Healthcare Financial management

Do You Know Who's Who in Your EHR?

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Erroneous patient records can be a serious problem—particularly for children's hospitals—that can lead to reimbursement and patient safety issues. Do you have the people, processes, and technology in place to prevent this problem?

At a Glance

- **Overlay and duplicate records pose a particularly insidious problem today for healthcare organizations—and pediatric hospitals in particular—that are introducing new information systems or upgrading their existing systems.**
- **Such erroneous records can be costly and time-consuming to identify and correct, and can lead to lost reimbursement and compromised quality of care.**
- **To address the problem, senior financial leaders need to recognize the critical importance of data integrity and take steps to ensure that the people and processes are in place to establish and maintain it.**

A mother of 11-month-old twins recently brought one of her daughters suffering from choking spells to The Children's Hospital in Denver. The baby remained in the hospital eight days, generating a nearly $43,000 bill. Although the child's outcome was good, her hospitalization challenged the institution's internal registration and billing processes. In the end, the hospital absorbed the cost of the infant's care, as officials could not piece together accurate patient information to bill the insurer within the 90-day bill filing requirement.

The culprit: an overlay record. Once the concern of medical records clerks, overlay and duplicate records are increasingly capturing the attention of C-suite executives, as health system operations in the age of electronic health records (EHRs) come to depend more and more on the organization's ability to maintain a clean enterprise master patient index (EMPI). Overlay and duplicate records can lead to reimbursement losses, administrative inefficiencies and resource drains, liability concerns, and most significant, compromised care delivery and threats to patient safety. Accurate data are essential if an organization is to operate successfully in a fast-changing healthcare environment where payment increasingly is based on performance and providing high-quality care.

The Growing Problem
Overlay and duplicate records are on the increase, in particular, for facilities that are introducing new information systems, such as EHRs and picture archiving and communications systems (PACs), or that are upgrading existing systems.

Overlay records usually occur when a registration staff member selects an incorrect record or when—due to insufficiently rigorous record matching rules—an inbound transaction is incorrectly linked to the wrong patient. The overlay record is the most troublesome patient identity problem. Because of the mother's confusion over which twin baby had to be brought in for care, The Children's Hospital in Denver erroneously registered the child as her twin. Overlay records are particularly dangerous because of the patient safety implications of treating a patient based on wrong information.

Duplicate records often occur when registration staff make data entry mistakes or do not search the master patient index thoroughly, which is especially likely to lead to an error when basic patient identification information differs from information in the already established patient record—for example, a nickname given instead of a formal first name, confusion over a hyphenated name, or an incorrect date of birth. Untested data loads and interfaces that are out of sync can also result in the creation of duplicate and overlaid records.

Children's Hospitals Bear the Brunt
This problem is particularly acute for children's hospitals. First, children lack official forms of identification; they don't have driver's licenses or credit histories and typically lack Social Security numbers. Such standard means of identification are among the ways registration staff at nonpediatric facilities guard against generating a duplicate record or simply registering the wrong person.

One recent analysis of more than 18 million patient records found valid patient Social Security numbers were present in fewer than 27 percent of children's hospital records, as compared with 76 percent of patient records at adult medical and surgical hospitals. The lack of unique patient identifiers is a major reason The Children's Hospital in Denver had nearly 18,000 duplicate records in its system. In addition, incorrect dates of birth are 10 percent more likely to occur on pediatric records than on adult records.

Lack of patient identifiers and other challenges in registering children—such as the frequency with which kids are brought to the hospital by relatives, neighbors, and other nonfamily members unaware of basic patient or medical information—leaves children's facilities particularly vulnerable to data discrepancies and duplicate records.

But the greatest threat, arguably, for any hospital—children's or other—comes when a facility converts to an EHR system.

Dirty Data Meet EHRs
An essential ingredient to the success of healthcare information system (HIS) initiatives from EHRs to PACS is ensuring the integrity of patient identification and other data. Physicians and other clinicians need to trust the information they access from these systems. Duplicate and overlaid patient records can undermine that trust and ultimately the success of these HIS initiatives.

Forty-five percent of physicians responding to a survey at Children's Medical Center in Dallas in 2005 indicated that they had found duplicate records for patients, and a quarter of the physicians said they believe duplicate records affect the quality of care. Meanwhile, a cost study performed in conjunction with the survey found that the costs reflected in patient records associated with repeated tests or treatment delays were, on average, $1,099 each, with one in 10 associated with bad debt.

When factoring in the costs associated with correcting overlay records in an EHR system, the overall expense runs far higher. For example, correcting a paper-based overlaid patient record typically takes about three hours. With an EHR, peeling apart and fixing overlay records becomes all the more intensive. Among the many steps required, for example, hospital staff must pull apart both records electronically, reconcile all physicians' orders and notes for each child, track down and match which child had which immunizations and flu shots on which dates, and identify which child has an allergy. This process is not simply a technical exercise; clearly, patient safety is at stake.

Fixing compromised electronic records in the system can be a monumental task, as most systems today do not handle duplicate or overlay record repairs easily. Keeping downstream systems such as laboratory systems or PACs in sync with the registration or EMPI system becomes trickier with increasing automation.

In the case of The Children's Hospital in Denver, for example, many of the duplicate and overlay records were a direct result of integration issues involving the old HIS data load in the new information systems and its EMPI. These problems and decentralized oversight of the registration process—common to many large health systems—forced the hospital to craft a workaround involving 16 people across hospital departments, all of whom had to follow specific, well-organized steps to ensure the hospital could make the necessary repairs to a record for patient safety, legal, and billing reasons. With this process, it took Children's three months to tease apart and correct the clinical records for the twin girls. Indeed, it can take as much as 60 to 100 hours to fix one electronic record overlay.

Beginning in 2005, The Children's Hospital oversaw an EMPI cleanup and system upgrade, tested a new record-matching algorithm, and instituted a new protocol for patients with hyphenated names as part of a thorough naming convention policy. The most severe overlay records were corrected, as were records where the HIS and EMPI were not in sync. Search routines and naming conventions were implemented, and the registration staff were retrained to avoid creating duplicate patient records.

Tackling the Problem

For the healthcare senior financial leader, the solution to this problem comes down to people, process, and technology. Extra attention should be paid to giving people the training and support they need and implementing appropriate processes, as registration staff constantly deal with curveballs resulting in the lack of patient identifiers for young patients.

For all hospitals, even the technology itself presents a challenge. Most HIS systems use duplicate detection algorithms—typically some form of deterministic, probabilistic, and/or rules-based (or "fuzzy") logic—to help registrars search the database and avoid generating duplicate medical records. These algorithms tend to identify duplicate medical records that match "exactly" on various patient-identity data elements, but they miss a large percentage of duplicates where the data vary slightly. Such approaches also have a high "false positive" rate—i.e., matching records for two different patients.

Nonetheless, identifying and resolving existing duplicates is only part of the solution. If registration personnel do not have the right skills or are not properly trained, an EMPI cleanup settles only half of a hospital's problems. Duplicates will continue to appear. Something as basic as how a registrar asks patients identity-related questions can significantly increase or reduce the chances that a duplicate record will be generated.

For example, it may seem innocuous for a registrar to ask a patient or a patient's parent the simple question, "Have you ever been here before?" Yet that question alone increases the risk of a duplicate record. By "here," the registrar is likely referring to organization as a whole. But patients are likely to interpret it as meaning the facility in which they are standing, and not necessarily one of a system's

affiliated clinics or other settings. If the registrar prompts patients with the names of other affiliated locations captured in this database, this clarification alone can reduce the risk of a duplicate. Registrars therefore should be well trained, and an institution should have the policies in place to oversee the skill-building and training of staff.

Thorough testing of data loads and interfaces also is critical to ensuring clean data are sent to and from the various systems. The Children's Hospital at Denver developed and used detailed test scripts, for example, to test the record-matching algorithm and the interfaces and, as a result, was able to modify the EMPI settings and minimize the creation of overlay and duplicate records.

Algorithms only go so far, however. The hospital's facilities, in particular, have compounding patient identity problems. They not only have a lower success rate than other facilities in capturing Social Security numbers, but also must contend with more nicknames and hyphenated names, a higher percentage of records with the first name listed as "baby," more date-of-birth discrepancies, and more instances in which the data are simply recorded differently, such as in the spelling of last and first names. Moreover, their emergency departments are filled with injured patients who can't speak for themselves. And even when they can, language can be a barrier. Twins' similar names can cause problems as probabilistic and other rules-based algorithms link these records together, creating errors in the EMPI.In short, people (skills, experience, and training) and processes (policies and procedures and workflow design) are the master keys to improving patient identity data quality. Sole reliance on technology and algorithms to tackle this issue will result in patient safety risks and quality-of-care problems to which none of us want to expose our children or institutions.

What's a Financial Leader to Do?

There is no quick fix to resolving data integrity issues. But there are clear steps you can take to prevent data integrity issues from damaging your organization's costly technology solutions—as well as its performance and reputation.

Acknowledge the importance of data integrity. Recognizing that data integrity issues increase the organization's financial and clinical risk is the essential first step. Whether it's an EHR or a PACS, today's technology represents potential benefits, but it also poses serious risks when these technology solutions are running on compromised data. Improving data integrity should be high on your "to-do" list to deter unnecessary liability related to clinical issues.

Listen to your clinicians. Are physicians complaining about missing clinical information on their patients? Under a paper-based system, medical records and health information management (HIM) personnel were the gatekeepers of medical records, and could be relied upon to help spot and correct certain patient identity errors. Under an EHR system, multiple providers can directly access a patient's record. That can lead to an increase in errors. Trouble may be brewing if you're hearing physicians complaining that information is missing.

Query the IT department. Ask if data integrity issues are a problem and then tell IT to prove data integrity is not an issue. Data may seem simply to have gone from point A to point B when a sent message is received, but are they the right data? Did they go to the right place? Interfaces can be problematic. Recognize that interfacing multiple clinical systems can exacerbate problems.

Check whether your institution has been sued lately. What's at the heart of a lawsuit claiming medication errors or other mistakes? Could it be that the data never got to the record or went to the wrong record? Another possible sign of trouble on the data integrity front is increasing bad debt. If your organization has this problem, do you know why the institution is writing it off?

Talk with your HIM department. Ask the following questions: Do HIM personnel have resources assigned to proactively manage data integrity? What kind of algorithm is being used to search and identify the correct patient? Are HIM staff monitoring the performance of patient access or registration personnel? What kinds of questions are the patient access personnel asking during patient registration? How specific are their questions? Are they capturing the details they need so that data integrity issues are minimized?

These are just a few steps you can take to proactively ensure data integrity. Pursuing such preventive measures is the best way to minimize the possible financial impact that data integrity issues can have on your organization.

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