



Driving Home the Message

Institution leaders adopt far-reaching measures to make the point that patient safety is Job 1.

Johns Hopkins Medicine Dean/CEO Edward Miller sat one day listening to the neuroscience critical care unit's patient safety committee members go on about what they thought were the issues and obstacles standing in the way of making the ICU safer. The dean was in the midst of leading a concerted drive to shine a more urgent spotlight on patient safety and make it a priority at every level.

Suddenly, Miller interrupted that committee's discussion. "We were going over statistics," he recalled, "when I jumped in and told the unit's senior staff, We're going out onto the floor and ask staff how we can help them make this place safer."

The first person the dean ran into was housekeeper Arleta Hawes, and he popped the question. Hawes didn't hesitate in her answer: She needed mop heads, and with them, the housekeeper asserted, she could keep patients' rooms cleaner and safer.

The dean did some investigative work and found that the supply of mop heads was being sent to the wrong place. That problem was quickly corrected. "Now, who would think of mop heads when talking about making patients safer?" Miller asks. "But she was right, she was invested, and we helped her do her work better."

Miller, like other top Hopkins Medicine executives, had adopted an ICU to help those units' caregivers identify safety issues, encourage them to take responsibility for finding solutions and knock down barriers that block patient safety improvements. These executive rounds, officially called the Comprehensive Unit Safety Program, actually are part of an eight-step process that begins with measuring a unit's attitude about patient safety.

But Miller and Hopkins Health System President Ron Peterson felt that, despite some great work being done in ICUs and some surgical units and a patient safety retreat held last spring, the importance of patient safety hadn't spread wide enough throughout the institution. And the nagging questions of how the organization will support quality and safety projects and how to get people invested persisted. So, Hopkins



Housekeeper Arleta Hawes shares a memory with Dean/CEO Edward Miller about their earlier encounter on the NCCU that led to an unlikely boost to patient safety.

held a patient safety follow-up meeting for the top 100 executives, where three work groups presented some far-reaching recommendations to answer those questions.

Among the recommendations was mandatory training for the institution's top leadership echelon as well as others in this program to learn such process im-

provement techniques as Six Sigma (a system for eliminating variability) or Lean Sigma (eliminating waste). It also recommended that these high-ranking executives and directors participate in one patient safety project annually.

Another recommendation called for each clinical department to identify around 12 safety and quality care items that pose a

risk, such as catheter-related bloodstream infections or surgical site misidentification, and create a plan to improve them. This information was turned into department score cards, or dashboards, to measure outcomes.

The Center for Innovation in Quality Patient Care is in the process of taking some of these performance measures—surgical-site infections and medication errors, as examples—systemwide, according to Richard "Chip" Davis, the center's executive director. While Hopkins so far has been good at improving safety and fixing system failures within units, departments or entities, the problem, Davis notes, is that "we need to do this better across silos. At the same time, we wanted to customize the dashboards because pediatrics, for instance, will have safety and quality issues that don't exist in otolaryngology. We want each department to focus attention on their specific needs."

Miller and Peterson will meet with individual department directors every six months to assess their progress in meeting their safety goals. To Peterson, adoption of these recommendations over the long term is not the end game, "but they do represent tangible measures that need to be taken now to support our patient safety goals."

An Education in Blood Waste

When the Department of Pathology started listing patient safety issues it needed to address (part of a new institutional initiative), one item—blood waste—spilled out. It seems that a significant number of unused red blood cell units were being sent back to the Hospital blood bank from operating rooms and clinical units.

Under the leadership of pediatric anesthesiologist Eugenie Heitmiller, representatives from the general operating rooms, transfusion medicine and anesthesiology came together to find a solution. The multidisciplinary group decided to use Lean Sigma, a statistical

analysis tool for eliminating process waste, as its weapon of choice.

One of the early findings was that the blood units weren't always packed the same way in the blood bank coolers, which affected their susceptibility to temperature changes. These units must be kept in constant contact with ice or their temperature will rise above 10 degrees Celsius, the point at which they are considered unusable. The team came up with a diagram showing the correct way to pack blood units in coolers to eliminate that variability. It also educated anesthesiologists to the problem's significance and to

the importance of returning unused blood units in coolers as soon as it's determined they won't be needed. These immediate changes have reduced the waste of red blood cell units by 25 percent.

Besides Heitmiller, the group includes Paul Ness, Christine Barrasso and Christi Marshall, transfusion medicine; Barbara Parsons and Natalie Wallace, pathology; Debra Fletcher and Joanne Walz, general operating room; Lauren Berkow, anesthesiology; Betsy Zink, NCCU. Together with Rich Hill, Center for Innovation Lean Sigma project facilitator, they are working to reduce blood waste further.

Inside:



2 **Conversation** with Julie Freischal on instilling a culture of patient safety in the ORs.

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



3 **Spotlight** on how the Hopkins operating rooms have broken down the medical hierarchy to reduce errors.

4 **Points From Pronovost** A letter from Hopkins' safety expert to a mother whose child died because of a medical mistake.

The Courage to Lead

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

As we strive at Johns Hopkins Medicine to be "safer by a factor of 10," we've found that the influence of leadership at every organizational level brings real, sustainable change.

How does that happen? It begins with leaders who have the courage and vision to get involved, to expose defects and to create a culture that focuses organizational discussion on improving systems and processes, not blaming caregivers and support staff for mistakes.

Although courageous executive leadership is crucial to building such a culture, this same boldness in taking the initiative also must filter down to mid-level managers and frontline staff who fundamentally are committed to improving the care we deliver to patients. This reality was demonstrated when nurse manager Bev Reynolds pinpointed a problem with the flow of service requests on her unit on Halsted 6.

Taking the initiative, she used the Lean Sigma approach, a process-improvement methodology that addresses issues of waste and variability, to track the flow of requests. One of Reynolds' findings showed that IV therapy staff wasted time traveling to units where they weren't needed.

In presenting the issue last month to the centers' monthly steering committee, however, Reynolds felt uneasy about exposing the inefficiency of her own unit. She was relieved to find that senior leaders not only lauded her initiative and ability to concretely identify the problem, they further recommended that she obtain assistance from center experts and IT staff as she continued work on constructing a solution. The result from this collaboration between Reynolds and the center was to alert the IV therapy staff about which units could be eliminated from their rounds, thereby improving the staff's efficiency.

To better support more staff-led initiatives, executive leaders now are taking part in a 10-hour curriculum on the science of safety and quality. Several articles in this issue of Quality Update provide additional examples of how Hopkins leaders are creating an environment in which change can move us closer to our goal of making patients safer by a factor of 10.



A Conversation With Julie Freischlag

Operation Safe

Surgeon in Chief Julie Freischlag arrived at Hopkins more than a year ago just as the push for patient safety was taking off. She didn't waste time bringing home to surgical teams that she meant business when it came to making operating rooms a safer place for patients.

Were you surprised at the level of emphasis on patient safety here?

Institutions where I previously had worked didn't have a lot going on with patient safety. The first thing I noticed was the intense commitment by the leadership to making Hopkins safer, which makes a huge difference in how the rest of the institution reacts to patient safety. Also, I had never heard of anything similar to the Center for Innovation in Quality Patient Care existing anywhere in academic medicine.

What does patient safety mean to you?

It has to be one of our core values. As surgeons, our treatment of patients is quite invasive and it alters lives. To do that without a safe environment is unacceptable. We can't live without this mission, and it has to be part of our culture.

Years ago, the medical community generally never talked about its mistakes. We rationalized them, forgave them, but we never brought them to the surface or shared them broadly. I'm impressed that at Hopkins we're openly talking about mistakes and learning from them across departments. I don't think I go to a hospital meeting where we don't discuss a sentinel event or medical error. We've all moved safety to the top of our priority list.

What does your priority list look like?

One of the most important things was the timeouts before starting a procedure. I've now required that every attending physician involved in the case be there, because that doctor is the one person who best knows the patient. We had several incidents over the past year where a faculty member wasn't at a timeout and decisions were made that resulted in a medical error.

It's the right thing to do because it gives OR teams time to go over every aspect of the case—

right patient, right surgical site, right equipment. It breaks down the traditional hierarchy, making equals out of everyone on the team.

You made communication training for surgical team members mandatory. How did people react to this?

The feedback was very positive. Nurses and technicians enjoyed the fact the surgeons sat down with them for the training, and physicians learned that they were expected to be part of a team. It helped that leaders like Dean/CEO Ed Miller President Bill Brody stressed the importance of team training.

Has this training resulted in fewer medical errors or sentinel events?

Luckily, the ORs don't have that many, so it's going to take a year or two before we truly know the answer. I can say that after doing time outs and team training, we've had the highest number of cases starting on time because people were there and in good moods. It's improved efficiency already.

What are next steps?

I've asked Kathy Hale, the Hopkins Hospital sentinel event coordinator, to go over our medical errors at our morbidity and mortality conferences. I've also asked here to do the same on a quarterly basis at our OR executive committee, which consists of the directors and administrators of each surgical service and nurse managers. We're also talking about taking the team training to regular medical floors and to clinics.

Do you come to work thinking that something bad could happen in the OR that day?

Actually, no. I come to work thinking that we're doing so many good things that nothing bad will happen. I'm a glass-half-full person.

(See article top of page 3.)

Culturally Sensitive Health Care

When non-English-speaking patients show up in the emergency department or are transferred to a medical unit, the ability of nurses and other caregivers to gather critical information, such as a patient's medication allergies, can make the difference between a safe outcome and a medical mistake. Not only can language be a barrier, but cultural differences could determine how forthcoming a patient is with information.

To overcome these communication obstacles and provide safer patient care, Johns Hopkins International and the Hopkins Hospital Department of Nursing have devel-

oped online training for nurses covering issues such as ethnic and racial stereotyping and how diverse populations express pain or face end-of-life decisions. More than 3,800 nurses—about 80 percent of the staff—have gone through the instruction.

"As our patient population becomes increasingly diverse, educating our staff has become critical in helping them provide culturally competent care," explains Deb Case-Cromer, education coordinator for Hopkins Hospital's Department of Nursing. The online cultural training now is being offered to other frontline staff, including administrators and physicians, to better help them serve these diverse populations.

"We understand that offering interpretation services to our frontline employees is a legal and regulatory priority, but it is far from being enough," says Emilio Williams, who directs the outreach and educational programs of Johns Hopkins International. So Nadia Sawaya, JHI project manager, helped create a training program that gives providers the tools to understand how cultural differences affect their encounters with patients. Hopkins International's call center for translation services, for example, has reported a sharp increase in requests from caregivers to assist patients whose first language is Spanish, Korean, Mandarin or Russian.

On Equal Footing

Breaking down divisive surgical team hierarchy improves morale and makes operating rooms safer.

It might seem strange to hear surgical team members call the surgery director Julie, or it could be presumptuous to call former department chair John Cameron, a stickler for protocol, just plain John. But in the operating room these days, calling people by their first name is just one of many changes that has everyone feeling they're equal players in a program making ORs safer.

Operating rooms historically have been home to a rigid hierarchical system. Physicians were addressed as Doctor and nurses by first name—if they were even acknowledged as anything but nurse. Calling people by their first names might seem paltry in the intense glare of patient safety. But studies in other industries, particularly in aviation, have shown that an inflexible hierarchy undercuts teamwork and can contribute to mistakes.

"We're trying to break down barriers that lead to errors," says Laurie Saletnik, assistant director of surgical nursing. "It totally changes the culture in the ORs when a nurse can call a physician by first name or a resident can address a nurse as an equal."

For the past six months, new practices, policy changes and leadership directives have refocused attention on patient safety throughout Johns Hopkins Medicine's scattered operating rooms. Surgical teams have been 100 percent compliant, for example, in holding timeouts to ensure that all members are on



A cardiac surgical team takes a timeout before starting a bypass procedure, making sure its members have the right information and equipment for a safer operation.

the same page before surgery begins. Discussions about medical errors have moved beyond the traditional morbidity and mortality conferences to other settings, such as the OR executive committee meetings, which bring together departmental physicians and nursing directors.

To drive home the importance she placed on teamwork training, the surgery director took a radical step.

The culture change started earlier this year, when leadership in the Department of Surgery decided that team building was

so important, it brought training offered by Hopkins' Center for Innovation in Quality Patient Care directly to the hundreds of people who don scrubs for work each day. The sessions, which brought physicians, nurses, pharmacists and technicians together, were taught by Bill Taggart, an aviation expert in team communication training who has adapted this method for the medical community.

To drive home the importance she placed on teamwork training, Julie Freischlag, surgery director, took a radical step. She made the training mandatory for everyone, including physicians, and to make sure the more than 1,000-member staff had the time to attend the four-hour sessions, she closed the operating rooms.

"It was important to me that our people went through the training together," Freischlag explains. "Otherwise, the message of team building gets lost, especially on doctors." The experience, she adds, encouraged nurses to speak up and physicians to listen. Not content with the one-time training opportunity, Surgery is developing, with guidance from the Center for Innovation, a Web-based training program for follow-up sessions and to keep material fresh.

Freischlag also expanded the Hospital's surgery timeout policy by requiring attending physicians to be present. "The policy only requires that a timeout be held," she says, "but doctors need to be there." The surgery director notes that new residency work rules

limit the time a resident can be in the hospital. "We've had several incidents in which something went wrong in a case because a physician wasn't at the timeout."

During the timeouts, surgical teams use a checklist, which varies for each service, to guarantee that key safety factors are met. To monitor timeout compliance, the department uses a document called the Operating Room Best Practices Audit, which contains 13 different items ranging from

surgical site identification to compliance with proper dress code. Each case is audited during surgery, and the results are reported to each service monthly.

Now, Surgery is talking about doing a debriefing immediately after a case, discussing whether the surgical team followed the preoperative plan, if there were problems that needed addressing, or whether anything could be improved. Saletnik says the debriefings most likely will be piloted in one or two services.

So far, all patient safety projects have improved morale, but it's too early, Saletnik notes, to tell how they have reduced medical errors. "We'd like to collect all the measurable data over time and turn that into a research study," she adds.

Tools

Getting to the Recall on Time

A new system speeds the removal of defective drugs and devices from the shelves.

For several months in late 2001, The Johns Hopkins Hospital unknowingly used a defective bronchoscope that, in some cases, caused a debilitating and sometimes deadly infection to attack patients. A manufacturer's letter that would've alerted Hospital officials and physicians to the danger was mailed to the same place the devices were shipped: the loading dock.

When the number of infections suddenly began rising, an enterprising group of physicians traced the source back to a faulty valve. Hopkins removed the bronchoscope from use. Two months later, a national recall of the device was issued, and it was only then that institution officials learned of the earlier letter.

This incident and the normal, cumbersome process for getting recall alerts and pulling defective materials off the shelves caused the Hospital's patient safety committee to question whether

there was a better way. The answer came from a northern Virginia nonprofit technology company, which joined Hopkins in creating the country's first computerized recall alert system.

Called the Risk and Safety Management Alert System (RASMAS), this Web-based technology can quickly search such databases as the U.S. Food and Drug Administration's enforcement report, cull out recall notices and speed them to Hospital alert coordinators. Since its trial run last summer, RASMAS has shaved the time spent responding to alerts from 8.3 days to three. Backed by this initial success, Hopkins and Mitretek Systems of Falls Church, Va., have expanded RASMAS' use throughout Hopkins Medicine and now are selling the system to more than 90 other hospitals and health systems nationwide.

The major benefit of the system, says Kathy Hale, the

Hospital's recently departed sentinel event coordinator who worked on the recall project, is that it reduces the exposure to patients. Recently, for example, Merck issued a recall alert for Vioxx after finding increased incidences of stroke and heart attacks in patients using the company's anti-inflammatory drug. RASMAS grabbed the alert and sent it to Hopkins Hospital's pharmacy alert coordinator within two hours. By the end of the day, every bottle was off the shelves.

The system separates alerts by type—medications, devices, materials—and by geographic locations, plus highlights duplicative alerts. "This has cut the volume of reports we have to wade through by more than 60 percent," says Wayne Sparkes, with the Johns Hopkins Medicine Center for Innovation in Quality Patient Care. The center loaned Sparkes to the



Wayne Sparkes clicks into RASMAS, an online system that speeds medication and device alerts to Hospital officials.

RASMAS project and paid for his time.

Once RASMAS has categorized the recalls, it sends them to the respective alert coordinator. For Hopkins Hospital, those are Shirley Geize for pharmaceuticals and Roy Shipley for biomedical devices; Linda Smith handles everything else. The sentinel events coordinator receives electronic notices when alerts aren't handled quickly and works with the coordinators to complete the recalls.

In addition to glean information from the Web, Hopkins can enter alerts it receives directly from manufacturers. To reduce the risk of another bronchoscope incident from occurring, Sparkes says that all new contracts with product manufacturers require them to send recall notices

directly to the risk management office.

"The system also gives us the opportunity to track alert response time by domain or department," Sparkes says, "and make quick improvements if there's a problem." Just as importantly, should the Joint Commission on the Accreditation of Healthcare Organizations or the FDA arrive demanding to know how the institution handled an alert, RASMAS can give them a quick answer.

Would Josie Die Again?

In 2001, 18-month-old Josie King tragically died as a result of a medical error. Her mother, Sorrel, since has worked tirelessly with Hopkins to improve patient safety. But what kind of progress has been made? Peter Pronovost gives the complicated answer.

Dear Sorrel:

It has been four years since Josie died, and five since the Institute of Medicine published "To Err Is Human," its wake-up call on medical mistakes. Recently, I've been haunted anew by a question you asked me: Would Josie be less likely to die today from the mistakes we made? What you were really asking, I think, is, How do we know that our patients are safer and that our efforts to improve patient safety are working?

My answer is more hopeful than I might have predicted four years ago and yet still less satisfying than either of us wants it to be. I say this because our job isn't done and it never will be. At Johns Hopkins, I can say with certainty that safety has improved, and it is my firm belief that Josie would be less likely to die today. We have risen to the challenge of developing ways to identify the processes that leave our systems vulnerable to error, and of tracking and measuring our progress with precision.

How often do we harm patients? How often do patients receive the interventions they need? How often do we learn from defects? How well have we improved our culture of safety? We're committed to giving disciplined answers to these tough questions. Hopkins is undertaking many efforts to improve safety, and I want to share some of the details of our progress.

First, your family and others who come to Hopkins are much less likely to develop a bloodstream infection in our hospital than four years ago. Our patients are much less likely to suffer from a medication error. We've created a model for determining how often we provide—or

In the Institute for Healthcare Improvement's (IHI) campaign to save 100,000 patients from fatal medical errors, hospital responses to patients whose breathing or heart has stopped is gaining particular attention. Most inpatient units have code teams that answer the call for imperiled patients. But one of the institute's six safety recommendations calls for teams to react at the first sign of a patient's deteriorating condition.

The IHI won't have to convince Betsy Hunt of the virtues of getting to patients before they code. The Hopkins pediatric intensivist and critical care specialist has been training pediatric code teams to improve their cardiopulmonary resuscitation skills. Among the conclusions emerging from studies worldwide (including those done by Hunt) looking at these teams' effectiveness was that patients had better outcomes if teams responded before a condition reached life or death.

So, pediatric code team protocols have been changed. Staff now can call a team at the first sign of deterioration in a patient's condition, such as changes in pulse rates or oxygen levels dropping below a certain point. And, the name of those groups of nurses, residents and physicians who rush to the bedside has been changed to Rapid Response Teams, better reflecting their role.

Although the number of calls for these teams has gone up, Hunt says she is still collecting data on how this earlier intervention is improving patient outcomes here. Meanwhile, anesthesiologist and critical care specialist Brad Winters has a \$250,000 grant from the VHAS Health Foundation to study the effectiveness of precordial-arrest rapid response in the Weinberg surgery intensive care units. And medical resident Michael Nottidge is working with the Center for Innovation in Quality Patient Care evaluating these rapid response studies to determine whether this care can be used throughout Hopkins Hospital.



fail to provide—the treatments patients need. And, Sorrel, you'll be pleased to know we're learning from our mistakes through such systemic programs as the Comprehensive Unit-based Safety Program (CUSP), in which staff identify and improve defects in care. Additionally,

we've started a Web-based reporting system so we can better collect safety incidents, track their patterns and then measure the impact of our corrective actions.

We understand that a critical factor in improving patient safety is actively changing the culture here, and it's starting at the top through the involvement of our senior leadership,

who have adopted a patient care area and meet with staff there monthly to identify and eliminate defects. Now, clinical department directors and unit managers will be accountable for improving patient safety in their area.

Results in areas that have implemented

our programs have exceeded our expectations. We know we're on the right path, in part, because we've been increasingly asked to share our models, measures and programs with others, including eight ICUs in Michigan, 40 New Jersey hospitals and 47 in Maryland.

Sorrel, a year from now, and every year, please ask me again how I know, not just whether I believe, care is safer. Please hold me and other leaders accountable for improving patient safety. Although our ability to make needed changes is evolving, we still have much to learn. We will not be able to cross the quality and safety chasm until we understand that safe health care delivery requires just as much scientific rigor as do anesthesiology or molecular biology. Improving safety requires talent, determination, funding and people like you who help us reach our goals.

In the meantime, we will strive daily to make the answer to your haunting question an even stronger "yes."

Sincerely,

Peter Pronovost



Starting on the Ground Floor

Improving the quality of care patients receive now is a fact of clinical life for physicians, nurses and health care administrators. It's emphasized by accreditation organizations for hospitals, medical schools and residency training programs; however, few health care professionals get any exposure to the methods of this fast-growing process science.

The Johns Hopkins Hospital and Bayview Medical Center are looking to correct this oversight through an education grant that would put six teams of medical residents, graduate nurses and administrative residents through a four-week curriculum, learning to use quality improvement tools for solving patient-specific problems. Called ACT II, the \$25,000 grants are a collaboration between the American Association of Colleges of Nursing, the Association of American Medical Colleges and the Robert Wood Johnson Foundation Partnerships in Education program.

Each of the six teams will use feedback from their patients to identify a problem—long waits in the emergency department before admission, for example. The team would interview ED clinicians and administrators and if the problem appeared broader, say lack of available beds in a medical unit, talk as well to staff in other units. An administrative mentor will help the team frame the issue and pose a possible solution, and a project oversight committee will clear away barriers the participants may encounter. "We're not expecting large-scale solutions," explains Judy Reitz, Hopkins Medicine's quality improvement officer and the grant's principal investigator, "as much as we want to expose them to the methods for improving patient care."

Hopkins is limiting this grant to residents in surgery, anesthesiology, Gyn/Ob and Bayview internal medicine residents. Reitz, who also is the Hopkins Hospital executive vice president and chief operating officer, says this kind of inter-professional system education hasn't been done in large academic medical centers. If this grant is successful, she adds, the institution will seek to renew it in April with the aim of expanding it into other clinical departments.

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