategy and evaluated its cost, they also assesed the validity, accuracy, and cleanliness of the data to determine if they would get a better result using their existing EMR to bring the data forward. Ultimately, the cost of abstraction far outweighed what would be spent on a data migration strategy. The way SSM decided to frame their data migration was by using a combination of CCD extracts and the corresponding reconciliation process within Epic, then importing the remaining data via HL7 messages.

Because of the lack of additional, qualified, internal resources and a tight timeline, SSM realized they needed outside help. SSM requested Galen Healthcare Solutions' assistance to convert their legacy data from MEDITECH and GE to Epic, because of their vast experience successfully completing over 200 migration projects and background knowledge of the MEDITECH, GE, and Epic system.

Project Scope

Galen provides every client with an assessment of the capabilities of their data migration engine, GalenETL, along with the processes and procedures that are part of the data migration project. One of the ways Galen analyzes this data is from a volume versus time perspective.

For each clinical element, Galen looks at the volume of data, starting at the previous one to two years, then one to three years, and so on. By reviewing the volume on a year by year basis, SSM determined what timeframes would either capture

the most data or only the most critical data that they needed to carry forward to their target system.

Another important facet of the assessment phase is to research and determine how each of the potentially in scope elements would be migrated and how they would appear in the target system. A series of questions were presented:

- Would elements be view only?

- Would they be discrete? Meaning the data would appear as if it were actually documented in the target system.

- Or would the migrated data be reconcilable? Meaning action would need to be taken on the clinical element before it's integrated into the patient's Epic chart.

This was the type of information that helped SSM determine what clinical data they wanted to bring forward into Epic. They settled on migrating active problems, active allergies, active medications, administered and historical immunizations, and two types of notes, operative and procedural.

> I was very impressed with Galen's knowledge of both the targeted system, Epic, and then the source systems, both MEDITECH and GE Centricity, because they were able to very clearly tell me what they needed access to, so I could submit the necessary paperwork and have our security team make sure that was granted appropriately. It was really nice to have someone who knew both systems to facilitate getting the right things to the right people.
>
> –**Sandy Winkelmann**, Project Manager, SSM Integrated Health Technologies

Mapping

MEDITECH			
CCD Clinical Element	Total Counts	Codified Counts	Codified (%)
Allergies	279,367	99,793	35.7%
Problems	164,355	151,287	92.0%
Medications	355,212	343,316	96.7%
Immunizations	31,519	N/A	N/A

Total CCDs	72,140

GE Centricity			
CCD Clinical Element	Total Counts	Codified Counts	Codified (%)
Allergies	81,465	1,322	1.6%
Problems	431,281	431,281	100%
Medications	292,427	271,258	92.7%
Immunizations	239,427	N/A	N/A

Total CCDs	72,140

Table 1

After the extraction phase, mapping begins. The goal is to map the legacy system's data to match how the elements will appear in Epic post go-live. To make sure this happens, a Galen resource works closely with the Epic implementation team to confirm the items being used in the mapping process.

Auto mapping of clinical elements was used by leveraging codifications. Codes were created to serve as a coherent standardized language across EHRs and healthcare entities. As shown in Table 1, the percentages for allergy codification are much lower than other elements. This frequently happens due to a majority of non-medication allergies being documented, which don't have Rx norm codes. However, while Epic initially tries to match allergies based on codification, it does have a second feature which matches allergies based on the exact spelling, so a large percentage are usually expected to be matched on that.

The codified percentage, also shown in Table 1, allows the migration team to gauge what portion of the migrated clinical elements will be auto-mapped. Because of the high percentage matches with problems and medications, SSM could then expect a minimal amount of effort, on the part of end users, to manually abstract elements during reconciliation workflows.

When there are not one-to-one matches between the legacy and the target systems, the Galen team must work with physician champions to decide which approach to take. The biggest challenge in this phase was the sheer volume of items there were that required mapping. The sub elements that were used the most frequently were mapped first, which allowed Galen to ensure that the majority of sub elements would parse discreetly in Epic before moving on to the less frequently or rarely used sub elements.

MEDITECH					GE Centricity				
CCD Clinical Element	Total Counts	Mapped Counts	Mapped (%)	SSM Validated (%)	CCD Clinical Element	Total Counts	Mapped Counts	Mapped (%)	SSM Validated (%)
Allergy Reactions	19,445	16,707	85.9%	93.3%	Allergy Reactions	12,817	7,689	60.0%	64.6%
Medication Dose Units	779,778	763,958	98.0%	100.0%	Medication Dose Units	179,047	62,371	34.8%	100.0%
Medication Route	776,080	756,845	97.5%	100.0%	Medication Route	179,047	61,811	34.5%	100.0%
Medication Frequency	752,590	629,694	83.7%	100.0%	Medication Frequency	179,047	150,021	83.8%	100.0%

Table 2

By mapping these sub elements Galen was able to save SSM end users a lot of time since they wouldn't need to manually abstract this information in Epic, it would simply parse discreetly instead. As shown in Table 2, the percentage of mapped data for GE Centricity is much lower. This is due to two things: for allergy reactions, GE allows for free text entry and the use of this capability was much more prevalent in GE than MEDITECH because of this there were a lot more unique, rarely used reactions. For medications, the way GE stores the data made it difficult to map any prescription instructions and as such, Galen had to extract the entire free text and then map dose and dose unit.

Validation & Testing

To further ensure data integrity and an efficient timeline, Galen recommended that the clinical mappings be reviewed by a SSM resource who was familiar with the data. Galen involves clinical end-users in every round of large and full scale validation, as this helps to ensure the data is manifesting and rendering correctly in Epic. Any identified issues were retested and ultimately fixed.

The biggest challenge associated with this phase was that the migration was moved up two months from the go-live date. Galen had approximately two months in the timeframe, from the initial extraction process to abstraction go-live, and this created a time crunch, in terms of making sure they could meet that go-live. Galen normally aims to complete two rounds of large scale and two rounds of full scale testing but to accommodate the time crunch only one round of each could be completed.

After sufficient testing occurred and Galen was confident with the data, demos were provided for physician champions to allow them to see what the clinical patient record would look like and how it would behave in the target system. Galen has found that these demos help to alleviate concerns and ultimately create physician buy-in. The final phase of the migration project is data load and go-live.

The Outcome

The day of go-live, SSM had a significantly shorter go-live in terms of the amount of information they needed to enter for hospitalized patients. This was because all the hospitalized patients had a majority of their meds, allergies, and problems already entered via the migration. One of the biggest takeaways Sandy Winkelmann, Project Manager for SSM, had was that "migrating data can lead to reduced abstraction time." Thanks to both Galen and SSM's efforts, St. Anthony's Shawnee Hospital successfully transitioned to Epic.