



Short Cuts

PICTURE TO THE WORLD IS A CLICK AWAY

For the past two years, the Center for Innovation in Quality Patient Care has made its presence felt throughout Hopkins Hospital by assisting front-line staff in developing projects that help eliminate medical errors and improve the way care is delivered. Now, the Center aims to share this pioneering work, its tools of the trade and the experiences of its experts around the world through a new Web site, www.hopkinsquality.com.

Surfing the site, visitors can examine case studies, such as improving ICU communication with daily goal sheets, or reducing catheter-related bloodstream infections. It offers information on tools that professionals can use to start their own quality interventions, and updates about Center-sponsored seminars and symposiums on practical approaches to quality and safety programs. The Web site also includes an electronic version of *Quality Update*.

GOING SOUTH OF THE BORDER

When the staff of a Hopkins Hospital inpatient unit wants assistance in piloting a project to improve patient care, the Center sends one of its experts across the street. This expertise also is being spread beyond this country's borders. Last November, for example, in the successful quality expo organized by the Mexican Society for Quality in Patient Care in Mexico City.

Richard Davis, the Center's executive director, talked about leadership's role in championing quality improvement to health-care chieftains from both private and public sectors. Cheryl Dennison, Center director of research and operations, spoke about Hopkins' cutting-edge work in patient safety, and Hopkins Hospital and Health System Vice President for Human Resources Pamela Paulk explained the correlation between employee and patient satisfaction. Another group of Hopkins experts has been invited to participate in the Mexican society's next quality expo in October 2004.

In a Manner of Speaking

Adopting communication skill training from aviation to improve teamwork among medical staff is gaining altitude.

On a day when a Hopkins Hospital intensive care unit was brimming with postoperative patients and more were on the way, the staff was finding it difficult to safely cover all of the beds. Yet, a senior nurse balked at carrying out a physician's request to call the operating room and halt further transfers. She explained that would open her up to harsh words from surgeons, anesthesiologists and the OR charge nurse.

In another busy ICU, a medical student told a fellow in passing about an abnormal laboratory result affecting a patient's condition. But the seriousness of the situation didn't register with the senior house staff officer, who was consumed with helping another critically ill person. Two hours later, when the situation finally became apparent to the fellow, he appropriately treated the patient.

Examples of communication failures like these fall into Bill Taggart's lap all the time. He gathers similar anecdotes like others collect research data. Taggart is a well-known expert in interpersonal communication skills and teamwork training within the aviation field, and now he's brought his forte to the health care industry. His four-hour training session has become the backbone of a joint program by Hopkins Hospital's patient safety committee and Hopkins Medicine's Center for Innovation in Quality Patient Care to teach front-line medical staff how to improve such skills as assertiveness, listening and group decision-making.

Communication breakdowns among health care professionals are one of the leading causes of patient harm. "If we can get our care teams to improve their communication," asserts Peter Pronovost, a nationally recognized patient safety expert and Hopkins anesthesiologist, "it will take us miles toward eliminating medical errors."

Hopkins borrowed its idea for interpersonal communication training from the aviation industry because of its success record in reducing communication-related causes of plane crashes. During its investiga-



Bill Taggart, the aviation industry's ace on communication skill training, explains to an ICU staff how briefings and teamwork reduce errors.

tions, the National Transportation Safety Board discovered that many plane accidents might have been avoided had pilots not ignored warnings from copilots. This led the industry to conduct training aimed at breaking down the hierarchal barriers among the flight crew.

Taggart believes the leap from aviation to health care isn't so unconventional. Both industries have common elements: highly skilled teams, high-stakes services, highly regulated safety environments and a traditionally hierarchical structure.

Medicine's complexity, however, does present its own obstacles to breaking down communi-

cation barriers, Taggart concedes. "The challenge," he says, "is to get the physicians, nurses, residents, pharmacists and others in the same room for the training. Otherwise, it's meaningless."

Using flip charts, video segments and PowerPoint, Taggart takes staff through the basic principles of effective communication: briefings, assertiveness, situational awareness and team decision-making. A study at Orange County (Calif.) Hospital showed, for example, that checklists and daily briefings reduced wrong-site surgeries by 200 percent, cut the nursing turnover rate to zero and increased morale for all of the sur-

gical teams. "Briefings," Taggart notes, "put everyone on the same page."

In many instances, the training participants learn it's the simple things that make a difference. In the case of the medical student and fellow, had the physician-to-be addressed the senior resident by name, made eye contact and fully explained the situation, the physician's attention would have been quickly drawn to the seriousness of the situation.

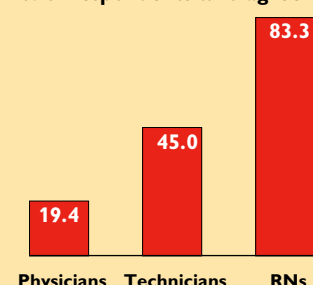
Although hospital report cards are focusing on how all doctors speak to patients, these skills have been slow to take hold in medical institutions. Their importance got a boost recently when Dean/CEO Edward Miller made communication training an institutional priority. Hopkins, Taggart feels, is positioning itself to be a leader in what this training is going to look like in academic medical centers. "But right now, we're just at the beginning of this journey in medicine," he says, "and we aren't 100 percent certain of how it will play out." ■

What medicine can learn from aviation's Crew Resource Management training

- Building teamwork
- Using daily briefings
- Creating a culture of safety
- Getting strong leadership support
- Flattening the hierarchy

"I know the names of all the personnel that I worked with during my last shift."

% of respondents who agree



Inside:



2 **Conversation** With Stephanie Poe on embracing evidence-based guidelines

2 **Director's Chair** Chip Davis.



3 **Spotlight** On the many who overcame barriers to cut catheter-related bloodstream infections rates.

4 **Points From Pronovost** A devoted wife and a determined nurse pulled together to teach a lesson of a lifetime.

Invitation to Exciting Ideas

Richard "Chip" Davis, Ph.D.
Executive Director

AS THE CENTER FOR INNOVATION IN QUALITY PATIENT CARE continues bringing Johns Hopkins' excellence in patient care, education and research to its care delivery models, we're reminded that progress initially can involve dismay, disruption and discomfort. Dismay comes with the discovery that hospitals, overwhelmed by sophisticated technology demands, reduced resources and ever-increasing administrative tasks and accountability, may be hampered in their efforts to heal.

Pursuing excellence also brings disruption. To craft successful interventions, we must be ready to redesign or eliminate well-established systems and processes, then challenge our cultural norms. And this process can create discomfort, particularly when achieving better care standards takes longer than expected.

But we work through these obstacles to find success. In some cases, it's found in lessons learned from other industries and disciplines. Mostly, though, it's relying on the ingenuity and quest for excellence we find in our people, their collaborative work and the commitment of our leadership to successfully redesign our care models that stand the test of time.

In this *Quality Update* issue, we've highlighted some examples of excellent redesign efforts. One article looks at how the aviation industry improved communication among flight crews and reduced human-error-related airplane crashes. We're now applying the concept, initially in our operating rooms, where faculty and staff are finding that it helps target problems arising from poor communication—a major factor in nearly every medical mistake.

A second article discusses Dr. Trish Perl's work in cutting catheter-related bloodstream infection rates.

Perl and her Epidemiology and Infection Control team introduced evidence-based protocols and educated medical staff to follow them. Adapting best practices to

current care delivery systems also can require a multidisciplinary approach, a theme behind a project to reduce cardiovascular disease risks among patients in two hospital units. An article explains how evidence-based medication guidelines and lifestyle education were successfully incorporated into cardiac care delivery models.

Einstein observed that "without changing our patterns of thought, we will not be able to solve the problems we created with our current patterns of thought." These efforts exemplify the excellence that evolves when we disrupt old models and work as a team to develop new ones. ■



Conversation with Stephanie Poe

A Watchful Eye

For years, groups such as the American Heart Association published guidelines aimed at reducing cardiovascular risks. But Hopkins and other institutions hadn't totally embraced these standards. Now, Stephanie Poe, nursing clinical quality coordinator, is heading a project to show that adhering to them is as easy as ABC.

How did this project get started?

Actually, it was a marriage of two strategies by the Center for Innovation in Quality Patient Care, one looking to infuse evidence-based guidelines into treatment practices, the other to use medication reconciliation to improve safety. The center already had supported a medication checklist in the Weinberg ICU for transfer orders.

Why target cardiovascular patients?

For years, there's been ample, scientifically supported data showing that certain medications and lifestyle regimens can significantly reduce the risk of recurring heart disease. Roger Blumenthal, director of the Hopkins preventive cardiology center, had been trying to introduce the use of these guidelines for some time.

So, the innovation center's medication reconciliation committee and Blumenthal decided to mount a pilot project on Halsted 5, a 21-bed telemetry unit, focusing on coronary artery disease patients. We met with the unit's staff to design a program that incorporates three strategies: education, medication reconciliation and outreach to referring physicians.

What kind of project was set up there?

We first educated prescribers, nursing staff and patients about reducing the risk of further cardiovascular disease through lifestyle changes like smoking cessation, diet and exercise, and by using evidence-based medications such as anticoagulants, ACE inhibitors and beta blockers. We then established a discharge reconciliation project to ensure that patients were sent home on medications recommended by AHA and the American College of Cardiology. Finally, we sent referring physicians a letter from Dean/CEO Edward Miller and Blumenthal explaining our program and encouraging them to have discussions with their patients about using these medications as part of their ongoing care.

We thought about a project name and finally settled on ABC, because it simply is about the fundamentals of cardiovascular disease risk reduction.

Did you measure the results?

We only measured the medication reconciliation piece. The short length of stay wasn't conducive to measuring the effectiveness of our education tool.

How did the project stack up with medication reconciliation?

We tracked the discharge medications versus the national guidelines over several weeks and benchmarked ourselves against a similar program at UCLA. I'll give you a few results: We achieved 100 percent compliance for prescribing aspirin and Plavix. For ACE inhibitors, we started below the benchmark, and after a slow beginning, we've stayed around 95 percent compliant. Beta blockers have been a tough nut to crack, but we've maintained steady improvement and find our compliance level at 85 percent.

Are you keeping a long-term eye on medication guideline use?

We've decided to do a quarterly follow-up on the Halsted 5 pilot to make sure we maintain compliance with the guidelines. And we've done grand rounds on the project for the entire Department of Medicine to increase awareness, because it has patients with coronary artery disease, even if they aren't on a cardiology unit.

What's next?

There's a second pilot under way in the 28-bed cardiac surgery intermediate care unit, where the average length of stay is nine days. And we're going to use a \$10,000 grant from the Dorothy Evans Lynn Fund from the School of Nursing for a post-discharge guideline-adherence study, and we will be looking at whether providers keep these patients on the recommended drugs. ■

Quality on Parade

QUALITY CARE and patient safety are arguably fast becoming the two leading issues on the radar screen of hospital professionals in the United States. But a three-day symposium held at Hopkins last October also proved that these issues have made it to the top of the agenda for health leaders abroad.

Co-sponsored by the Johns Hopkins Medicine Center for Innovation in Quality Patient Care and Johns Hopkins International (JHI), the event brought to Baltimore 90 hospital leaders from more than 14 countries. According to Clara Marin, JHI senior manager for International Pro-

grams and symposium coordinator, participants heard more than 30 speakers, including senior administrators, physicians and nursing staff, and took home lessons learned from the myriad initiatives implemented on hospital units here in the past year. (All plenary and track sessions were audiotaped and are available for purchase on CD-ROM from the Center at www.hopkinsquality.com.)

The October symposium has led to several exchange and educational programs with Monterrey Tec, the leading Mexican private university.

With the success of last fall's seminar behind them, the Center and JHI are preparing for a second one to take

place May 12-14 on the Hopkins medical campus. This event, titled *The Future is Here: Managing Change in Clinical Care*, will focus on how clinical, technological and other trends are changing the practice of medicine and how hospitals plan for the future. Workshops will include techniques to improve teamwork and communication to ease the work of quality-improvement teams. For program details and registration information, contact Clara Marin at 1-410-955-3096 or jhis@jhmi.edu, or visit www.jhintl.net. ■

The Roots of Danger

Two intensive care units prove that simple steps backed by scientific evidence can drive down infections.

PHYSICIANS LIKE NOTHING better than data to support new ways of doing things, and Roy Brower is no exception. During the past two years, the medical director for the medical intensive care unit (MICU) has doggedly pursued changes in procedures for inserting central lines, driven by the fact that the unit had one of the highest bloodstream infection rates in Hopkins Hospital.

But Brower wanted each change to have the weight of the best evidenced-based practices behind it. In 2002, for example, the Hospital changed its policy on central-line insertions to recommend that either betadine or chlorahexidine could be used as a skin prep before catheter insertions. Brower, however, thought the evidence clearly pointed to chlorahexidine as the wash that would best reduce the chances for infection and worked with the infection control group to make this the preferred prep.

Through the determination of Brower, Dana Moore, clinical

nurse specialist and the MICU clinical practice committee chair, and other staff, the unit has seen a remarkable 75 percent reduction in its bloodstream infection rates. "It's been our best success story," asserts Trish Perl, the Hospital's infection control officer.

In fact, Hospital catheter-related bloodstream infection rates have fallen significantly below the national average in a number of ICUs over the past 18 months, from an annual high of 235 per 1,000 catheter-use patient days to around 90. This was accomplished thanks to a convergence of efforts spearheaded by Perl and her team of physicians, the ICU medical teams and, most recently, the Johns Hopkins Medicine Center for Innovation in Quality Patient Care.

Hopkins isn't alone in battling hospital-acquired infections. Hospitals around the United States are bedeviled by this problem, according to the Centers for Disease Control and Prevention. The CDC reports that about 2 million hospital patients a year—

one of every 20 admissions—contract an infection unrelated to their condition, and more than 90,000 of them die.

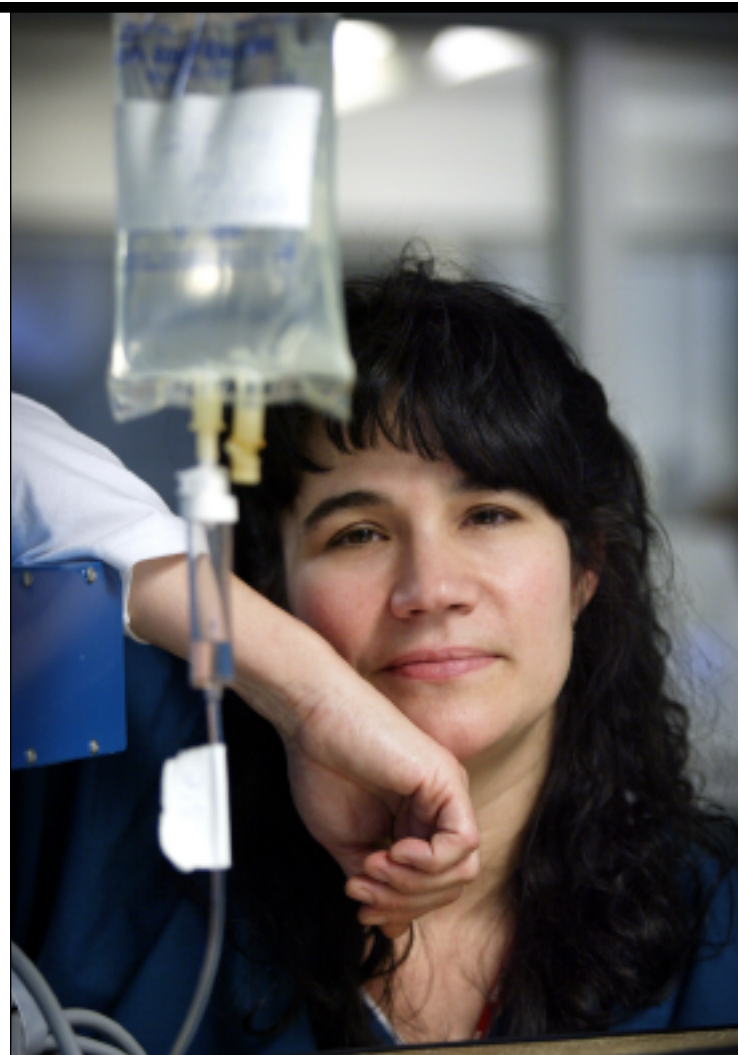
Perl started looking at Hopkins' catheter-related bloodstream infections more than six years ago. It was a slow process, beginning with marshaling evidence that showed central-line insertions harbored dangers to patient safety. "Next we needed a policy to put in front of caregivers," Perl says. "It took us several years, but by 2001, we had one that reflected the CDC's best evidenced-based guidelines."

These recommendations for central-line insertions, in addition to using a certain kind of skin prep, include requiring doctors and nurses involved in the procedure to wear sterile gowns, masks and caps, and using large sterile drapes around the insertion site.

But having protocols in place, Perl found, didn't automatically translate into success. "It became readily apparent that we couldn't just legislate change."

Using a five-year CDC grant worth \$400,000 a year to instill best practices for central-line insertions, Infection Control launched an aggressive intervention in August 2002 to reduce bloodstream infections in the MICU and the cardiac surgery intensive care unit. It also sought to buttress efforts already under way in the surgical intensive care unit led by surgeon Pam Lipsett and anesthesiologist Todd Dorman.

The Center for Innovation in Quality Patient Care stepped in to lend salary support for epidemiologist Sara Cosgrove so she could undertake an intensive education program on the units. Infection Control also created a Web-based,



Dana Moore, the MICU's clinical practice committee chair, helped guide a unit project that cut its catheter-related bloodstream infection rate.

mandatory training module for all residents rotating through the units and made the exercise a prerequisite for physicians to get their credentialing renewed.

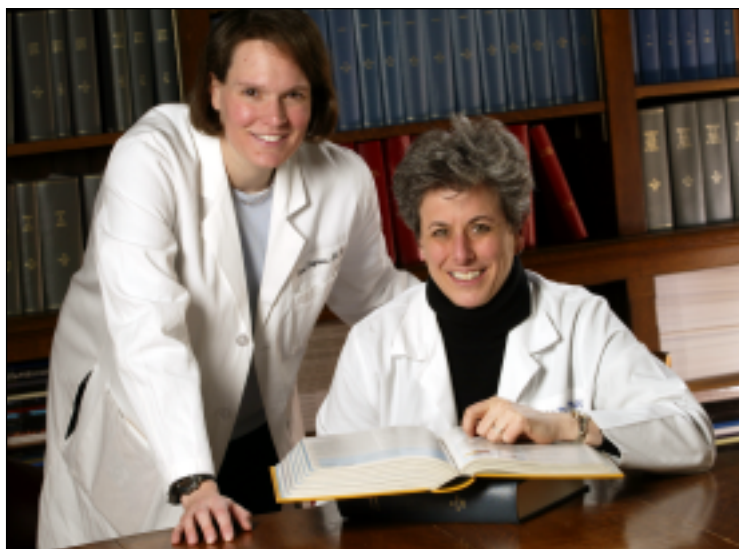
The innovations center, Perl points out, has been invaluable in knocking down bureaucratic barriers to getting products, harnessing support from the Hopkins Medicine leadership and plugging the central-line-infection reduction projects into the institution's patient safety program.

The two project ICUs also adopted from the SICU the idea of buying a special cart that stores all of the sterile materials the medical staff need for central-line insertions. "We had found," explains nurse Debbie Hobson, the SICU's performance improvement committee chair, "that sometimes physicians and residents wouldn't use all of the ma-

terials because they wasted so much time tracking them down."

The units also took their own lead in making changes beyond the protocols. The MICU, for instance, purchased an ultrasound machine that displays the location of veins and guides the placement of the catheter needle. "Data shows that this helps reduce infections by limiting unnecessary needle sticks," says Dana Moore.

Since this exhaustive push by so many to address bloodstream infections began, Perl says, Hopkins has achieved more success reducing infection rates than any other institutions involved in the CDC grant, including Washington University and the Medical College of Virginia. "Everyone likes to take credit for this accomplishment," she muses, "and that's OK. It shows that everyone is invested in the program." ■



Infection control experts Sara Cosgrove, left, and Trish Perl discovered that changing old practices requires education and evidence-based policies.

The Paper Chase

When tracking compliance with surgical-site infection protocols became sidetracked, a quick solution made a difference.

Making sure that operating-room staff follow evidence-based protocols to prevent surgical-site infections sounds like a no-brainer. After all, Hopkins Hospital's Epidemiology and Infection Control and operating room staff put a lot of time into researching and then introducing the guidelines into the OR's daily pre-operative routine. And the result was starting to reduce infection rates among patients.

So the Hospital's surgical-site infection task force last spring developed a paper compliance form containing questions such as whether a surgical site was marked and initialed by the surgeon, whether antibiotics were given at the proper time and whether the operating room

was clean. Circulating nurses (those not scrubbed in for surgery) filled out the forms. The completed audits were collected and placed in files and remained there unused sometimes for months until someone could be sprung from other duties to enter the information into a database.

What to do about this vital delay in compliance tracking became a classic use of a rapid-cycle solution to a system problem, a signature tool of the Hopkins Medicine Center for Innovation in Quality Patient Care. This accelerated process involves identifying problems, planning a solution, getting a pilot project started quickly with small resources, adding necessary changes and measuring results.

Laura Winner, a quality innovation coach for the Center, was working with Cardiac Surgery to reduce its infection rate when the issue of timely monitoring came up. The initial idea was to make an electronic copy of the audit and connect it to a Cardiac Surgery database. But there were no computers in the cardiac OR and it wasn't scheduled to get them for another year, when a new computerized operating room management system (ORMS) was ready for a phased rollout. Additionally, the plan was to implement the audit tool in all operating rooms.

Two Cardiac Surgery information technology team members, Diane Alejo and Joe DiNatale, came up with a

solution: Make the electronic audit form Web-based and tie it into a database in the Department of Surgery. The Center and cardiac surgery IT worked together to develop the application, and within several weeks, the paper form

Applying rapid-cycle tools can help units defeat bureaucratic obstacles.

was migrated onto a secure Web site. Operating-room nursing leadership decided to pilot the application in the computer-equipped Weinberg OR.

By using the rapid-cycle process to get the pilot up and running, the Web-tool project bypassed the time-consuming method of gathering information, taking it to a committee and waiting for the right op-

portunity. "We could've waited until all of the ORs had computers to start this project," Winner points out. "The pilot has given us the chance to make some tweaks before the online audit form goes to a broader use."

The online audit version is tied to the electronic patient record system, making it easier to get the surgical patient's name or identification number. Drop-down menus and Yes and No answers allow the nurse to simply point and click the results with a computer mouse. The tool also has a comment field to point out concerns that aren't addressed by answering the questions. Results for each surgery are automatically submitted to the surgery database.

The data helps to pinpoint opportunities for improvement and helped staff reach 100 percent compliance with evidenced-based OR best practices. ■

Embracing Family in Patient Care

By Peter Pronovost, M.D., Ph.D.
Christine Holzmüller, BLA

THERE IS NO BETTER WAY TO explain what patient-centered care means than to recall a story of compassion and understanding that I witnessed recently between a nurse and her patient. The patient (we'll call him Jim) died in his wife's arms as they both lay in his hospital bed in the intensive care unit. Being able to hold her husband gave Ann (alias) great comfort and meaning, something Diane Rusnak made possible through her courageous and remarkable work as Jim's ICU nurse.

This compassionate finale began over six months ago in the surgical ICU. Jim arrived there with sepsis, a complication following his kidney transplant. He had battled more than six life-threatening events, but this last crisis was different. An infection was raging within him, and Jim's medical care team was losing the battle to save his life.

The team included Robert Montgomery, the surgical attending, Edward Kraus, the transplant nephrologist, his nurse, Diane Rusnak, and me, the ICU physician. Realizing that Jim was sliding downhill quickly, we decided to meet with the family to discuss his prognosis and goals of care. Rusnak, who had more than 10 years of nursing experience, recognized that Jim's dialysis machine and heating blanket were physical barriers for his family. She proposed removing both, and the family readily agreed. This insightful and compassionate suggestion permitted Jim's family to draw closely around him, touch him and celebrate his life.

Rusnak then prepared Jim's bed to make room for his wife. Though Jim was unconscious, Ann knew that after many years of marriage, he would sense her touch. She laid in bed with Jim for hours until eventually he passed away peacefully in her arms.



Peter Pronovost

What an Idea!

In the quest for an error-free drug delivery system, self-reporting currently is the best way to track medication errors. Accurate and unbiased reporting, however, has been especially difficult in the health care environment up to this point, because the fear of blame is still prevalent.

To take fear and bias out of the process, a multidisciplinary group has developed an automated method to report medication errors. The system, called Medication Event Markers (MEM), red-flags mistakes by the type of drug, the time it occurred and the unit where it happened.

Still in its infancy, MEMS is being tested in the Weinberg and surgery intensive care units, because it can pull information from Eclipsis, a point-of-care clinical data system. These medication-event triggers don't necessarily indicate actual harm to patients, but they are valuable for

tracking error trends and highlighting areas for improvement.

A medication-event marker is an automated algorithm that identifies the toxic side effects, or triggers, of an overdose with certain clinical indicators. In setting up the system, the group—intensive care units, pharmacy, nursing, risk management, information technology, the Hopkins Hospital patient safety committee, and the Center for Innovation in Quality Patient Care—focused on medications whose high use and mis-dosage could have devastating consequences for patients. These include narcotics, anticoagulants and insulin.

The system's mathematical formula takes into account exceptions to the rule.

Implementation of the clinical physician order entry system at Hopkins, scheduled by this autumn, should increase the potential for more widespread use of MEMS.

In my seven years of attending in the ICU, this was the first time I saw a family member so involved in patient care. Rusnak is a hero to me, for she taught me what it means to practice patient-centered care. We use this phrase often and loosely, but few of us comprehend its true meaning. I am beginning to understand that it means many things. First, it means patients should be united with their loved ones. Our ICUs are now embarking on an effort to accomplish this by making visiting hours more flexible.

Patient-centered care also means organizing health care around patients rather than caregivers. This means involving patients and family in all aspects of medical care, including medical decisions. Ann, for example, was very involved in decisions regarding Jim's medical care and many times pushed physicians and nurses to ensure that he received the best possible care. At first her assertiveness was felt to be offensive, but on reflection the team knew that she

brought an important perspective that needed to be considered. She provided the love, comfort and intuition that no machine, drug or care provider could mimic.

In my seven years of attending in the ICU, this was the first time I saw a family member so involved in patient care.

Rusnak recognized this care that only a spouse or other close family member can provide. She showed us that patient-centered care can take on many faces that go beyond a clinical procedure or therapy. Our work must strive to relieve the physical and emotional pain and suffering our patients and families experience that no dose of morphine can dull. Rusnak and many caregivers like her bring

this reality to the forefront daily and remind us that we are guests in the lives of our patients.

What does patient-centered care mean to you? I am interested in hearing your stories. Please share them with us so we can pass them on to others and better understand the many faces of patient-centered care. You can e-mail your stories to CIQPC@jhmi.edu. ■

As Hopkins Hospital's new patient safety coordinator, Lori Paine is on a critical mission.

Lori Paine's career trajectory has taken her from bedside nurse to the very face of patient safety at Hopkins Hospital. As the institution's first patient safety coordinator, she embodies the mantra of doing no harm. "Every single one of us would be lying to ourselves if we denied that we had ever made mistakes," she says. "And all of us are either patients or family of patients. Safety is something we simply cannot ignore."

Nationwide, other hospitals are instituting similar posts, as a new "science of safety" in health care emerges. This new path comes in response to pressures from patient advocacy groups, accrediting organizations and now, internally, from medical staff, as they embrace the concept that it's everyone's responsibility to protect patients.

Paine stepped into the new post a year ago and began by leading the Patient Safety Committee, the group that sets and monitors the hospital's safety agenda, through an eight-week planning process. The exercise resulted in the safety strategy—anchored by eight goals, such as improving communication and teamwork, engaging patients and family members in planning treatment, and developing valid measures of patient safety—that she is now coordinating.

To key people in to the new strategy, for example, Paine has organized a series of quarterly grand-rounds presentations on safety for the entire hospital staff. To engage patients and families, she works with units to make sure patients receive daily care plans and daily goals sheets. To improve the "culture of safety," she coordinates rounds made by senior executives. These rounds are part of the Comprehensive Unit-based Safety Program, or CUSP, an eight-step exercise now in place in at least 10 different units that begins and ends with staff assessments of safety.

Paine also was the first person hired as a quality improvement coach by the Hopkins Center for Innovation in Quality Patient Care, overseeing an initiative to increase nurses' "touch time" with patients. ■