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Unique patient safety authority enables sharing of lessons learned

Pennsylvania PSA reports on serious events collected

In the past two years, three Pennsylvania hospitals have won the coveted John M. Eisenberg Patient Safety and Quality Award, given by the National Quality Forum (NQF) and the Joint Commission on Accreditation of Health Care Organizations. In addition, the latest report on the performance of Pennsylvania hospitals by the Pennsylvania Health Care Cost Containment Council (PHC4) finds a decline in patient mortality rates for all conditions reported over the last two years. The report includes risk-adjusted mortality rates, lengths of stay, and other data for patients admitted to 167 Pennsylvania hospitals from October 2002 through September 2003.

But while hospitals from other states are garnering quality and safety awards and improving outcomes, Pennsylvania also is doing something no other state has yet done: It has established a statewide Patient Safety Authority (PSA) to help health care professionals learn from events that occur, or have the potential to occur, to avoid injuries to patients in hospitals throughout the state.

No one is claiming the PSA is responsible for this spate of safety award winners — in fact, these institutions had well-established programs in place before the PSA was created two years ago — or

Key Points

- The Pennsylvania Patient Safety Authority requires hospitals to report serious events and potentially harmful events.
- Hospitals can be fined and physicians can lose licensing for failure to report events.
- More than 50,000 events have been reported statewide since the system went on-line in July 2004.

that it is the main reason mortality rates have dropped in Pennsylvania. But the authority *is* unique; it *does* require that hospitals pay more attention to their patient safety efforts, and it enables sharing lessons learned by some of the safety leaders in the state.

How the PSA works

The PSA is part of a tradition started by PHC4, which was established in the mid-1980s, explains **John Combes**, MD, senior medical advisor for the Hospital & Health System Association of Pennsylvania (HAP). "PHC4 was a way for the state to avoid rate controls around health care and to create resources for businesses and consumers to look at health care costs and some outcomes," he explains, noting that for years it has been generating what is called the "Hospital Performance Report." (For more information, go to its web site at PHC4.org.)

"The Patient Safety Authority was established by our legislature two years ago as part of Act 13, or the Mcare act," he notes. "It involved establishment of the PSA. It introduced some basic tort reforms; and it addressed unfunded [insurance] liabilities."

The authority collects reports from hospitals on events that may have harmed patients or have the potential to harm patients. "The hospitals *have* to report them as they occur," Combes adds.

Both serious events and incidents must be reported. Serious events are events that occur in clinical care that affect patient safety and result in harm to the patient that requires treatment, he points out.

Incidents are events that *could* affect patient safety, did not harm the patient, but have the *potential* to harm the patient.

Reporting is not voluntary, Combes emphasizes. "For serious events, the fine is about $100 a day for failure to report, and the physician or licensee can be reported to the licensing board," he says. "But the idea is not to use the information *against* the facility — rather, it is for [gaining] knowledge." Serious events are shared with the Department of Health, which may in turn use them to develop new regulations.

The state has contracted with ECRI (Emergency Care Research Institute) in Plymouth Meeting, PA, to analyze the data. "They review all the reports, and then the authority issues recommendations to the field in the form of a newsletter — called *Patient Safety Advisory,"* Combes notes.

An example of the kind of information shared is several recent reports about people confusing TB syringes with insulin syringes. "Both are about the same size, with orange caps to them," he explains. "It's an easy mix-up to make, but the gradations on the TB syringes are different.

"The beauty of this is that the report actually does the analysis of these events and then gives recommendations to the field about how they can improve care," Combes continues. The newsletter is mainly distributed electronically.

"The state has created this independent authority as a resource from which hospitals can learn," he says. "It is the first of its kind in the country, and right now it is unique; it's the only one with mandatory requirements for reporting incidents as well as serious events."

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Even hospitals with well-established quality improvement programs have felt the impact of the PSA, although they also are called upon by the state to provide advice and are used to illustrate best practices.

"We've had a very active quality program in our organization for many years," says **Zubina Mawji**, MD, acting senior vice president for quality and care management for the Lehigh Valley Hospital and Health Network in Allentown, PA, a three-hospital system that is a 2003 Eisenberg winner.

"What we have done, as a result of Act 13 and the subsequent PSA and Patient Safety Councils required under Act 13, was develop our own council in 2002. Prior to that, we had numerous committees that reviewed various areas in the network — QA, multidiscipline councils reviewing cases involving multiple departments, and so forth. As a result of the PSA, our safety council is another opportunity to review patient safety events in a different framework."

Act 13 has five major safety requirements:

- Each facility has to designate a patient safety officer.
- Each facility has to establish a patient safety committee.
- Each facility has to establish a system for health care workers to report serious events and incidents, and that system must be accessible 24/7.
- The act prohibits any retaliatory action against a health care worker for reporting a serious event or incident, in accordance with the Dec. 12, 1986, whistle-blower law.
- Facilities must provide written notification (disclosure of any serious medical error) to patients, in accordance with the act.

"The PSA *does* provide direction to us at a state level on what to pay attention to, and the data is sent back to us in aggregate form, so it allows us to check in and take a pulse about what's going on at the state level — Are we on target? Are these things we need to keep working on? It tells you the things that everybody is addressing," adds Mawji.

"That information we all enter on incidents becomes aggregate data on which [the PSA] disseminates statewide," adds **Fran Miranda**, RN, director of risk management and patient safety officer for the network. "It may be on best practices or on areas of concern hospitals need to focus on."

While the newsletter goes out quarterly, "if there is an area of exposure that really negatively impacts patients, [an additional alert] is sent out under separate cover," she notes.

Lehigh Valley also is one of those hospitals leading the safety movement. "We have been extremely fortunate to be ahead of the curve; we have become very vocal at the state level to help move other hospitals along," Miranda explains. "People call us up and ask for best practices."

Another 2003 Eisenberg winner, Abington (PA) Memorial Hospital, also has been both benefiting from and leading efforts to improve the statewide initiative. "We've found it to be a relatively easy way to report centrally on the challenges to take us to the next level," says **Doron Schneider**, MD, associate program director of the internal medicine residency program. "The authority is really a leader in assisting hospitals in reporting errors; we've been involved in their web-based initiative from the beginning as one of the pilot sites for error reporting."

The ultimate goal, he continues, is for the web-based system to interface in a more "hospital-centric" manner. "Now, our incident reports have to be hand collected and entered into our internal database, and then sent to the PSA. "It's not efficient, and it's resource-intensive. We've been working with ECRI to talk about building our own program in-house to allow nurses and other staff to collect data that can be dumped right across to the PSA."

Schneider says he's proud to be part of the pilot phase, and while "we haven't seen any returns yet in how the system will help hospitals create a safe environment, I imagine they will be forthcoming."

Activity is promising

Combes takes up that theme from Schneider. "I think it's been very helpful," he asserts. "Since the reporting got up and running [in July 2004], they have received 50,000 reports. The hospitals are *serious* about getting information to them to analyze."

And if imitation is the sincerest form of flattery, then Pennsylvania should be flattered indeed. "Other states are piloting [programs similar to the PSA] and trying to move into this area," Schneider notes. "Kansas might also be piloting an authority."

It's not an accident, adds Miranda, that this is happening in Pennsylvania. "We do consider ourselves fortunate — not only to be in this network,

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but in this state," she says. "I recently reported to our board on PHC4 data, and they were very pleased with it. I then asked my staff to look at each state to see what they were doing at a state level similar to PHC4. A little more than half the states around the country do have some level of statewide reporting of outcomes, but we have clearly been more active in addressing the data and in striving to get better every year." ■

Tool forms foundation of approach to pediatric PI

Success with asthma highlights PI opportunities

A new study by researchers at the University of Michigan Health System in Ann Arbor has shown shorter, less costly, and less frequent hospital stays and, in addition, has prevented repeat hospital visits for kids with asthma.[1]

The initiative, conducted at University of Michigan C.S. Mott Children's Hospital, achieved its results by checking the hospital's asthma-care performance against a national database of information from children's hospitals and using the data as a guide in making specific changes to the way hospitalized asthmatic kids are cared for.

The team benchmarked against data from the National Association of Children's Hospitals and Related Institutions (NACHRI) Case Mix Comparative Database, which are specially adjusted to reflect the severity, or acuity, of children's illnesses.

Even more important, says the study's lead author, **Aileen Sedman**, MD, FAAP, "this is a tool for clinical design; it is very generalizable." Sedman is professor emeritus at the University of Michigan Medical School, past associate chief of clinical affairs, and currently the medical advisor for NACHRI.

Addressing the problem

The researchers began using APR-DRGs (all-patient refined diagnosis-related groups) to analyze Mott patient care data in 1998.

The next year, Sedman's team in clinical affairs found Mott had an above-average hospital stay for children who had been hospitalized for an asthma attack, but who had been classed in the least-severe category (Level I) of inpatient asthma patients.

The more severely ill asthma patients had shorter-than-average stays. "One of the most important things about this particular tool is that you can look discretely at pieces of data that are acuity-adjusted," she notes.

As in most academic institutions, there only were general services — i.e., general internal medicine, general pediatrics, but no subspecialties. "The general hospitalists or resident would see the patients, then consult with a pulmonologist," Sedman notes.

In an effort to determine new interventions that would help shorten stays, Sedman's team brought the pulmonologists and respiratory therapists into the process.

"We looked to facilitate expert care to the average patient," she explains. One of the key issues addressed, for example, was establishing certain

Key Points

- All-patient refined diagnosis-related groups are used to analyze patient care data.
- Pulmonologists and respiratory therapists help identify performance improvement opportunities and interventions.
- Educational visits are a key element in achieving a lower rate for readmissions.

conditions under which a child could be weaned from nebulized treatment with oxygen, according to a standardized protocol.

Accordingly, the pulmonologists developed standardized orders that physicians and nurses could follow for each patient, so that they could adjust levels of inhaled asthma-calming medications throughout the day instead of waiting for a pulmonologist to come.

"The way the hospital usually works, the pulmonologists come into the hospital in the morning, do rounds, then come back later in the day, and nothing happens in between," notes Sedman. "Now, the nurses can observe the O_2 saturation monitor, keep dialing down the meds, so that by the time the doc comes back at 4 p.m., the patient is already off oxygen and potentially ready to go home the next morning."

The team also developed a procedure that automatically notified an asthma educator when a child was admitted to the general floor after an asthma attack.

"On the order sheet, when a resident fills it in, it says: 'Notify asthma educator ASAP,'" she says. "If the patient is admitted at night, they will leave a message on their phone, so the educator can sit with the patient and their family first thing in the morning."

Thorough education for families

The educational visit includes issues such as how to give the nebulized therapy, making sure meds are given on time, avoiding allergens, ensuring the home environment is appropriate, and how the family can help facilitate those things happening.

"It helps parents understand how best to manage their child's condition at home and avoid the triggers that can set off an asthma attack and send a child back to the hospital," Sedman observes. "We assume that if a child is in the hospital from an asthma attack, something happened that didn't go well and there's a need for more parent education or at-home equipment and medication."

Finally, the team looked in great detail at a sample of medical records and noticed some consistent problems with the way physicians documented specific information.

"The basic issue was when the patient came in with asthma, they would often not list comorbidities — i.e., electrolyte disturbance, fever, weight loss, all of which make a longer length of stay more likely," says Sedman. "If you do not write them down, then the patient falls into Level I instead of Level II."

According to the study, Mott's average length of stay in 1999 for Level I asthma patients was 2.16 days, compared with a national average of 2.14 days. "That's not a huge difference, but since we were far under the national average for more severe patients, we wanted to improve," Sedman says.

Length of stay decreased

After the quality improvement process was in place for three years, the team repeated the comparison. On length of stay, both the national average and the Mott average dropped — but Mott was able to allow children to go home in 1.75 days, compared with a national figure of 2 days. Costs increased on both sides, but Mott contained cost growth to 12%, while the growth nationally was 18%.

Even more significantly, the education effort seemed to work: the percentage of Level I asthma patients who were readmitted within 30 days for another asthma attack dropped from 3% to less than 1%.

During the same period, the national readmission rate hovered around 2%. Mott also had no deaths among its Level I asthma patients; there were several nationwide.

The methodology employed in this QI project could be applied to "almost any condition that has an APR-DRG code," says Sedman, outlining the process as follows: "You have data coming from an aggregate source. Your data go in, and then come back so they're broken down by APR-DRG according to acuity. You look at your diagnoses compared to the rest of the country; as you go through the data, see where you are higher. Then pull together multiple disciplines, and write your standardized orders."

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For example, she says, her team used an infectious disease expert to help address bronchiolitis.

"We agreed on a standard, and we had the subspecialists sign off on the orders as reflecting the highest level of science we currently know," adds Sedman

"The other key is to update your protocols appropriately. Keep everything coded by date, revisit and revise, and keep track of all that you do."

Reference

1. Sedman AB, Bahl V, Bunting E, et al. Clinical redesign using all patient refined diagnosis related groups. *Pediatrics* 2004; 114:965-969. ■

Collaborative effort sees improvement in LOS

Simultaneous opening of clinic key to QI success

Evergreen Healthcare in Kirkland, WA, has used a combination of collaboration with an outside consultant and a diverse in-house team to achieve dramatic reductions in lengths of stay (LOS) and readmission rates for congestive heart failure (CHF) patients.

The concurrent opening of an outpatient heart failure clinic, along with a CHF expert coming on board, also were key to the success of the initiative.

"Evergreen was putting in a clinical IT system and also wanted to see how to make improvements around quality of care," recalls **Linda Lockwood**, RN, a director in clinical practice for First Consulting Group (FCG), a Long Beach, CA-based consulting and technology company.

"We did some analysis on their quality and cost data to see where they could have the biggest impact — those DRGs or diagnoses where they had the greatest challenges," she explains.

Lockwood used an FCG-developed methodology, working from Evergreen's cost data.

"They work with Solucient [for benchmarking data], so we were able to compare their performance with other hospitals," she explains. "Then we'd ask, 'How much cost opportunity is there for improvement?'"

Among the opportunities identified were CHF, ventilator patients, and care of deliveries (a key issue with the chief nursing officer).

At about the same time, **Debra Preller**, MD, an Evergreen hospitalist, was involved in setting up a QI project.

"I chose CHF as my project for January 2002," she relates. "The hospital was interested because we were losing money on these patients, and at the same time, they had asked Linda to work on several major DRG issues; and they offered to have her work with me. This was fortuitous, as we were looking at opening an outpatient clinic at the same time and had a CHF expert coming on board."

Key Points

- Consultant helps identify conditions with the greatest cost opportunity for improvement.
- Bringing pulmonologist on board is one key to better protocols for congestive heart failure.
- Clinic readmission rates are cut to 2.2%; lengths of stay also are reduced.

The effort begins

As the initiative got under way, Preller was clear about what she wanted to achieve.

"Our goals were to decrease readmissions and length of stay, as well as cost per case and, at the same time, improve quality of care," she notes. "We set up metrics at the start to make sure patients did not fall through the cracks."

These metrics were based on the initial goals — cost per case, LOS, readmission rates, and the Joint Commission on Accreditation of Healthcare Organizations' Core Measures.

"In the outpatient facility, we used the six-minute walking test, Minnesota Quality of Life Survey, and the Beck Depression Scale," Preller adds.

She put together a very large team, which included the heart failure specialist (Mark Vossler, MD), a nurse practitioner, nurse case managers, social workers, a nutritionist, a pharmacist, the nurse managers on the floor who got most of the CHF patients, and the call center nurse managers.

"They were key," Preller observes. "The health line nurses were able to come see the patients while they were still in the hospital, talk about heart failure, diet, meds, and so on. Then, when the patients got a follow-up phone call, it would

be from someone they've already met; they were plugged into the system early," she explains.

"Many of these patients were older, with lots of comorbidities," Lockwood adds. "I've frequently seen in other facilities some very expensive case management, which was really hit or miss.

"This was unique; we insisted up front that the nurses come and meet the patient face to face. They would then call a week after discharge and two weeks after. Then we had an interdisciplinary case conference and talked about these patients — who did not have enough money, who was not following their diet, and what we could we do about it," she continues.

New protocol, clinic induce change

As part of the initiative, a new protocol was created to simplify the process for the physicians. "It's much better, much simpler, but it needs to be updated regularly; and each time, it's another difficult step," Preller says.

Also difficult — or at least, not easy — was getting everybody on board.

"We did have some initial resistance on the part of the docs to sending their patients to the clinic," Lockwood notes.

However, that resistance eventually was overcome. "Deb and Dr. Vossler went out and talked to each physician, explained what we were doing, and provided them with literature," says **Kathy Schoenrock**, director of quality, who joined the team about a year into the project.

"Slowly but surely, almost everyone has come around to see the benefits of the clinic for their patients," she points out.

Vossler sees many of the patients while they still are in the hospital and then follows up in the clinic, Preller explains.

'He can follow up within a week," she continues. "He'll see the nurse practitioner, go over what was done in the hospital, and is actually able to see the patient in a day or two if they are having trouble post-discharge."

The system's hospice also has been involved, which contributes to the lowering of readmission rates.

"The problem with end-stage CHF," Preller says, "is that the patients may pick up for a day or so, but soon they feel poorly again. The program encourages the hospice RN to come to the home, make sure the patients are getting meds they need, like lasix, without having to spend the last months of their lives in the hospital."

The results have been impressive. The average LOS, which pre-program was about 5.5 days, is now less than three days. Six months into the project, the readmission rate was down from 13% to 11%; it is now less than 10%.

"One thing that's been really exciting is the performance of the clinic," Schoenrock adds. The readmission rate for the CHF clinic is 2.2%

"The administration realized early on that running a clinic might mean a loss at the start, but they also knew that if we reduced readmissions and improved outcomes, it would pay for itself," Lockwood says.

And in fact, Preller adds, "Our clinic is now running in the black."

Improvement efforts continue

The Evergreen team is not content to rest on its laurels. "We're starting to go into the nursing homes and educate them, to help prevent future patients from being readmitted," she says.

In addition, one of the original goals was to work with Vossler to make sure all core measures were backed in to the data and they all are automated. To date, that has not happened.

However, according to Schoenrock, "We now have a disease management data tracking system installing as we speak; it's just moments away."

Another critical ongoing effort, she continues, is the CHF report card sent to the physicians. "It's very comprehensive, and the doctors can use it to measure themselves against their peers," adds Schoenrock.

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Both Lockwood and Preller underscore the benefits of their collaboration in this successful initiative.

"The skills I brought to the table were guiding principles, bringing folks together and project managing," Lockwood says. "I was the one constant, keeping focus, bringing people together, doing a lot of groundwork, and helping to analyze the data."

"The other thing is, [Lockwood] was really able to bring her experiences from other places to help us sell the project to administration, to convince them to put in the money and the staff time necessary to make the project successful," Preller adds.

Lockwood previously worked for Delmarva Foundation, which is the peer review organization that manages Medicare and Medicaid in the Washington, DC, and Maryland region.

"She could tell them that from her previous outside experience, this was worthwhile. She was also able to help focus us, and to make sure the right people did the right jobs," Preller notes. ■

Survey finds hospitals lagging behind on safety

Progress made on wrong-site surgeries

The results are mixed in the first-of-its-kind survey of hospital safety practices conducted by The Leapfrog Group, a Washington, DC-based organization founded to promote improvement in health care safety.

The Leapfrog Hospital Quality and Safety Survey, which included responses from more than 1,000 hospitals, is the first to include measures that cover all 30 of the safety practices endorsed by the National Quality Forum (NQF). (The safety practices can be found on the NQF web site, www.qualityforum.org.)

"My general reaction is that while we have made some progress in agreeing on what practices should be implemented universally to reduce mistakes; we are lagging behind where we should be in terms of actually *implementing* those practices," says **Suzanne Delbanco**, PhD, CEO of The Leapfrog Group.

"NQF's release of its report identifying the 30 practices for safer health care was the impetus for the survey," she continues. "The NQF said, 'Here are 30 practices that should be instituted everywhere. We were already collecting data on three [computerized physician order entry, ICU (intensive care unit) physician staffing, and evidence-based hospital referral], but 27 were not touched. We felt if we wanted to have a national consensus, we should collect data on all of them, so consumers can see which hospitals do and don't practice them."

Key Points

- Survey is first to include measures covering all 30 NQF-endorsed safety practices.
- Protocols, policies, and procedures found lacking in many different areas.
- Survey questions designed to help hospitals focus on potential areas of improvement.

Good news, bad news

The Leapfrog survey did show significant progress in two areas:

- Eight in 10 hospitals have implemented procedures to avoid wrong-site surgeries.
- Seven in 10 hospitals require a pharmacist to review all medication orders before medication is given to patients.

Even here, Delbanco, says, there still is room for improvement. "Of course, they all should be 100%," she asserts. "But what really worries me is that some patients go to a hospital where there are no protocols in place. What's good is that there *is* a lot of attention on wrong-site surgeries, for example; hospitals have responded, and policies are in place."

In many other areas, however, that is *not* the case. Leapfrog cites four examples of areas that still need improvement — not, Delbanco emphasizes, because they are particularly egregious or because they rank high on Leapfrog's priority list. Rather, they simply illustrate the kind of advances that still must be made:

- Seven in 10 hospitals report they do not have an explicit protocol to ensure adequate nursing staff or a policy to check with patients to make sure they understand the risks of their procedures.
- Six in 10 lack procedures for preventing malnutrition in patients.
- Five in 10 report they do not have procedures in place to prevent bed sores (pressure ulcers).
- Four in 10 hospitals lack policies requiring workers to wash their hands with disinfectant

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before and after seeing a patient.

"It would be most interesting to ask the hospitals why [they have not adopted these policies and procedures]," Delbansaysdds. "If I had to guess, I'd say that some of these are so obvious that it may not occur to hospitals that they have to take the time to establish policies and procedures and see if everyone is following them. Take hand washing, for example: The institution may think it's so obvious that it's not necessary to take time to see if they have a policy about that, or if they have stations where staff can wash."

Survey offers roadmap

It was Leapfrog's intent that the very structure of the survey spur hospitals to make safety improvements. "We designed a section of the survey as a kind of roadmap; the very process of filling it out may lead hospitals to take steps they might otherwise not have taken," Delbanco observes.

For each of the 27 safety practices addressed, she explains, the respondent is asked four specific questions:

- How aware is the hospital of its performance?
- Please comment on whether anyone on staff is held accountable for performance in that area, i.e., is their compensation tied to quality metrics?
- Has the hospital been able to improve its performance?
- What actions has it taken to improve its performance?

"By answering those questions, they may say, 'Gosh, maybe we *should* be measuring these things or have ties to compensation,'" Delbanco points out. "Or, if they do not know how to do something, they may be inspired to seek outside help. It almost leads people through a work plan."

Leapfrog does not have a strict schedule concerning future surveys. "As research comes out and makes strong suggestions for us to revise our recommendations, or new standards come out, we will expand it," she says. "Right now, the plan is to release another survey in 2006." ■

Tailored anesthesia aids safety post-surgery

Longer-term outcomes also may be improved

Tailored doses of anesthesia can improve the safety and quality of patient care dramatically during and immediately after surgery, and may even reduce postoperative mortality rates in the longer term, report physicians from the Medical College of Georgia and MCG Health System in Augusta. They reported some of their latest findings Oct. 26, 2004, at a meeting of the American Society of Anesthesiologists (ASA).[1]

"Ensuring patients receive just the right amount of anesthesia may have a more dramatic impact on the safety and quality of patient care than previously thought," observes **James B. Mayfield**, MD, director of perioperative services and vice chairman in the department of anesthesia at MCG, and lead author of the study.

"Tailored anesthesia" refers to dosing based on medical condition, the drugs the patient is taking, and so forth, he adds. The study, based on a yearlong quality improvement initiative in MCG's ORs, included adoption of an advanced brain-monitoring device called BIS technology.

BIS stands for bispectral analysis, Mayfield explains. "The device essentially monitors brain waves acquired from the patient's forehead, runs the data through a sophisticated analysis in a computer box near the patient, and creates a reading of 0-100." A reading of 100 indicates the patient is completely awake, and 0, completely asleep. "Between those are varying degrees of sedation," he declares.

Not first use of BIS

Mayfield has been using the BIS for many years, notably, at Massachusetts General in Boston, where he was director of ambulatory

Key Points

- Bispectral analysis technology enables more precise measuring of depth of consciousness.
- The more traditional method, vital signs, now is seen as too nonspecific.
- Patients awaken sooner, respond quicker, and experience less nausea, vomiting, and pain.

surgery. "We showed some wonderful effects of being able use less medication, wake the patient up quicker, do better overall — but that was in an ambulatory setting," he explains.

"Here, we wanted to see if it would work in an entire operating room, and this study also helped us figure out the effects of titration on short-term outcome in the recovery room. We found if the doses were tailor-made, all those parameters greatly improved," Mayfield adds.

The patients were kept at a depth of consciousness of somewhere between 45 and 60. "Research has shown if you do that, you have maximal benefit for post-op outcomes," he notes. "If the patient is too light, there is awareness and perturbations in vital signs. If they are too deep, it takes longer to wake up, you use more sedation, there is post-op nausea and vomiting, cognitive deficits, and so forth."

The measures the researchers looked at were pain therapy, nausea and vomiting, temperature, alertness and orientation, cardiovascular status and care, and respiratory status and care. Improved outcomes were shown for all measures, and only the improvement for respiratory status and care was not statistically significant.

In short, the BIS-guided anesthesia care enabled patients to wake sooner; respond quicker; experience less nausea, vomiting, and pain; go home sooner; and have fewer postoperative cardiovascular problems.

"It was kind of shocking to us to think that just managing patients [in this manner] could have such a profound effect in the operating room," Mayfield comments.

More traditional methods of determining the proper amount of anesthesia involve taking vital signs. "Research has shown that vital signs are fairly nonspecific for deciding what dosage to give patients," he asserts.

"With BIS, you track the amount of anesthesia given at a given time; if the patient has a number higher than 60 or 65, you give them more anesthesia, and if they are too deep, you let off. It enables you to titrate to the specific needs of the patient," Mayfield notes.

The dosages stayed within a tighter range, and thus, less medicine was used than previously was used without the BIS, he points out. "When you use vital signs, you tend to overdose the patient a bit. With the BIS, using brain signs you know exactly how much to give; you use less, and the patient is safer."

The BIS, which is manufactured by Aspect Medical Systems Inc., of Newton, MA, is "fairly inexpensive compared with many medical devices," Mayfield explains. "Many hospitals could use it."

Co-author urges caution

While the study also indicated the BIS may even improve post-op mortality rates in the long run, **Steffen E. Meiler**, MD, associate professor, vice chairman of research and director for the program of molecular perioperative medicine and genomics in the department of anesthesiology and perioperative medicine at MCG and one of the paper's co-authors, warns, "We have to be very careful of this. This is a very early finding that came about as a surprise from Terry Monk's data at Duke.[2] It opened up the very intriguing question about whether perioperative patient management does have impact long-term."

One of the challenges, he notes, is that other factors, such as inflammatory response, may have significance in post-op mortality rates. Drugs such as statins, for example, have been shown to be effective in controlling inflammatory responses. Some beta-blockers also have been shown to have a long-term effect on the inflammatory response.

"The BIS is a different story; all we can say in that there appears to be a correlation between long-term death and the depth of anesthesia. The research shows the more time you spent as a patient with a lower BIS value, the higher seems

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the likelihood for a bad event or even death in the long term."

While other factors may be playing a role in long-term survival, "The data are tantalizing enough to go after 40,000 to 50,000 deaths in the U.S. each year we could avoid by reducing mortality by just 5%," he concludes.

References

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2. Monk T, Sigl J, Weldon BC. Intraoperative BIS™ utilization is associated with reduced one-year postoperative mortality. *Anesthesiology* 2003; 99(suppl):A1361. ■

NEWS BRIEFS

Strides made in patient safety, experts say

Experts participating in a recent panel discussion of progress in patient safety since the Institute of Medicine's (IOM) landmark 1999 report on medical errors, *To Err is Human*, said significant strides have been made in the five years since the report but that much more needs to be done to make health care safer. Participants in the event, sponsored by the Boston-based Institute for Healthcare Improvement (IHI), included three authors of the report: Donald Berwick, MD, IHI president and CEO; Janet Corrigan, senior board director for Health Care Services at the IOM; and Lucien Leape, MD, adjunct professor of Health Policy at the Harvard School of Public Health.

To promote continued progress, the panelists called for uniform and clearly defined patient safety goals and evidence-based measures to reach them; patient safety training in medical and nursing school curricula; more robust public reporting, both voluntary and mandatory; financial incentives for investing in health information technology; and reforms to encourage more open discussion about errors. A transcript of the discussion is available at: www.ihi.org/ihi. ▼

Survey helps measure hospitals' safety culture

Agency for Healthcare Research and Quality (AHRQ) has unveiled a new tool to help hospitals and health systems evaluate employee attitudes about patient safety in their facilities or within specific units.

The *Hospital Survey on Patient Safety Culture,* released in partnership with Premier Inc. (with offices in San Diego; Charlotte, NC; Oak Brook, IL; and Washington, DC), the Department of Defense, and the American Hospital Association, addresses a critical aspect of patient safety improvement: measuring organizational conditions that can lead to adverse events and patient harm.

Assessments of patient safety culture typically include an evaluation of a variety of organizational factors that have an impact on patient safety, including awareness about safety issues, evaluating specific patient safety interventions, tracking changes in patient safety over time, setting internal and external benchmarks, and fulfilling regulatory requirements or other directives.

The *Hospital Survey on Patient Safety Culture* includes the survey guide, the survey, as well as a feedback report template in which hospitals can enter their data to produce customized feedback reports for hospital management and staff. These items provide hospitals with the basic knowledge and tools needed to conduct a safety culture assessment and suggestions about how to use the data.

The survey was pilot tested with more than

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- JCAHO's pay-for-performance principles: An end to the confusion?

1,400 hospital employees from 21 hospitals in the United States to ensure that the items were easily understood and relevant to patient safety in a hospital.

To ensure widespread awareness and use of the survey, AHRQ and its partners will host a toll-free audioconference this month to help health professionals adopt and use the survey. Details on the audio conference will be made available on the AHRQ web site and AHRQ's electronic newsletter in early January.

To see the survey, go to www.ahrq.gov/qual/hospculture/. To order printed copies, call (800) 358-9295. E-mail: ahrqpubs@ahrq.gov. ▼

NDEP publishes two evidence-based guides

The Bethesda, MD-based National Diabetes Education Program has published two evidence-based guides for health care to help providers and patients with diabetes and pre-diabetes. *Guiding Principles for Diabetes Care* helps providers identify people with pre-diabetes and undiagnosed diabetes and provide patient-centered care. *4 Steps to Control Your Diabetes for Life* helps providers educate patients in vital self-care principles and to be active partners in their own care.

Information for children and high-risk minority populations also is available, including materials in Spanish, Asian, and Pacific Islander languages. For more information, go to: www.ndep.nih.gov. To order one of the guides, call (800) 438-5383. ▼

Nursing informatics groups form alliance

Eighteen organizations representing nurses who work in nursing information technology have formed the Alliance for Nursing Informatics, which will collaborate on public policy and standards activities and the dissemination of best practices.

Affiliating organizations include the American Medical Informatics Association (AMIA), the Healthcare Information and Management Systems Society (HIMSS), and the American Nursing Informatics Association.

"As more health care organizations adopt electronic health records and technology solutions, nurses who manage and work in the nursing informatics field have increasingly vital roles in designing and implementing systems that enhance the safety and efficiency of patient care," says **Joyce Sensmeier**, RN, HIMSS' director of professional services. AMIA and HIMSS each will appoint a co-chair to the new organization. ■