

## IMPROVING MEDICATION SAFETY

### MISSOURI BAPTIST MEDICAL CENTER (MBMC)

- ◆ St. Louis, MO
- ◆ 489 licensed beds
- ◆ [www.missouribaptist.org](http://www.missouribaptist.org)

Missouri Baptist Medical Center is part of BJC HealthCare, St. Louis' largest health care system.

## S T E E E P

### Safe

20-fold decrease in medication-related patient harm in a little more than seven years.

### Timely

Investment in systems geared toward mitigating ADEs before they occur.

### Effective

Follows and implements best practices for high hazard drugs.

### THE PROBLEM

Adverse drug events (ADE) occur in as many as 10 percent of hospitalized patients, with thousands of patients dying each year from drug-related injuries, according to the Institute for Healthcare Improvement (IHI). A single ADE can cost as much as \$7,000. Narcotics, anticoagulants and insulin are among the highest risk medication categories when it comes to ADEs. Missouri Baptist sought to significantly reduce medication mistakes and sustain the results.

### THE SOLUTION

Missouri Baptist set out to implement known safety practices—including unit dosing, standardization of prescribing and dosing rules, medication reconciliation and other efforts—to reduce ADEs and improve medication safety for patients on a consistent basis.

### RESULTS

- » Nearly a 20-fold decrease in medication-related patient harm from January 2001 to June 2008.
- » Reduced ADEs per 1,000 patient days from 2.2 average in 2001 to 0.12 as of June 2008.
- » 78 percent reduction in use of reversals associated with narcotic PCAs.
- » 88 percent of critical care patients have a blood glucose in 70 to 150 range versus 76 percent in 2006.
- » 100 percent of medications reconciled on admission on average, while 97 percent are reconciled at discharge.

### BACKGROUND

The first thing to understand about Missouri Baptist's achievements in reducing medication errors by some 20 fold is that it's not a flavor-of-the-month approach. Results have been achieved through hard work, including changing the organization's culture into a patient safety-oriented atmosphere. The hospital embraced and adopted a non-punitive culture in order to make significant and lasting gains in its safety initiatives. Without that construct, "you would not be able to get very far," notes John Krettek, MD, the hospital's chief medical officer.

Hospitals need to come clean and talk openly about errors. A hospital's top brass needs to walk the walk on patient safety, not just talk about it. A full-time patient safety officer was tapped, safety champions were culled from the medical and frontline staffs to lead most initiatives, and the leaders invested in technology and systems to help staff lower errors. "I like to think of our near misses as gifts," says Nancy Kimmel, the hospital's patient safety officer. "It's okay to speak up and stop the line and to truly talk about it...because the bottom line is to keep patients safe here."

Even before the 1999 IOM report, Missouri Baptist embarked on cultivating a patient safety culture. It was in conjunction with that process that improving medication management was undertaken. Adverse drug events are the most common type of errors occurring in hospitals. About 80 percent of all ADEs are tied to certain drugs: narcotics and sedatives, anticoagulants and insulin. Targeting ADEs became one of the first interventions Missouri Baptist ran through its patient safety culture shift.

TEAM MEMBERS

- » **Dennis Bouselli, PharmD**  
Pharmacy
- » **Cathy Flora, RN**  
Clinical Information Systems
- » **Joan Magruder**  
President
- » **Michael Murphy, MD**  
MBMC Medication Safety Team  
Chairman
- » **Nancy Kimmel**  
Patient Safety Officer
- » **John E. Krettek MD**  
Vice President Medical Affairs,  
Chief Medical Officer
- » **Jana Royer, RN**  
Clinical Education Specialist
- » **Caryn Rosen, RN**  
Staff Nurse

**PRINCIPLES OF PERFORMANCE EXCELLENCE**

**Creation of a High-Reliability Culture**

Efforts focused on empowering frontline workers so that they could “stop the line” if something was amiss. An array of strategies were used, including sharing of stories among frontline staff of near misses and regular walk-arounds that Kimmel takes with different executives, including the CFO and human resources, so that the issues on workers’ minds reach executives’ ears.

Committees were formed, including one on high hazard medicines, to look at processes, standardization and patient education. Medical and frontline staff participated, with committees taking ownership of their issues. Change recommendations from IHI and Institute for Safe Medication Practices were used to evaluate current processes associated with targeted medicines. Such processes were mapped to find where risks lurked and how processes could be improved. Using rapid-cycle analysis, the high hazard medicines team tested an alternative process, including standardizing order sets and putting protocols in place. New processes were tested on a small scale and slowly expanded, refined 18 times over six months before being rolled out hospital wide. The process was empowering, observes oncology nurse Caryn Rosen. “The nurses think they can ask more questions to the physicians; are you sure this is the dose you want?”

Processes were reworked but Missouri Baptist officials knew that constant monitoring of high hazard drugs was crucial to continually reduce ADEs. For instance, critical care patients’ blood glucose is tightly controlled or the need for reversal agents for narcotic patient-controlled analgesia is mitigated. Use of reversals associated with narcotics patient-controlled analgesia, for example, has been reduced by 78 percent since 2005. That meant investing in an array of pharmacy and decision-support systems, as well as trigger tools. For example, ADEs related to IV infusion are among one of the greatest medication harm threats. Hospital leaders invested in new “smart pumps,” containing sophisticated drug libraries outfitted with alerts and other safety devices, allowing medicinal delivery at appropriate rates, not too fast or slow. Costing about \$8,000 a piece, the hospital didn’t just buy a handful of smart pumps, it purchased 420 of them. “It’s that kind of commitment by leadership,” Krettek notes to highlight leadership’s seriousness.

**The Patient Experience**

Too often patients are discharged or transferred from hospitals without an accurate or complete accounting for the medications they’ve been prescribed in the hospital and what they take at home. This can lead to medication errors. “We’re an organization that puts patients first,” says Kimmel. “We want our patients to be part of our health care team.” Along these lines, Missouri Baptist officials realized the lack of awareness among the public of the importance of an updated medication list. Hospital officials

started an education program, going out to nursing homes, rotary club luncheons and other venues to preach the importance of and hand-out updatable medication lists.

Medication reconciliation begins at Missouri Baptist with a patient interview upon admission. Nurses ask each for the drugs they take, frequency and doses. Patient physician and pharmacist names are collected. Copies are sent to hospital physicians and pharmacists, who then call each patient’s personal doctor. New medications prescribed in the hospital are added and the list travels with the patients. At discharge, physicians reconcile the medicines for safety purposes, noting ones that should be continued or discontinued. Nurses provide the updated cards to patients and do face-to-face education. Nearly all medications are reconciled upon patient discharge or transfer.

**CONTINUAL IMPROVEMENT**

The hospital has invested heavily in technology and systems, including bar coding and smart pumps in the last two years, in order to reduce ADEs further. “This [effort] is all related to mortality,” says Kimmel. The hospital has seen a 54 percent reduction in mortality between 2005 and 2007. Missouri Baptist leaders want clinicians to be aware of patients, identify potential problems early and intervene in a timely fashion. Hospital officials also are looking to apply the lessons taken from medication management and reconciliation to reduce incidence of pressure ulcers and falls.