

Decade of Standardization: Data Integrity as a Foundation for Trustworthiness of Clinical Information

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By Katherine Lusk, MHSM, RHIA

For many years, health information management (HIM) professionals have been responsible for locating a complete patient record in a timely manner to provide a solid foundation for clinical decision making. When one healthcare system started noticing a high rate of duplicate records in their records system, they got creative in their approach to fixing the problem.

Facing the Challenge

In 2003, Children's Health System of Texas (formerly Children's Medical Center of Dallas) was experiencing a 22 percent duplicate record rate resulting in data availability and integrity issues. The duplicate rate is calculated by dividing the number of duplicates created in a month by the total number of registrations. To further compound the problem, a new clinical information system was implemented in late 2002, but the virtues of the new electronic health record (EHR) were dampened by the inability to locate information. This made for a disenchanted clinical team concerned with patient safety.

A survey in early 2003 revealed that 45 percent of medical staff routinely found duplicate medical record numbers, and 25 percent of these staff members felt duplicate medical records were negatively impacting care delivery. The HIM department had five dedicated staff members; however they were not able to maintain a clean master patient index (MPI) due to the volume. This five-person team was notified of potential duplicate records via a daily report, and received notification on a specific case delivered via e-mail and/or a dedicated phone number. The medical staff perceived clinical care was compromised by incomplete information. An audit performed during this time revealed duplicate radiology and laboratory tests due to the inability to locate information by physicians. Concerns were raised about radiation exposure and repeat blood draws for the delicate pediatric community. The clinical and financial management of the existing process was not sustainable. With these factors in mind, in 2003 the organization began its information governance project focused on the MPI.

Finding Solutions through Information Governance

Children's Health established a collaborative information governance program underpinned by technology to ensure sustainable results. Data integrity, transparency, accountability, and availability principles were components of the process redesign. The team is comprised of the information services, HIM, and patient financial services departments, as well as ambulatory leadership.

Registration is a decentralized process with new medical records created within patient financial services and by the ambulatory division. A standardized naming convention policy was established to govern rules and conventions for entering a patient's information into the MPI. The policy defined the organization's requirement to use the patient's legal name for inclusion in the MPI. Data integrity requirements include first or given name, middle name, and surname as entered on the birth certificate or as altered by a legal name change event.

To optimize compliance with standardized naming conventions as well as Children's Health requirements for data elements, technical forcing functions—features to prevent undesirable user input, usually made by mistake, which are required data fields to be filled out before completion of the registration—were instituted in the workflow before a new medical record number could be assigned. The requirements to assign a new medical record number include name, date of birth, sex, and mother's maiden name. Multiple birth status is also captured. Additional information gathered, such as address and telephone numbers, are also components of the process. Once a registration has been completed, if corrections to demographics are required, changes must be completed by HIM data integrity specialists.

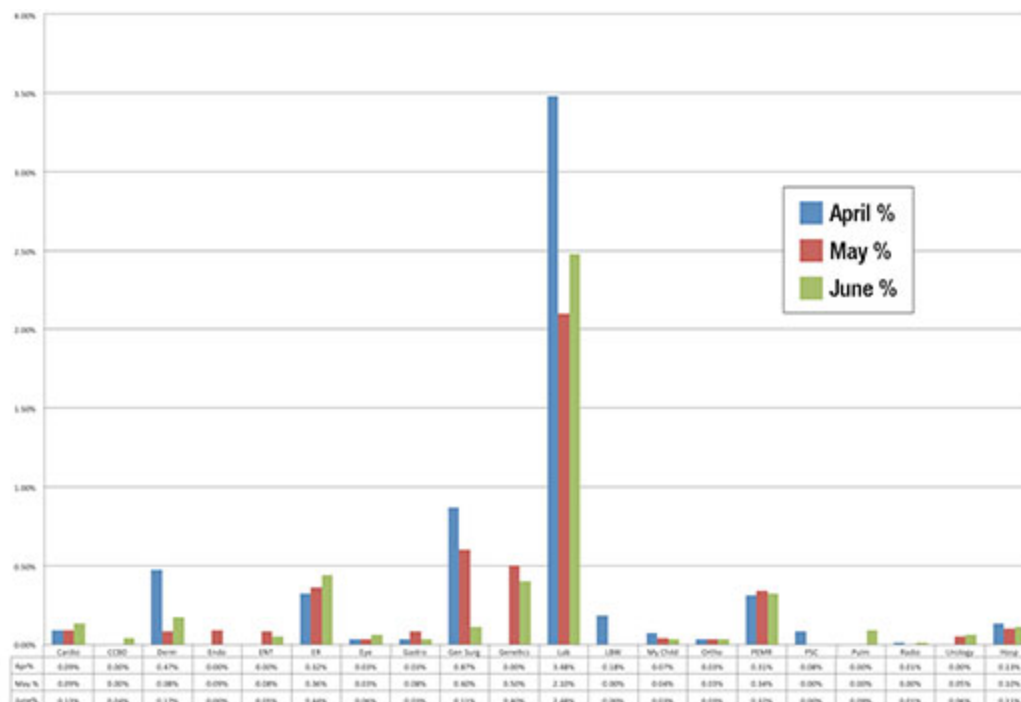
The HIM department and patient financial services partnered with the information services department to identify technology constraints affecting the ability to interface with other electronic systems. Analysis revealed punctuation included in a name field caused interface error or failure with downstream systems such as the radiology diagnostic imaging archival system and the blood bank. The downstream systems could not be corrected quickly enough to avoid impacting clinical care. Therefore the organization's naming policy eliminated special characters when capturing the legal name.

The patient financial services and the registration departments instituted a training program for all new employees that placed a high focus on the critical nature of creating a medical record number and selecting the proper patient name. In addition, the training program emphasized the registration staff's contribution to care delivery and the clinical partnership. Data integrity requirements were added when creating a new medical record number. Extensive training on the definition of the legal name and capturing all required attributes also were prominent elements of training. Employees were required to pass a written and didactic examination prior to being granted access to the system. Employment status depended on passing the examination. Monthly audits with feedback on issues related to individual employees are a component of the quality assurance program. Employees struggling with job performance were required to undergo repeat training and had to pass the test to continue in a registration role.

The HIM department developed a system to provide daily feedback on duplicate medical record numbers created and noncompliance with the naming conventions policy. The individual responsible for the error, and his or her direct supervisor, were notified the day after the occurrence, which has proven to be effective in correcting these issues. If people are immediately notified that they are making mistakes, they will quickly correct the error and are unlikely to repeat the mistake. A monthly summary by clinical department was provided to build a general awareness of the areas creating duplicates. These reporting methods ensured transparency and allowed the entire organization to understand where opportunities for improvement lie. Figure 1 below presents an example of the monthly duplicate record number report by clinical department used by Children's Health.

Figure 1. Summary of Duplicate Record Number Rates by Clinical Department

EMPI Status Update for 2nd Quarter 2014



Achieved Outcomes

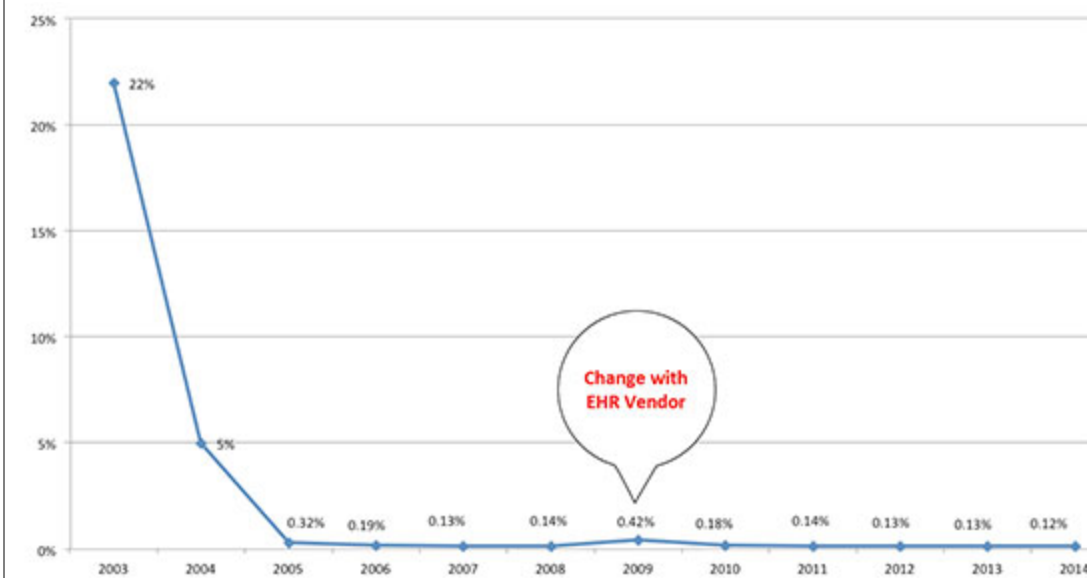
The results of this effort have been favorable. What began as a process requiring management by five staff members is now managed by 1.5 FTEs—and these team members have been able to utilize skills in managing transitions of care and direct messages sent by external organizations as a result of the “meaningful use” EHR Incentive Program.

Accountability with process changes, technical forcing functions, daily reconciliation, immediate communication, transparency with errors identified, and a standardized naming convention policy provided Children’s Health with a trusted medical record that positively contributes to clinical care delivery. The medical staff also recognizes the benefits. Some say they cannot remember the last time they saw a duplicate medical record number.

The first year of the program demonstrated improvement. When the program began, Children’s Health experienced a 22 percent duplicate record rate. Within one year, the rate had fallen to five percent. In the second year, there was another reduction to 0.32 percent, with subsequent years declining further. There was a brief increase to 0.42 percent when changing EHR vendors in 2009. Of note, the duplicate rate has been maintained, from 0.12 to 0.19 percent, despite two different EHR vendor platforms that use different technology. The result: data integrity allows for accurate matching despite the vendor.

Children’s Health has been able to sustain a low duplicate rate with standardized processes as illustrated in Figure 2 below.

Figure 2. Trending of Duplicate Medical Record Number Rates



Need for National Standards

Organizationally, Children’s Health embraces patient identification standards, but those standards are not utilized nationally. Health information exchange (HIE) activities resulted in a large number of duplicates incorrectly identified by two HIE vendors. There are concerns with overlays of multiple birth patients. Parents of multiple births often name their children similarly or rhyme the names. Algorithms will see the same date of birth, sex, address, and what appears to be data entry issues. The algorithms link patients or identify them as a potential duplicate. In working with two vendor partners, Children’s Health was able to convince one vendor to use a multiple birth indicator to avoid the overlays, and the other vendor to not link records of patients with the same address, date of birth, and gender with similar names.

The additional work of manual correction due to technology limitations is unfortunate and is driving up the administrative cost of healthcare delivery. The optimal scenario would be to fully utilize the standards provided by Health Level Seven (HL7) and use a multiple birth indicator along with birth order to allow automatic linking of records.

There must be a better way of mitigating patient safety risks with duplicate medical record numbers or overlays that will not require additional staff. The increase in staff across the nation exponentially increases the cost of healthcare, which we cannot

afford to sustain. National standards for patient identification and record matching, such as patient identity cross referencing (PIX) and patient demographic query (PDQ) developed by Integrating the Healthcare Enterprise (IHE), need to be adopted to eliminate duplicate records and to harmonize record matching algorithms across healthcare organizations in order to reduce patient safety risks and administrative burden.

Moving Forward

HIEs struggle to provide value because of an inability to properly match and assemble clinical information. As an organization, Children's Health recognized the need for information governance both internally and externally to provide a clinically trustworthy medical record. As demonstrated at the healthcare system level, duplicate diagnostic tests and clinical care concerns increased the administrative burden and financial costs. With data integration across multiple healthcare systems via health information exchanges, this burden and cost will continue to increase unless proper information governance practices are established across organizational data exchanges. Accountability with reconciliation processes, data integrity created by standardizing data element capture across organizations, underpinned with technology, provides the platform for information availability and clinical trustworthiness.

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Article citation:

Lusk, Katherine. "Decade of Standardization: Data Integrity as a Foundation for Trustworthiness of Clinical Information" *Journal of AHIMA* 86, no.10 (October 2015): 54-57.

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