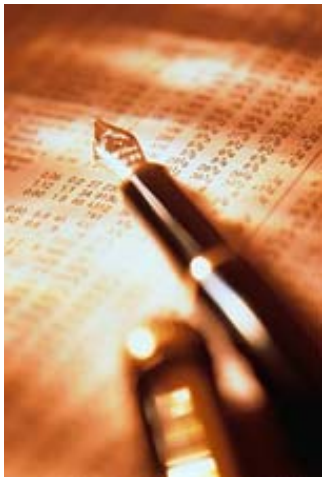
Reducing Errors - Improving Patient Safety and Quality

CEO/CIO Partnership—Leadership Series

Built-in safety and monitoring systems, error prevention, 'rule-based' best practices, process improvement, IT tools

In the last 20 months, the healthcare industry has been hit by two serious reports from the Institute of Medicine (IOM). These reports reveal the extent of system and process errors that lead to patient injury and even death in this country.

The first report, "To Err is Human," came out in November 1999, and found that up to 98,000 patients die each year from preventable deaths due to medical errors. The report touched off a debate that still rages today. Despite the disagreement on numbers, everyone does agree that we have a deep-rooted patient safety problem that needs to be addressed in a timely manner. In many boardrooms and CEO offices around the country, discussion has begun to determine how to strategically tackle this issue. Progressive organizations have realized that if healthcare management/leadership does not seriously start addressing quality issues in a systematic manner soon, they will find themselves in front of a state or congressional hearing; just like the tire and auto companies did recently.



If the first report was successful in identifying and raising the awareness of this grave issue, the second report, which was released in March 2001 called "Crossing the Quality Chasm: A New Health System for the 21st Century," focused on possible solutions for this industry-wide challenge. It called for nothing short of reinventing how we deliver and document care across the continuum. The report called for eliminating handwritten clinical information, deploying error free processes across the enterprise, and building better systems of care.

TO ERR IS HUMAN—TO CONSTANTLY IMPROVE IS DIVINE

Since healthcare delivery rides on the highway of information, all communications through verbal, paper or electronic form must be designed to be error-free. This is not easy to do. Errors can be made at any point during the care process. The potential will always exist for errors. The million-dollar question is how to design new processes with built-in safety and monitoring systems, and how to have technology assist in improving processes to prevent unexpected errors from occurring.

Enterprise-wide smart technologies that have integrated error prevention and reporting capabilities, such as those used by other industries like aviation and manufacturing are critical for quality and cash flow success.

TSG has discovered that when processes are standardized, simplified, and reinvigorated based on 'rule-based' best practices, the pay off across the enterprise is lasting, and the organization transforms both clinically and financially in a positive manner. Following are some identified opportunities:

- Measurable lower cost—less rework
- Better outcomes and improved quality—safe (defect-free) care
- Enhanced cash flow and receivables— (on average 80% rejection in billing is due to errors in scheduling/registration)
- Reduced hospital/physician malpractice exposure—lower insurance costs
- Compliance with JCAHO and other regulatory and market requirements
- Automated data entry and CQI—reduced drudgery of data collection/analysis, and acceleration of speed and precision of data quality, thus, elimination of rework
- Emphasis on measuring systematic causes—elimination of 'blame' syndrome
- Safer care for all patients—processes have built-in safety net
- Quality comes under direct control of each staff—organization moves from anecdotal to data driven, where quality is the fiber of each process
- Ability to offer incentives based on quality—rework targets are set; improved reporting tied to annual budget, goals and objectives

IT SOLUTIONS THAT WORK

Many experts believe that information technology is a key component to eliminating system errors. Enterprise-

wide smart technologies that have integrated error prevention and reporting capabilities, such as those used by other industries like aviation and manufacturing are critical for quality and cash flow success.
In the MEDITECH environment, this means taking the MEDITECH system and adding a SMART software layer, which allows hospitals to do exactly what the IOM states, "Deploy IT systems geared towards preventing, detecting, and minimizing hazards that are likely to cause error."

In the last few months, I have been involved with a number of progressive hospitals around the country that have taken a strategic approach to quality improvement across the enterprise. Instead of reacting to every challenge that the government or the market place throws at them, these hospitals and health networks have realized that most medical and data errors are actually not caused by staff intentionally, but are due to convoluted processes that often put staff and physicians in a position to make errors. By partnering with TSG, these hospitals are laying the foundation for an 'error free/zero defect' environment, where first the 'root cause' of errors in current processes are identified, and then management works to design new 'best practice' processes to avoid and eliminate errors across the enterprise. A surprising benefit of this approach has been the ability to satisfy the education and monitoring requirements of HIPAA and Medicare compliance requirements, as well as the successful enhancement of data quality for cash flow. Hence, these hospitals have solved many emerging problems with one strategic approach. The goal is nothing short of creating new, highly automated, and intelligent processes where 'best practice knowledge' is embedded to guide the staff through each step of a process to ensure and enhance quality, compliance, and cash flow.

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IMPROVEMENT TARGET: MEDICATION ERRORS

The following is a case study from *ISMP Medication Safety Alert,* Volume 5, Issue 19, September 20, 2000. The recommendations below have been expanded to highlight new analytical and 'smart agent' software tools available to enhance patient safety.

PROBLEM: When using fibrinolytics and related drug therapy to treat patients with acute myocardial infarction (AMI), any deviation in the dose, timing, or use of specific agents could adversely affect the patient's outcome. Yet, complex regimens and variations in the way the drugs are dosed and administered increase the chance of serious errors, especially when multiple products are on the formulary, and protocols are absent or poorly designed. Several errors have been reported recently that demonstrate these problems. One situation involved a 62-year-old patient who died after receiving duplicate therapy. The patient, who was admitted to the emergency department (ED) with unstable angina and chest pain, was initially treated with aspirin, **PLAVIX** (clopidogrel) and **FRAGMIN** (dalteparin). An hour after his chest pain resolved, he developed EKG changes consistent with an AMI. A thrombolytic protocol was initiated and the patient received the first bolus dose of IV **RETAVASE** (reteplase). The protocol also directed staff to begin a heparin infusion. The nurse began the infusion without realizing that Fragmin had been given to the patient previously. About 30 minutes later, before the second bolus dose of reteplase was administered, the patient began to hemorrhage and died despite aggressive treatment for bleeding.

In a typical hospital, 25% to 35% of the admitted patients experience at least one medical error and multiple data errors that impact quality, outcome and cash flow. These events add 10% to 15% per year to the hospital's annual operating cost, or 10 to 12 million dollars for a 200-bed hospital.

The potential for overdoses with **TNKase** (tenecteplase) was also reported. This is the first fibrinolytic that can be administered as an IV bolus over five seconds in a single dose. Other fibrinolytics are split into several doses. For example, reteplase is split into separate injections given about 30 minutes apart. If the dosing schedule for **TNKase** is confused with that for reteplase, a patient may receive a second TNKase dose 30 minutes later, or the dose may be split in half and delivered as two doses, 30 minutes apart. Another error involved confusion between tissue plasminogen activators when referring to a specific drug using the term "t-PA." When a physician ordered TNKase, a genetically engineered mutant form of tissue-plasminogen activator (t-PA), a nurse who was unfamiliar with the drug asked for clarification. The physician inadvertently misled the nurse by answering in the affirmative when asked specifically if the drug ordered was a "t-PA." The nurse erroneously administered alteplase, which is commonly referred to as "t-PA."

SAFE PRACTICE RECOMMENDATION

It is important to remember to standardize and simplify processes for error prevention. Using alerts and instant messaging technology can also help in error prevention as these tools ensure the quality of information. Applying some basic safety principles, which are as

follows, can also reduce errors with fibrinolytics and related drug therapy:

Develop easy to use Physician Order Entry systems.

Use big, bright pop-up alerts when ordering, and limit fibrinolytic agents on the formulary.

When selecting these agents, proactively analyze what might go wrong during their use, determine the consequences of an error, and build safety nets (e.g. independent automated double checks, dosing tables to avoid miscalculations) if patient injury is likely.

Require streamlined protocols and standardized online or paper order forms to promote proper use. Refer to fibrinolytic drugs, especially tissue plasminogen activators, by their full generic names (e.g., alteplase, reteplase, tenecteplase), not "t-PA" on preprinted and handwritten orders and drug protocols.

For weight-based therapy, add prompts on standard order forms or ensure that weight is promptly shown on the same screen where order is taking place to communicate the patient's weight.

Minimize the complexity of the treatment regimen, and be sure to consider all the associated drugs that may be used to treat the patient (e.g., heparin, low molecular weight heparin, oral and IV beta-blockers, aspirin, IV nitroglycerin) and the tight time constraints for administration.

Make sure the protocols require practitioners to assess all recent drug therapy, and clearly note that a heparin infusion should not be started if a low molecular weight heparin has just been administered.

On a regular basis, use analytical decision support tools to identify deviation in dose, timing, and use of specific agents and their effect on outcome.

Standardize, Simplify, Use Alerts and Instant Messaging Tools to Improve Quality of Information

CONCLUSION AND RETURN ON INVESTMENT (ROI)

The opportunities for process improvement and patient safety are boundless, and I can fill volumes with examples. The bottom line is that your strategy should be based on process improvement, patient safety and data quality. For example, in a typical hospital, 25% to 35% of the admitted patients experience at least one medical error and multiple data errors that impact quality, outcome and cash flow. These events add 10% to 15% per year to the hospital's annual operating cost, or 10 to 12 million dollars for a 200-bed hospital.

Therefore, let's not assume that there is no ROI or bottom line opportunity available in process improvement and patient safety. The ultimate challenge in healthcare is to find the right combination of tools, technology, skills, and passion for excellence. Every organization can succeed and should succeed, but it will require vision, leadership and commitment as you move forward.

Most medical and data errors are actually not caused by staff intentionally, but are due to convoluted processes that often put staff and physicians in a position to make errors.

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