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RELIAS MEDIA

Precautions in Surgery Centers Can Save Patients With Malignant Hyperthermia

Certain patients carry a rare genetic predisposition to a disease that could kill them during surgery.

Called malignant hyperthermia (MH), common anesthesia agents can trigger the pharmacogenetic condition. It is a tricky condition to diagnose as it can appear to be something else and can continue to worsen, unrecognized, until a patient is close to cardiovascular collapse and death.

Surgery teams might have only a few minutes to recognize the symptoms and act to save a patient's life, says **Joseph Tobin**, MD, board member with the Malignant Hyperthermia Association of the United States.

MH is a hypermetabolic reaction to volatile anesthetics such as isoflurane, sevoflurane, or desflurane or the administration of succinylcholine with or without the introduction of an inhalation agent.

Although few people die from the disease, thanks to better emergency preparedness among hospitals and

surgery centers, any operating room (OR) death can be traumatic for surgery teams. The victims often are young, healthy, and even athletic.

According to a 2008 study of 20 years of data related to MH injuries and deaths, reported in the North American Malignant Hyperthermia Registry, the median age of patients who experienced cardiac arrest due to MH was 20 years. Patients with a muscular build were more likely to go into cardiac arrest and die during surgery.¹

For example, one recent case involved a teenage athlete undergoing elective orthopedic surgery on his ankle. The teen quickly showed signs of MH. The OR team administered dantrolene, a drug used to reverse symptoms, but it did not stop the crisis. The young man died despite the OR staff's interventions.²

Most patients with MH show physiological signs that the surgery team could catch early enough to diagnose and provide emergency treatment. But a small number of these patients might

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reach a crisis point within minutes, Tobin says. Preparation is key to patient survival.

“The crisis of the malignant hyperthermia syndrome is a hypermetabolic crisis, and the process must be stopped as quickly as possible,” Tobin says. “The high potassium and fever must be counteracted.”

OR staff education on malignant hyperthermia, combined with an MH cart, is what saved the life a 5-year-old girl whose tonsil surgery quickly turned into a medical crisis, says **Terri Passig**, BSN, CPAN, CCRN, CPAHQ, regulatory consultant with Orlando Health. Passig was working for a children’s hospital about five years ago when the little girl was given anesthesia for a tonsillectomy, adenoidectomy, and the placement of ear tubes.

“It’s a very short surgery, and the OR staff noticed problems with her carbon dioxide level going up and not responding to their intervention,” Passig says. “At first, they tried to increase her ventilation with 100% oxygen. They tried to increase the anesthetic gasses because sometimes a patient’s body is trying to fight [sleep], and the CO₂ levels go up.”

But the girl did not respond to those changes. Staff decided to test

her blood. Someone moved her wrist and noticed that it was slightly rigid. That was when someone said it could be MH.

“Then, they gave her dantrolene, and she responded very quickly,” Passig says.

Using the MH cart, the OR staff gave the girl ice packs to lower her temperature. The cart also contained additional resources, including a refrigerator for cool IV fluid, tubes and lines, Foley catheters, irrigation fluids, and lab tubes for drawing lab specimens.

MH was first described in medical literature in the 1960s when multiple members of one family died under anesthesia. No one understood the etiology of the family’s deaths, but they assumed the deaths were related to anesthesia, Tobin explains.

“In the United States, it was noted that pigs transported across the country had a significant percentage die from what appeared to be a heat-related illness,” he says. “The environmental heat stress of being transported in big tractor-trailers triggered porcine stress syndrome, a similar condition.”

That discovery gave scientists an animal model to test potential drugs in humans. By the end of the 1970s, there was a drug, dantrolene, approved to treat cases of malignant

EXECUTIVE SUMMARY

Malignant hyperthermia (MH) is a rare and sometimes deadly disease that is difficult to diagnose and treat unless surgery centers have undergone proper training and prepared the right way.

- Surgery teams might have only minutes to react once the condition is first apparent.
- MH is triggered by volatile anesthetics and succinylcholine and can be avoided by using the clean technique.
- Dantrolene is a drug that can be used to reverse symptoms, but ORs must keep the drug in stock to ensure it reaches the patient in time.

hyperthermia, according to Tobin. Dantrolene is a drug that stops the release of calcium inside the muscle cells and causes the hypermetabolic reaction to discontinue. The drug does not always stop the patient's reaction. If he or she has a high fever or high levels of potassium, it still is possible for the patient to experience cardiac collapse.

Sometimes, surgery patients die from MH because the OR was unprepared for the crisis. There might not be dantrolene on site, or employees were not trained to recognize the earliest signs of the condition. Preventing these crises and deaths begins with staff education and training, Passig says. "We've started doing simulations at our hospital involving anesthesia and a simulated crisis."

Surgery centers need to be more aware of MH and ready to act when a patient shows symptoms, Passig adds. One way they can prepare is to

keep dantrolene in stock. Both Tobin and Passig note that while the drug is costly, it is necessary to protect patients' safety.

"In hospital and outpatient surgery settings, there are defibrillators, which are expensive, but they're there when you need them," Passig says. "From the patient's perspective, dantrolene is the same. They might say, 'Are you trying to tell me that our life is not worth \$3,000 if something happens to us when we're in here?'"

Surgery centers might never use dantrolene, but better safe than sorry. "You don't want to wait to have someone die before stocking it," Passig offers.

Staff education is crucial to identifying MH quickly enough to save lives. One way surgery centers can improve staff's knowledge of MH is through holding mock drills, Tobin says.

"The Malignant Hyperthermia Association of the United States

supports mock drill calls when someone does a MH drill and is put in contact with an expert," he says. "You also can have an MH expert visit your facility, go over your MH preparedness, and supervise an MH-simulated event — an MH prep check." ■

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Malignant Hyperthermia: Causes, Alternative Diagnoses, and Treatment Techniques

Patients who experience malignant hyperthermia (MH) in the OR are genetically predisposed to the condition. However, they may be unaware they are susceptible. It is a pharmacogenetic disease that usually becomes a crisis after a pharmaceutical trigger.

"The common drugs that trigger malignant hyperthermia are the volatile anesthetics and succinylcholine," says **Joseph Tobin, MD**, board member with the Malignant Hyperthermia Association of the United States. "The crisis begins with the skeletal muscle cells, beginning to contract and not relaxing, which causes them to

deplete their energy stores," Tobin explains. "Normally, once you are paralyzed, your muscles should be fully relaxed. But in these cases, the muscles contract anyway, and there's a problem from inside the cell."

As the muscles contract, they deplete their energy supply, a process that is happening without the OR team's knowledge, at least at first. "It can be asymptomatic for the first few minutes," Tobin notes. "Then, as the cells deplete their energy, the membranes become unstable and the cells die." This process results in the cells releasing potassium, acid, or lactic acid and heat. "These problems cause an increased heart rate, a

variable blood pressure, and increased carbon dioxide, which is reflected in the expired carbon dioxide, measured by the anesthesia team," Tobin says.

When the OR team sees that a patient's carbon dioxide has increased, it is a sign that something might be amiss.

"They don't know that the patient is significantly ill yet," Tobin notes. "It's just the beginning of what's happening. If it's unrecognized, the process continues."

If the process proceeds, the patient's potassium level can rise, leading to cardiac dysrhythmias. Still higher, the patient could suffer cardiovascular collapse and death.

When surgery teams are trained to identify signs of MH, they might suspect MH when they see the rising carbon dioxide level, and monitor the patient's heart rate trend while under anesthesia, watching for unexpected changes, Tobin says.

"If lab testing is available, they could measure serum electrolytes and the blood gas," he adds. "But, if it's not available, the anesthesia team must consider alternative explanations for the elevated heart rate and carbon dioxide levels."

There are several potential alternative causes of rising carbon dioxide levels:

- **Caused by laparoscopic procedure.**

"One thing we often do in outpatient surgery is laparoscopic procedures, including gallbladder removal," Tobin says. "Tiny punctures push carbon dioxide into the body, which absorbs it, and it's exhaled as CO₂."

- **Sepsis.**

This is a difficult diagnosis when a patient is under anesthesia, and there might not be a fever with either sepsis or MH, Tobin notes.

Sometimes, OR patients develop sepsis as the result of kidney stone procedures in which an ultrasound machine is used to break up the stones, he explains.

"We provide anesthesia for these patients because it's painful," Tobin says. "Sometimes, behind the stone there is an infection. When the stone breaks open, the infection is released from the area where it is located and it gets into the blood stream."

An estimated 5% to 10% of the hotline calls received by the Malignant Hyperthermia Association are associated with lithotripsy, outpatient procedures to break up kidney stones, Tobin says. "When in doubt, we treat for both sepsis and malignant hyperthermia by using antibiotics and the rescue drug dantrolene."

- **A malpositioned endotracheal tube.**

If the patient's breathing tube is not placed well or ajar, then the patient might not be ventilating appropriately, which could lead to increased carbon dioxide. One way to determine that the endotracheal tube is malpositioned is to listen to the patient's breath on both sides of the body, Tobin says.

"It takes a couple of minutes to assess," he says. "If it's put in too far, you can diagnose it by markings on the endotracheal tube that tells you it is in too far."

- **An obstructed airway.**

"An obstructed airway could cause it," Tobin says. "If you have a big

patient, the person might relax and go to sleep, obstructing their own airway in the neck because they're heavy and the muscles are relaxed."

This also causes snoring and CO₂ levels to build up. The OR team can determine if an obstructed airway is causing the CO₂ rise by listening to the patient's breathing sounds, such as wheezing or stridor, Tobin suggests. "Also, measure the exhaled tidal volumes," he adds. "Too little volume means the airway is obstructed."

Physicians and surgery centers could prevent a malignant hyperthermia crisis by identifying patients who might be susceptible to the condition. For instance, all patients could be screened for a family history of anesthesia intolerance. Also, patients who have been hospitalized for exercise-induced rhabdomyolysis and severe muscle cramping could be at risk of MH, Tobin says.

The good news is that if a patient has a history of MH or a history that suggests susceptibility, the preventive action is to use clean technique, an anesthesia approach that does not include volatile anesthetics or succinylcholine.

"If a surgeon knows of a patient's potential for malignant hyperthermia, then tell anesthesia ahead of time to use clean technique," Tobin says. "The induction and maintenance of anesthesia [in clean technique] is most commonly performed with propofol and an opioid. Propofol will keep you asleep, and the opioid will take care of pain. If we need to paralyze someone, we can use a paralyzing drug in another class."

The alternative drug could be a nondepolarizing neuromuscular blocker. If a patient's family history suggests MH or if the patient has visited the ED because of severe muscle cramping, Tobin says he

EXECUTIVE SUMMARY

A MH crisis begins with the skeletal muscles contracting and not relaxing. This causes them to deplete their energy stores, which leads to the membranes becoming unstable and cells dying.

- For the first few minutes of the crisis, the process is asymptomatic.
- As cells release potassium, acid, or lactic acid and heat, the patient may experience an increased heart rate, variable blood pressure, and higher carbon dioxide levels.
- When the OR team sees that a patient's carbon dioxide has increased, it is a signal that something is wrong.

would use a clean technique for that person's surgery. "Not everyone would agree with that," he says.

But there is some science suggesting that ED patients with exercise-induced rhabdomyolysis who were biopsied for MH were susceptible to the condition at a ratio of 45 out of 100 vs. a general population susceptibility of one in hundreds to 1,000 people, Tobin adds.

There is a genetic screening test that can be sent to a genetic reference lab, but it is only 40% sensitive, Tobin cautions. "A positive test is helpful, but a negative test is of no information at all."

A biopsy test is the gold standard for diagnosing MH, but it is costly, challenging, and available at only five centers in North America, including

the MH Biopsy Testing Center in Winston-Salem, according to Tobin.

"It's a physiologic test done on living tissue, taken from the operating room and immediately delivered to the testing laboratory," he explains. "The biopsy is taken from the outer thigh, three to four inches long, and it's teased into small fascicles. Then, the muscles are made to contract by exposure to caffeine and halothane."

The five centers perform about 150 to 200 biopsies for MH per year, Tobin says. Since the screening biopsy is so difficult for patients to procure, it is unreasonable to ask possibly susceptible patients to obtain the test before surgery.

A better precaution is to ask at-risk patients to undergo their procedures in surgery centers that are prepared for a MH crisis, including the ability

to use the clean technique, Tobin suggests.

Also, the FDA recently approved an activated charcoal filter that could absorb volatile anesthetics that patients exhale, reducing the volume of anesthetic agents that patients might rebreathe. The filter costs about \$60 per patient, making it most useful for patients at high risk who are in a MH crisis, Tobin says.

"Another technology advance is that the FDA approved a new formulation of dantrolene, which can deliver 250 mg in 5 milliliters vs. older formulations, which deliver 20 mg in 60 milliliters," he says. "It's faster. If you're in an outpatient surgery center, and MH begins to happen, it will take 30 seconds for the new formulation to work vs. minutes with the older formulation." ■

Nurses Play Vital Role in Evolving Surgery Center Culture

Nurses can lead efforts to change surgery center culture to focus more on patient-centered operations.

For instance, in a patient-centered culture, surgery center staff thinks of the patient and family as part of the team, says **Deanna Collins**, RN, MSN, CCRN, charge nurse, ICU, at St. Charles Health System in Bend, OR.

"In a changing culture, families are not visitors anymore," she says. "We can change our concept of how important the whole team is and how important the family is as part of that team."

Collins offers a few examples of how nurses and organizations can shift to patient-centered operations:

- **Introduce the entire team.** "Do you introduce the entire team when someone enters the OR?" Collins

asks. "Sometimes, if you go into the OR with the patient, nurses could have their backs to the table, and they might not turn around to meet the patient."

A patient-centered approach calls for a nurse to make an introduction to the patient and introduce the patient to the entire team. "She

could say, *I'm Deanna, and I'm going to be taking care of you today. Josh, over here, is going to take care of you, too,*" Collins says. "Do you have any concerns or questions before we start?"

The simple courtesy of an introduction can make a big difference in patient satisfaction scores, she adds.

EXECUTIVE SUMMARY

Nurses can lead and help change a surgery center's culture to one that focuses around patients and their families.

- One simple way to embody this culture change is to introduce the OR team to the patient when the patient enters the room.
- Another technique is to include families in the recovery room and to ask them what they observe as the patient is recovering from the procedure.
- It also is important for nurses to take a few minutes to sit, look patients in the eyes, and listen to their concerns and questions.

• **Include families in the recovery room.** “Something we’ve always done in pediatric operations is allow the family in, but we don’t necessarily do that with the elderly population,” Collins says.

The family’s presence could be helpful to patients *and* the surgery team. For example, if a patient is delirious coming out of surgery, the team might not know if this is a new symptom or the patient’s baseline because of the onset of Alzheimer’s disease, she explains. The family can provide answers. Some hospitals and surgery centers might direct a nurse liaison to provide information to families as they wait. Other facilities maintain an electronic board that provides families updates vs. displays with the patient’s code, Collins says. “You can look at the board and see that the patient is in preop, the OR, or the recovery room phase,” she says. “It will say when visitors are allowed.”

Families appreciate transparency, and they like feeling they are part of the team. Their feedback should be sought, as it is useful. “We could have a stoic gentleman as a patient, and only his wife or child would know that he’s really hurting,” Collins notes. It is critical to change the culture from one of doing something for patients to a culture of doing this with patients and their families, Collins adds.

• **Promote dignity and collaboration with patients.** “This starts with leadership,” Collins says. “Any system has to assess what barriers they have.” For instance, does workflow design

allow for more patient-centered care? Are nurses’ and other employees’ greetings and instructions to patients designed to allow for a conversation? Do you discuss the patient’s stress about surgery and their concerns regarding potential risks?

• **Set workflow patterns to allow time with patients.** “It shouldn’t be a cattle call,” Collins says. “Spend time with patients, and it doesn’t have to be long,” she notes. “It could be less than five minutes.”

The point is to take time to sit and listen to patients, making eye contact. “Make that bond to try to get more information,” Collins suggests. “I’ve seen families go from being super angry and super scared to being fine within four minutes. Just open a chart, sit with them, and look them in the eyes. It takes a lot of stress out of it.”

• **Educate staff.** Organizations should know their own barriers through process improvement groups and practice committees. Most employees, including nurses, hate change. Educating employees about ways to be more patient- and family-focused requires some small steps with follow-up, Collins says. “It’s just having a set of principles, defining them, and putting them into our practice.”

• **Demonstrate patient-centered actions.** It also helps if leaders are demonstrating how the culture change can work. For example, some nurses simply do not want to engage with the family when they are busy with their recovery room work. This

is where a leader can handle that simple task for the nurse, she says.

“I just come in the room, greet the family and patient, and say, ‘Hi, is there anything I can do for you?’” Collins explains. “It takes me two minutes, and it eliminates the nurse’s stress. The family goes back to their phone or magazine, and the nurse is a lot happier.”

Leaders can link organizational strategies directly to daily work, she says. “The organizational strategy should be reflected in what bedside staff do. It would be nice to talk to staff the way you want them to talk with patients and families.”

At weekly staff meetings, leaders can touch on the patient-centered strategy and align priorities. “We try to make progress and develop goals that reach down to staff so they’re tangible,” Collins adds.

• **Emphasize cultural sensitivity.** “Make sure staff has competency in handling cultural differences,” Collins says. For instance, some patients might want sage in the room.

“See what we can do for them in the operating room; learn what’s important to them,” she suggests. Once, a family wanted the patient to hold a medallion. Since the patient’s hand was not part of the procedure, the staff allowed it.

• **Start a patient and family advisory committee.** This group can help the organization with changes and standards.

For instance, the committee members could provide input on patient lounges and waiting areas, expressing what kind of environment they would like to experience while they are waiting.

“Ask members of the community to be on the committee,” Collins suggests. “We had two long-term patients who agreed to help us, and we had volunteers.” ■

COMING IN FUTURE MONTHS

- Surgery centers must address OR smoke hazard
- Nurses can raise their emotional intelligence
- Best practices for manual scope cleaning
- Software upgrades can improve workflow

Proposed OPPS ASC Rule Could Mean New Procedures for Surgery Centers

The recently proposed Medicare hospital outpatient payment rules encourage site-neutral payment between some Medicare sites of service and push for price transparency in hospitals.

The CY 2020 Medicare Hospital Outpatient Prospective Payment System (OPPS) and Ambulatory Surgical Center Payment System Proposed Rule, published on July 29, 2019, is moving toward more transparency, as directed by President Trump's executive order on improving price and quality transparency in healthcare.¹

The rule would remove total hip arthroplasty from the inpatient-only list, making it eligible for payment by Medicare in the outpatient setting. Total knee arthroplasty, knee mosaicplasty, and three more coronary intervention procedures could be added to the ASC-covered procedures list. OPPS payment rates could be updated by 2.7%. Further, CMS is proposing to continue to pay an adjusted amount of the average sale price, minus 22.5% for certain separately payable drugs or biologicals acquired through Section 340B of the Public Health Services Act.

The Centers for Medicare & Medicaid Services (CMS) gave hospitals and others until Sept. 27, 2019, to comment on the proposed rule.

"We see the new provisions in the proposed rule as carrying forward what we see as a good trend of CMS recognizing the quality and value of surgery center setting and increasingly moving procedures our way," says **Bill Prentice**, JD, MGA, CEO of the Ambulatory Surgery Center Association. "It's nice that CMS is seeing the data and proposing to

allow ASCs to perform total knee procedures for Medicare patients. They also proposed to move some cardiac procedure codes to our payable list."

For both orthopedic and cardiac procedures, CMS has proposed allowing ASCs to perform these for Medicare patients after such centers have demonstrated some evidence those procedures have been performed safely in those settings for patients covered by commercial insurance.

"We've seen a slow and steady increase in the number of surgery centers that are doing procedures like total joints, and they're slowly increasing as clinicians are comfortable with finding the right patients and bringing them to the surgery center," Prentice observes. "We're making sure we have the right protocols to bring patients home within 24 hours."

The change toward greater transparency will require hospitals to

make their standard charges public and online. Each hospital must list all standard charges for items and services provided by the hospital, including negotiated charges for some services and charges for diagnosis-related groups (DRGs).

Shortly after CMS released details of the proposed OPPS rule, the American Hospital Association (AHA) expressed concern in a statement.²

"Mandating the disclosure of negotiated rates between insurers and hospitals is the wrong approach," AHA CEO **Rick Pollack** said in the statement. "Instead, it could seriously limit the choices available to patients in the private market and fuel anticompetitive behavior among commercial health insurers in an already highly concentrated insurance industry."

Hospitals that serve vulnerable communities will suffer under the proposed rule's continuation of cuts in payments for 340B drugs,

EXECUTIVE SUMMARY

The Centers for Medicare & Medicaid Services (CMS) has published its latest changes that affect surgery centers in the CY 2020 Medicare Hospital Outpatient Prospective Payment System (OPPS) and Ambulatory Surgical Center Payment System Proposed Rule.

- Published July 29, 2019, the proposed rule incorporates changes directed by President Trump's executive order on improving price and quality transparency in healthcare.
- The proposed rule also would remove total hip arthroplasty from the inpatient-only list so the procedure could be performed for Medicare payment in the outpatient setting.
- Total knee arthroplasty, knee mosaicplasty, and some coronary intervention procedures would be added to the ASC-covered procedures list.
- The American Hospital Association expressed concern about the proposed changes, arguing that mandating the disclosure of negotiated rates between insurers and hospitals is the wrong approach.

according to Pollack. “The AHA, along with other hospital associations and member hospitals, successfully challenged the previous cuts to the 340B program in court,” he said. “Now that the court has ruled that those cuts are illegal and exceeded the administration’s authority, we urge CMS to refrain from doing more damage to impacted hospitals with another year of illegal cuts.”

Further, Pollack argued the entire proposal exceeds the administration’s legal authority and should be abandoned. (*Editor’s Note: AHA’s media office said that no further comments or interviews would be available regarding the proposal beyond Pollack’s statement.*)

From the ASC perspective, the proposed rule’s biggest challenge involves Medicare payment for procedures added to the ASC list.

“The barrier that we foresee, based on the proposed rule, is that Medicare payment for total knee is low,” Prentice says. “Most surgery centers will receive significantly lower payment than what they’re receiving from commercially insured patients. I suspect my members will

want to submit comments on what an appropriate payment will be. The closer it is to payment on the commercial side, the quicker they will want to bring those patients to the ambulatory surgery center.”

ASCs’ payments for surgeries involving implants already are challenging for their bottom lines. For instance, sometimes the payment could be less than the cost of the implant, Prentice notes.

“We’ve been working with CMS to see if they can pay separately for the procedure and the implant/device,” he says. “We’re working with CMS so that more of these device-intensive procedures, when done in the ASC, have a device cost that is not a barrier to bringing the surgery to the surgery center.”

Also, there remains a reimbursement discrepancy between hospital surgeries and ASC surgeries. “ASCs are paid about 51% of what the hospital-based surgery centers receive,” Prentice says. “It varies by region, but, on average, about half of what the hospital department receives is paid to ASCs for the same procedure, and that’s not changing.”

Considering this reality, ASCs will focus on adding more Medicare surgeries to their schedule if the reimbursement makes sense financially. “While we can focus on newer procedures like total knee and total joints, the thing is that so many common procedures, like colonoscopies, still are not performed on Medicare beneficiaries in ASCs,” Prentice says. “They’re not being performed in surgery centers because the reimbursement is too low.”

If more of those types of procedures migrated to the surgery center, then Medicare could save billions of dollars each year, he says. ■

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Anesthesia Input Crucial to Quality Improvement

When surgery centers develop quality improvement (QI) programs, they should consider including anesthesia on the team.

Anesthesiologists significantly affect several important measurements in a surgery center’s QI program, including dizziness, falls, and burns, says **Leopoldo V. Rodriguez, MD**, FAAP, FASA, medical director of the Surgery Center of Aventura in Aventura, FL.

“We have significant influence on those [quality measures] because we’re the ones medicating patients.

If they get dizzy, they’ll fall. We also manage the oxygen at the facility. If we give too much oxygen to the patient, then that can cause a physical burn,” says Rodriguez, director of the Ambulatory Anesthesiology Performance Improvement Program and chair of the Ambulatory Anesthesiology Quality Committee – Envision Physician Services in Plantation, FL.

The Medicare Access and Children’s Health Insurance Program Reauthorization Act of 2015 mandated CMS to focus on quality.

The agency has implemented the Quality Payment Program as an incentive-based initiative to reward value.

The program achieves process and outcome measures through its merit-based incentive payment system and the advanced alternative payment models. It was designed to reward high-performing clinicians and help low-performing clinicians improve their practices to improve their value. It also is expected to achieve high-quality care at a lower cost.¹ Professional organizations,

including the American Society of Anesthesiologists (ASA), have developed performance and outcome measures that assist with objective data collection.

Anesthesiologists need a seat at the QI table because there are many areas in which anesthesiologists can contribute to QI. For example, they can develop treatments for patients with sleep apnea, and they can improve patient transfers and enhance care for patients with multiple diseases, according to Rodriguez.

“Things like transfer also are influenced by anesthesiologists because if we select the right patient for a procedure at a facility, it is less likely that the patient will be transferred to the hospital for medical reasons or that there will be a medical complication,” he explains. “The anesthesiologist is managing the entire patient. In the past, patients used to be healthy, but now they’re sicker, and a significant number of patients have multiple diseases — like heart diseases, coronary diseases, pacemakers, diabetes, hypertension, strokes, or simply are old with physical deterioration, which we call frailty.”

Selecting patients properly is one way to reduce medical complications during surgery. Another is to select the proper method of anesthesia for each patient, Rodriguez says.

“Anesthesiologists have to risk-stratify patients,” he advises. “They should select patients who will have surgery in the surgery center and select patients who are less likely to be transferred to the hospital. That’s part of CMS’ conditions of participation.”

The ASA Committee on Ambulatory Surgical Care and the Society for Ambulatory Anesthesia created a technical expert panel that is developing quality measures for ambulatory anesthesiology.

The panel is focusing on developing measures related to assessing and managing blood sugar stability, frailty, and mitigation techniques for obstructive sleep apnea.¹

Anesthesiologists can look at measures like smoking cessation and offer education by phone before surgery to encourage patients to follow smoking cessation programs, Rodriguez says.

“The most significant thing an anesthesiologist does is control the way the patient breathes during surgery,” he explains. “There are several things we do to examine the airway of the patient. If the patient has a difficult airway, then we have algorithms we have to follow, which include having an extra person in the room to manage the difficult airway.”

Another significant presurgery task for anesthesiologists involves paralyzing the patient’s muscles.

“After putting the patient to sleep, we have administered muscle relaxants,” Rodriguez says. “The complication that was happening frequently in patients is that it was difficult to assess patients if they recover from administration of a paralytic a couple of hours later.”

One quality measure is called the muscle relaxation administration assessment of return to normal function. The methodology used to assess the patient’s return from relaxation is subjective. If someone determines the patient is ready and is incorrect, the patient could wake up in the recovery room with weakness and too much pain.

A nurse might give the patient a narcotic medication, as ordered by the anesthesiologist, but that drug could block the patient’s breathing as oxygen levels drop, leading to hypoxia. The patient then would need resuscitation. This scenario

can be prevented with the use of neostigmine, a reversal agent, but there have been shortages of the drug, leading to poor outcomes, Rodriguez notes.

“At the end of an operation, before waking up patients, they’d use neostigmine, but it was difficult to find,” he explains. “Sometimes, patients would stay in the operating room a little longer because of the drug shortage.” Neostigmine was cited by anesthesia professionals in surveys of 2012 and 2013 as one of the drugs most often on their drug shortage list.²

From a QI standpoint, anesthesiologists can review data and documentation. If they notice an increase in patients intubated in the recovery room, anesthesiologists can analyze records and note a possible cause, such as the absence of neostigmine, Rodriguez says.

“You either document the patient’s strength or document that the patient was given a reversal agent to make sure the patient was not weak,” he adds.

Another anesthesiologist’s quality measure relates to nausea and pain. Patients are assessed for risk of nausea. One common assessment tool is the Apfel scoring system for people at high risk of postoperative nausea and vomiting.³ For example, a nonsmoking woman with a history of motion sickness or vomiting who will receive postoperative opioids is at high risk for nausea after a procedure, according to Rodriguez.

“When you use an assessment table, and the patient has three or more of the items listed, then you give the patient two medications to prevent nausea,” he says.

Physicians and surgery centers also share a quality measure related to hypothermia. They have to document at the end of the procedure that the

patient's temperature is normal, above 35.5° C to 36.5° C, he says.

"The importance of this measure is if a patient has surgery, comes out, and is hypothermic," Rodriguez explains. "The patient will be shivering. When you have shivering, that increases the oxygen consumption of the body."

The patient's body is contracting muscles to compensate for the low temperature, reducing blood flow. The wound needs blood flow for the

healing process and to help prevent infection. "From the facility or physician's point of view, the ultimate goal is to improve care by preventing complications," Rodriguez says. ■

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Multidisciplinary Approach Helps With Hand-Off Communication Improvement

A surgery center focused a QI project on communication between OR anesthesia staff and post-anesthesia care unit (PACU) staff after observing issues related to hand-off communication.

"We did research on different methods and came up with four different types of hand-offs that you could use to improve the communication between getting the patient off from one area to the next," says **Sharon Petruzzi**, RN, nurse manager, Susquehanna Surgery Center in Bloomsburg, PA. "We did some education, discussions, and brainstorming with the staff, and we did some trials and found that SBAR fit our organization well," she adds.

SBAR is a communication method that stands for situation, background, assessment, and recommendation. Originally, SBAR was developed by the U.S. Navy as a way to communicate information on nuclear submarines, but the healthcare industry adopted it about 20 years ago. (*Learn more about the tool at: <http://bit.ly/2MIOU>.*)

Project leaders at Susquehanna Surgery Center wanted

communication during hand-off to be accurate, clear, specific, and to provide an opportunity for asking questions and voicing concerns. Using SBAR, the surgery center provided staff with a concise, predictable way of giving reports, using remeasurements.

The project's performance goal was to have 97% of patients transferred from the OR to PACU to have a standardized report during the hand-off from OR to PACU staff. The goal acknowledged the reality of how a new or flex nurse might be working in the OR occasionally, and they might not remember the hand-off goals.

"We focused mainly on orthopedics because we have a large population of orthopedics. That population has more complex issues than some other populations," Petruzzi says. "Also, we knew that the change would be adopted by other specialties as well."

The change included staff education and displaying a laminated description of each element of SBAR. It resulted in a big improvement that has continued since 2017. "After the

first measurement, when we didn't reach our goal, we sat down with staff and discussed reasons why we didn't get to where we wanted to be with the goal," Petruzzi reports. "We did re-education, and they said that sometimes we forget the way things should go."

The laminated signs were created as a reminder. The surgery center used a preoperative phone call checklist to ensure all essential information was collected.

The one-page checklist includes questions such as "Does your primary care provider know you are undergoing this procedure?" and "Did you undergo any abnormal medical tests in the past 12 months?" Also, the list includes results of preop lab work, ECG, and medical clearance; current medications; preop instruction for patients (e.g., what to eat and drink, reminders to bring crutches or contact lenses); and expectations regarding wait times.

Staff discussions helped create buy-in among surgery center employees. It also was the best way to identify solutions because the surgery center's nurses are experienced and bring a lot

to the table, Petruzzi notes. “They are very interested in quality care for all of our patients. I didn’t have a hard time with buy-in.”

The staff meetings and brainstorming sessions were helpful and facilitated the quality improvement process.

“I asked staff, *‘What do you think are the barriers to a good hand-*

off?’” Petruzzi reports. “Some said, *‘Distraction, noise, trying to get ready for the next patient, and things like that.’*”

The more managers involve employees in the QI process, the more likely they will be to embrace changes and the easier it will be to make improvements. It is less stressful for staff to make system and

process changes if they are part of the solution and are not feeling as though changes are dictated from management without their input.

The QI project has resulted in long-term gain, too. “They seem to be following through with the new communication process,” Petruzzi says. “They got into the new habit for a good period.” ■

SDS Manager

Try Changing Your Mind

By Stephen W. Earnhart, RN, CRNA, MA
CEO, Earnhart & Associates, Austin, TX

I have been praised and criticized over the years for saying, “The only thing consistent about our company is our inconsistency.”

There are issues that need changing at all our facilities. Some things you cannot change, such as a policy on patient safety based on a state or federal requirement. We can accept that. What if you changed the requirement that all patients show up 30 minutes before their procedure instead of 60 minutes before? That would be nice for patients, but can staff process all that needs to be accomplished in that time?

What is wrong with changing your mind about a decision that was made earlier? I know I frustrate my own staff by constantly changing the way we interact with clients or processes. I have been accused of changing something simply for the sake of changing something. Still, the business of healthcare is not static. It demands changes and it transforms (for the most part) into something better. Complacency is not compatible with healthcare.

“When you look at things to change, the things you look at change.” Any material changes you, your hospital,

or surgery center make should be thought out carefully and rely on input from sources other than yourself. If, after you have researched the issue and the change will result in a positive outcome for all, then do it. Status quo is boring and kills creativity among your staff. Some examples of changes we have made recently include:

- **New scrubs.** The scrubs at an ASC were wearing out, drab, and boring. They contained no pockets. We recommended the board replace them. We chose to change the color, add the ASC logo to the breast pocket, add cargo pockets to the pants, and include a strip of color across the front of the top.

- **Saturday hours.** Another facility was becoming overwhelmed with cases starting late in the afternoon. The only solution was to add a new wing to the ASC with two more ORs at an unacceptable price. Once the problem was re-examined, leaders decided to open on Saturday and Thursday evenings (even though they had vowed to never open on Saturdays). The extra shifts solved their potentially expensive-to-fix problem.

- **Hire per-diem staff.** A facility was struggling to replace retiring

staff. Still, leaders insisted on only hiring full-time employees. They realized that what worked for them 10 years ago did not work anymore. They changed their mind and hired per-diem, part-time staff members to close the gap. It worked.

These are just some examples of how changing your mind about something can produce positive outcomes. At your next staff meeting, ask everyone to come up with 10 things they would like to change at the facility that would make it work better, ease congestion, reduce cost, or increase job satisfaction. Secure consensus, and then challenge your staff to find a way to fix those 10 items by the next meeting. I am constantly amazed by the suggestions staff comes up with for seemingly daunting problems. Give it a shot. ■

(Earnhart & Associates is a consulting firm specializing in all aspects of outpatient surgery development and management. Earnhart & Associates can be reached at 5114 Balcones Woods Drive, Suite 307-203, Austin, TX 78759. Phone: (512) 297-7575. Fax: (512) 233-2979. Email: searnhart@earnhart.com. Web: www.earnhart.com. Instagram: [Earnhart.Associates](https://www.instagram.com/Earnhart.Associates).)



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CME/CE QUESTIONS

- 1. What is one change proposed under the CY 2020 Medicare Hospital Outpatient Prospective Payment System (OPPS) and Ambulatory Surgical Center Payment System Proposed Rule?**
 - a. Updating OPPS payment rates by 3.2%
 - b. Changing the adjusted amount of the average sale price of certain 340B purchased drugs to -15.3%
 - c. Adding shoulder and elbow procedures to the ASC-covered procedures list
 - d. Adding total knee arthroplasty, knee mosaicplasty, and three more coronary intervention procedures to the ASC-covered procedures list
- 2. How can anesthesiologists engage in quality improvement?**
 - a. They can develop methods to treat patients with language barriers.
 - b. They can suggest more efficient postoperative work flow.
 - c. They can develop ways to handle patients with sleep apnea.
 - d. They can help cut surgical supply costs.
- 3. What is malignant hyperthermia?**
 - a. It is a spontaneous combustion of a person's stomach region.
 - b. It is a pharmacogenetic condition that is triggered by common anesthesia agents.
 - c. It is when a patient's body temperature falls too low, restricting blood flow and resulting in infection.
 - d. It is a quick rise in temperature due to sepsis.
- 4. To change a surgery center's and nursing culture to one that is patient- and family-centered, which question might leadership consider during an assessment of current progress on that goal?**
 - a. Does workflow design allow for more patient-centered care?
 - b. Do leaders treat staff and patients with affection and concern about their personal lives?
 - c. Do nurses offer stress-reduction sessions to preop patients?
 - d. Does the surgery center provide Keurig coffee and other luxuries to patients and families?