

Infection Control & Clinical Quality

5 Strategies for Extracting More Value From Patient Warming

By Lindsey Dunn

For years hospitals have carefully managed expenses in response to various cost containment initiatives. As a result, many of the most obvious opportunities for leaner operations have been leveraged. However, the pressures to deliver improved care at lower costs continue.

Patient warming presents an excellent example of how facilities can glean more value from a current practice without significantly altering procedures or expenditures.

An almost universal intervention

Nearly every anesthetized patient in the U.S. undergoing a surgical procedure of an hour or more receives active warming to maintain normothermia, or normal body temperature. One modality alone, forced-air warming, or FAW, is used in more than 80 percent of U.S. hospitals and treats more than 50,000 patients each day.¹

The clinical benefits of normothermia maintenance are well established, including reduced rates of postoperative wound infections, decreased likelihood of postoperative myocardial infarction and shortened hospital length of stay.² Perioperative temperature management is included in clinical practice guidelines of anesthesia, nursing, surgical and infection prevention organizations worldwide. It also has been part of CMS' Surgical Care Improvement Project and Hospital Compare, the government's public quality reporting website.

Innovative facilities have found ways to extend this largely intraoperative intervention into a pre-op clinical and comfort tool and a contributor to patient satisfaction.

Defining value in new ways

Hospitals have long considered how products will improve or maintain the quality and safety of care in a cost-effective manner. Now the federal government's Hospital Value-Based Purchasing program outlines additional performance parameters with reimbursement consequences.

In fiscal year 2014 (Oct. 1, 2013 through Sept. 30, 2014), the three "domain" scores that comprise a hospital's "total performance score" for the VBP program are:

- Clinical Process of Care Domain (45 percent) — Thirteen measures, including eight clinical measures culled from the Surgical Care Improvement Project.
- Patient Experience of Care Domain (30 percent) — Based on Hospital Consumer Assessment of Healthcare Providers and System survey results, including eight criteria relating

to effective communication, staff responsiveness, pain management, facility cleanliness and quietness, and patients' overall rating of the hospital.

- Outcome Domain (25 percent) — Three measures, including 30-day mortality rates for heart failure, pneumonia and acute myocardial infarctions.³

VBP requirements demand continuous improvement. The reimbursement impact of these measures is significant, yet for most hospitals, there are few additional resources available to pursue them. Here are five ways to make the most of the widespread practice of patient warming.

1. Use patient warming gowns to enhance patient experience

The patient experience domain is a major component of VBP with significant financial consequences for facilities.

An older urban hospital in New Jersey projected potential losses of \$240,000 in 2013 due to low satisfaction scores. An Atlanta facility anticipated a \$230,000 satisfaction-related loss.⁴ Both hospitals sought to bolster scores by improving amenities like adding flat screen TVs in patient rooms and doubling the number of TV channels available.

While better TVs may be obvious improvements from the patient's perspective, they are not clinical enhancements. Additionally, HCAHPS quality indicators, such as clear communication and clean rooms, may be practices patients assume have always been in place. Patients undoubtedly benefit from these important factors; however, they may not perceive them to be personally relevant.

Ideal solutions offer proven clinical outcomes, measurable cost efficiencies and the ability to enhance the patient experience in a way that is immediately apparent to patients.

Forced-air warming, which is primarily an intraoperative practice, is now available in a gown that patients can wear before, during and after surgery. Patients can adjust the temperature of the air flowing through this single-use gown to a level that meets personal comfort needs.

While patients have taken a dim view of traditional hospital gowns, they have reacted positively to forced-air warming gowns. A study of more than 1,800 patients showed that 83 percent of patients preferred the FAW gown (3M™ Bair Paws™ patient warming system) to a standard hospital gown. Patients also said that the warming gown kept them comfortable before surgery (86 percent) and had a positive impact on their surgical experience (73 per

cent). Almost 80 percent said they would tell a friend or family member about their experience with the warming gown.⁵

For Ronald Sutton, OR business manager at Fawcett Memorial Medical Center in Port Charlotte, Fla., The Bair Paws system proved to be a significant addition to the facility in multiple ways.

“Our primary goals were to increase our patient satisfaction scores, decrease the infection rates and meet new requirements for normothermia,” says Mr. Sutton. “We wanted to do that across the board and not just on open general surgery cases.”

Fawcett Memorial began a trial of the product in November 2013, focusing on the outpatient department only. The impact on patients was almost immediate.

“In an environment where so much control is taken away from the patient, the fact that they had actually gained some control over their own comfort made them feel better,” says Mr. Sutton. “We had patient surveys done on these patients, and it was 99 percent positive.”

Given these positive reactions, it is clear to see how expanding forced-air warming use from intraoperative to pre-op—where patients are awake and able to appreciate warming—can contribute to the overall perception of care at a facility.

2. Begin warming efforts in pre-op

In addition to enhancing patient satisfaction, adding preoperative warming to the patient warming protocol has yielded other benefits.

Prewarming with forced-air warming before surgery can reduce an anesthesia-induced decline in core temperature called “redistribution temperature drop” that all anesthetized patients experience.^{6,7} Prewarming coupled with intraoperative FAW can prevent unintended hypothermia in procedures over one hour in length while reducing the frequency of hypothermia’s associated negative outcomes, such as an increased rate of wound infections,⁸ increased length of hospital stay⁹ and higher mortality rates.¹⁰

Use of a temperature-adjustable gown that patients can control themselves also reduces the need for pre-op nurses to repeatedly retrieve warmed cotton blankets, freeing more time for other patient care matters. Patients who receive the FAW gown also arrive to the OR ready to be warmed. The gown can be attached to the intraoperative warming unit, potentially saving both patient prep time and the need to use other normothermia products like FAW blankets.

3. Use normothermia maintenance to adhere to quality initiatives

The specifics of quality initiatives have changed over time, but the general objectives remain the same—improve the quality of surgical care, avoid adverse events, decrease infection rates and so on. Products and procedures should be assessed within these parameters.

SCIP-INF-10, the perioperative temperature management quality measure, demonstrates how adherence to one measure may aid in achieving other quality initiatives.

SCIP-INF-10 assesses the percent of surgery patients for whom either active warming was used intraoperatively for purposes of normothermia maintenance, or who had at least one body temperature at or above 36°C 30 minutes before or 15 minutes after anesthesia end time.¹¹ The recently topped-out measure was introduced to help prevent the serious, costly and avoidable complications of unintended hypothermia, such as increased rate of surgical site infection and increased incidence of myocardial infarction—and SSI and MI are subjects of other quality initiatives.¹²

By the time a measure is “topped out,” or retired due to high performance nationwide, it is likely part of everyday practice. However, there is a move to replace process measures like SCIP-INF-10 with suitable outcome measures. A new outcomes-focused normothermia measure has been drafted and is currently under consideration as an updated anesthesia quality metric.^{13,14}

Additionally, normothermia maintenance has been suggested as a potential quality measure for the federal Ambulatory Surgical Center Quality Reporting Program.¹⁵

4. Obtain potential costs savings by avoiding unplanned hypothermia

In cost-cutting mode, it is logical to look at line-item expenditures; however, it is important to consider costs in a larger context. A product or practice that reduces the likelihood of a complication could lead to financial benefits by: 1) eliminating the costs of treating the complication; and, 2) allowing a quality measure and its associated reimbursement to be achieved.

Maintaining normothermia reduces the risk for surgical wound infection, and the average cost of an SSI has been estimated at \$25,000.¹⁶ Hypothermic patients’ duration of hospitalization has been shown to be 20 percent longer (2.6 days) than normothermic patients.¹⁷ A 2012 study estimates the average cost per inpatient day to be \$1,629.¹⁸ A day or two of hospitalization quickly adds up—certainly a concern in an era of preventing complications and their associated expenses.

One product also may reduce the need for others. Normothermia maintenance has been shown to reduce surgical bleeding and the need for blood products—significant when the mean acquisition cost for a unit of blood is \$203.¹⁹ A forced-air warming gown can supplant traditional hospital gowns and the multiple cotton blankets used during each patient’s perioperative journey. A major medical center in Texas estimated a potential annual cost savings of \$50,000 by using the FAW gown system instead of cotton gowns and blankets.²⁰

According to Fawcett Memorial’s Mr. Sutton, use of the Bair Paws system was so efficient, the facility was able to significantly cut the amount of cotton blankets utilized.

“Using the Bair Paws system, we were able to replace the cotton blankets with a sheet, which is cheaper to buy and launder. We reduced cotton blanket usage by 120 pounds per day,” he says.

5. Seamlessly transition warming into future care models

To save time and money, hospitals need to consider how well current practices will apply to new models of care.

The development of accountable care organizations is among CMS’ efforts to link payments to quality. A survey of 530 hospital leaders released in 2013 showed that more than half (55 percent) expect to be in ACOs by the end of 2014, up from the 22 percent participation level at the time of the survey.²¹ ACOs move care away from the fee-for-service model and focus even more on prevention, evidence-based medicine and outcomes. Both existing and new products should be more closely assessed in terms of how well they fare against these areas of emphasis.

Effective ACOs may also transition care from acute to outpatient settings. In the U.S., an estimated 60 to 70 percent of all surgeries take place on an outpatient basis.²² As more surgical patients seek outpatient care, acute-care hospitals are developing or expanding their outpatient facilities.

Forced-air warming therapy has proven effective in acute settings, and perioperative staff is familiar with it. It can easily transfer to outpatient facilities, saving staff training and implementation time, streamlining purchasing and inventory management and optimizing care through evidence-based protocols.

Perioperative temperature management interventions — particularly forced-air warming — can bring new value to facilities today and in the future. This widespread practice can be leveraged more fully to enhance outcomes, improve the patient experience and avoid costly complications.

In addition to the cotton blanket savings, Mr. Sutton says Fawcett Memorial also realized an increase of several points on its patient satisfaction scores and saw a decrease in overall surgical infection rates.

“Patients have come across anywhere from 1-2 degrees warmer when they reach the recovery room. The design of the system was nothing short of genius. We’re now using the Bair Paws system for both outpatient and inpatient surgical patients,” he says. ■

References

- 1 www.fawfacts.com
- 2 Mahoney, CB, Odom, J. Maintaining intraoperative normothermia: A meta-analysis of outcomes with costs. *AANA Journal*. 1999;67(2):155-164.
- 3 “Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and Long Term Care-Proposed Rules,” 42 Federal Register, Vol. 78, No. 91 (10 May 2013), pp. 27607-27608. <http://www.gpo.gov/fdsys/pkg/FR-2013-05-10/pdf/2013-10234.pdf>
- 4 U.S. ties hospital payments to making people happy. Adamy J. *Wall Street Journal*. Oct. 14, 2012.
- 5 Van Duren A. Patient Warming Plays a Significant Role in Satisfaction, Clinical Outcomes. *Infection Control Today*. 2008;12(6): 1-4 (reprint page numbers).
- 6 Sessler DI. Perioperative heat balance. *Anesthesiology*. 2000; 92(2): 578-96.
- 7 Andrzejewski, J, Hoyle, J, Eapen, G, et. al. Effect of prewarming on post-induction core temperature and the incidence of inadvertent perioperative hypothermia in patients undergoing general anaesthesia. *BJA*. Nov 2008;101(5):627-631.
- 8 Barie PS. Surgical site infections: epidemiology and prevention. *Surgical Infections*. Vol. 3, Supplement 2002; S 9-21.
- 9 Kurz A, Sessler DI, Lenhardt R. Perioperative normothermia to reduce the incidence of surgical-wound infection and shorten hospitalization. Study of Wound Infection and Temperature Group. *N Engl J Med*. 1996; 334(19):1209-15.
- 10 Tryba M, Leben J, Heuer L. Does active warming of severely injured trauma patients influence perioperative morbidity? *Anesthesiology*. 1996; 85: A283.
- 11 Specifications Manual for National Hospital Inpatient Quality Measures—Discharges 4-01-11 through 12-31-11. <https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228760129036>.
- 12 “Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and Long Term Care,” 42 Federal Register, Vol. 78, No. 160 (19 Aug. 2013), pp. 50505, 50682, 50687. <http://www.gpo.gov/fdsys/pkg/FR-2013-08-19/pdf/2013-18956.pdf>
- 13 Hannenberg A. “Measuring Physician Performance.” Harvard Anesthesia Update. Fairmont Copley Plaza, Boston, MA. May 2014. <http://anesthesiainupdate.com/pdf/Dr%20Hannenberg%20.pdf>
- 14 Johnstone R, Byrd J. Practice management-performance measures present and future. *ASA Newsletter*. 1 Feb 2011; Vol. 75, No. 2. https://www.asahq.org/For-Members/Publications-and-Research/Newsletter-Articles/2011/February2011/Performance_Measures_Present_and_Future.aspx
- 15 “Hospital Outpatient Prospective Payment and Ambulatory Surgical Center Payment Systems and Quality Programs,” 42 Federal Register Vol. 78, No. 237 (19 Dec. 2013), p. 75130. <http://www.gpo.gov/fdsys/pkg/FR-2013-12-10/pdf/2013-28737.pdf>
- 16 Stone, P, Braccia, D, Larson, E. Systematic review of economic analyses of health care-associated infections. *AJIC*. Nov 2005;33(9):501-509.
- 17 Kurz A, Sessler DI, Lenhardt R. Perioperative normothermia to reduce the incidence of surgical-wound infection and shorten hospitalization. Study of Wound Infection and Temperature Group. *N Engl J Med*. 1996; 334(19):1209-15.
- 18 Oh, J. ASC Communications 2012. April 30, 2012. Source: Kaiser State Health Facts.
- 19 Shander, A, Hofmann, A, Ozawa, S, et. al. Activity-based costs of blood transfusions in surgical patients at four hospitals. *Transfusion*. April 2010;50:753-765.
- 20 Results reprinted with permission of Memorial Hermann Health System. Information on file with 3M Infection Prevention Division.
- 21 Premier Survey: <https://www.premierinc.com/wps/portal/premierinc/public/newsandevents/newsreleases/newsreleases/fab0f976-0f6f-460c-be08-a9f81739e0e5>.
- 22 Barie, S. Infection control practices in ambulatory surgery centers. *JAMA* 2010;303(22):2295-2297.