

Supplement to

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Outpatient Surgery

August 2006 Magazine®

2006-07 Manager's Guide to

Ambulatory Anesthesia

A FOCUS ON SAFER

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ENHANCE DRUG AND ANESTHESIA SAFETY WITHOUT LOSING SURGICAL EFFICIENCY

Bringing

the Heat

Our efforts to reduce surgical site infections ended up improving our patient warming protocol.

Pam Smith, MSN, CNOR | St. Johnsbury, Vt.

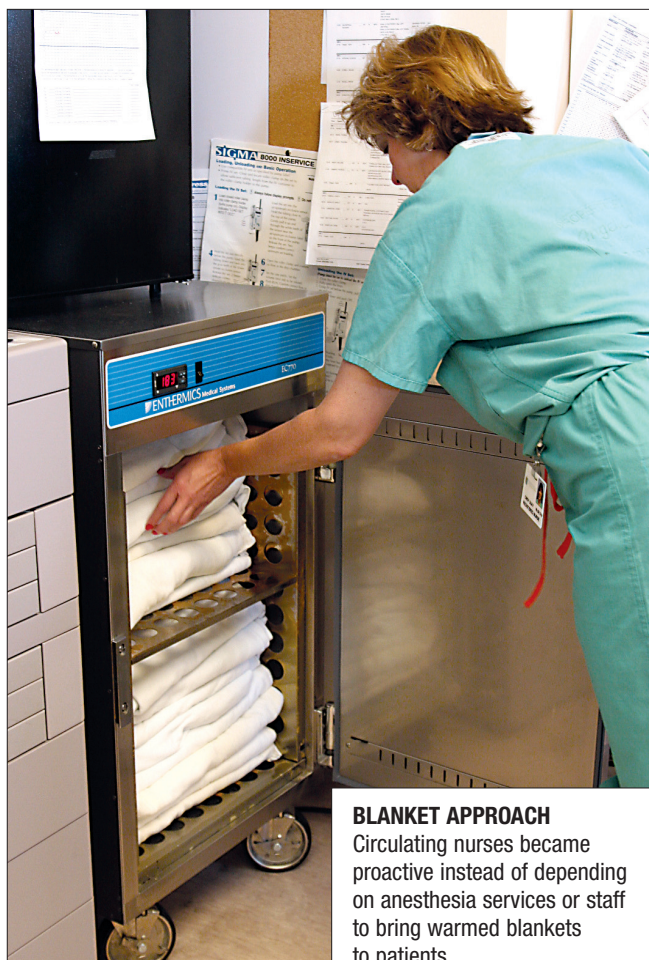
Our surgical team's quest to decrease incidences of hypothermia began in 2004 when my hospital participated in a national collaborative to reduce surgical site infections. Under the initiative, collaborative faculty identified six primary indicators for our facility to review for improvement. In the OR, we saw that lack

of staff education and a tendency to warm reactively rather than prophylactically were likely causes of hypothermia in the PACU. With our sights on these targets, the OR set its goal: normothermia (36°C to 38°C) achieved in 95 percent of patients in PACU.

Our initial improvements in these areas resulted in 90 percent of patients' being normothermic, a greater number of days between surgical site infections and increased patient comfort and satisfaction. Here's what worked for us here at North Eastern Vermont Regional Hospital in St. Johnsbury, Vt.

A first look

Hypothermia impairs immune function and causes vasoconstriction at the operative site. This suppresses the phagocytic neutrophil and macrophage activity that usually occurs during acute inflammation, therefore increasing SSI risk. Hypothermia also reduces oxygen tension in tissues, a factor that's been correlated with the occurrence of SSIs.¹ Our hospital had a very low surgical infection rate to begin with; the goal of the collaborative was to maintain that low rate, increase days between infections and incorporate



BLANKET APPROACH

Circulating nurses became proactive instead of depending on anesthesia services or staff to bring warmed blankets to patients.

evidence-based best practices.

Senior management created a multidisciplinary task force in November 2004 comprised of the senior nurse manager, quality control vice president, infection control practitioner and me, the OR representative. In December, I began the investigative process with reviews of patients' charts in order to establish baseline temperatures in PACU. Less than 50 percent of patients had temperatures equal to or greater than 36°C, the initial appraisal showed. There were no trends by surgical specialty, surgeon or anesthesia provider.

A closer look at the initial data showed several factors may have contributed to the unacceptably low percentage of patients reaching body temperatures of 36°C.

- Many of our hospital's staff rotated through PACU, indicating accuracy of temperature readings are partly dependent on the device's user.
- We only used intraoperative warming devices, such as upper-body or full-body blankets, on patients with an anticipated surgery of an hour or longer.
- It follows that we didn't warm patients who'd be in the OR for less than 60 minutes.
- Nurses reapplied warming devices in PACU only when patients shivered noticeably or complained of being cold, instead of application based on actual core temperatures.

Turning up the heat

Intervention began in January of 2005. I presented the baseline data at surgical staff meetings to inform the frontline staff of the changes we hoped to implement. To imbue staff with a sense of ownership, we asked for help from interested members of the surgical staff. We then named volunteers to a surgical sub-committee, a group of frontline workers in charge of improving normothermia rates in PACU. Sub-committee members championed the cause throughout our ORs and had the authority to suggest warming policy improvements to the global task force, which trialed those ideas validated by proper research.

Based on current literature and feedback from the surgical sub-committee, we executed new policies:

- fewer temporary staff members rotating through PACU,
- revised electronic intra-operative and PACU documentation to reflect the variety of warming devices used and when they were initiated, and
- application of warming devices on all patients entering PACU with a core temperature less than 36°C, regardless of whether patients indicated they were cold.

We didn't institute anything official regarding OR

temperature, but we did find that orthopedic surgeons preferred the coolest rooms — 16.6°C — while other surgeons maintained settings of 20°C. As a result, we've become especially vigilant about properly warming orthopedic patients.

We also began using warm-air equipment in all procedures instead of dedicating these devices to cases scheduled for more than one hour. Circulating nurses in the pre-op and PACU areas stopped relying on anesthesia services to apply warm blankets and started warming IV fluids and wrapping warmed blankets around patients. Day surgery nurses

DIALED IN Low OR temperature settings necessitated a renewed emphasis on intra-operative warming.



They Call Me Norma Thermia

As our patient warming initiative lasted nine months — short in real-life time, long in protocol-change time — maintaining nurse focus became an essential element of the program's success. At the three-month mark, the hospital's administration created a poster display showing the staff in patient warming action as well as the improved normothermia data we'd collected to date. While serving as a marketing tool for patients, the posters also highlighted the efforts of the staff nurses — the people who truly contributed to the improved patient warming results. The display made no



mention of the senior administration; all the credit went to the employees who deserved it.

As word of our success spread, organizers of national conferences invited the hospital to present the project's results. This provided another opportunity to highlight the frontline staff. Nurses attending the conferences appreciated the exposure and created T-shirts to express their pride. The shirts displayed the surgical team's self-appointed nickname, "The Yankee Clippers." This tongue-in-cheek moniker was based in part on our New England hospital using Yankee ingenuity to improve patient warming; another segment of the safety initiative involved using hair clippers instead of razors around the surgical site. Staff also assigned SSI-inspired nicknames to individual employees and printed the names on the T-shirts. My alter ego? Norma Thermia.

— Pam Smith, MSN, CNOR

lobbied for and obtained blanket and fluid warming devices for patients in pre-op. They also trialed and obtained forced-air patient warming gowns.

When patients in pre-op refused warming devices, we educated them about the importance of achieving normothermia. Staff stressed the role of core body temperatures in controlling surgical site infections and post-op healing. Patients who complained of being too warm were still wrapped in warmed cotton blankets or were injected with warmed IV fluids. And patients who said they initially felt fine were in fact more comfortable when asked again after the application of warming devices in both pre-op and PACU.

There and back again

Our surgical team achieved normothermia in 80 percent of cases in February 2005, one month after changing our patient-warming protocol. In March, that rate increased to 95 percent. In early June, however, we noticed a dip in the rate of normothermia. Once again, less than 80 percent of patients were normothermic in PACU.

The problem? Most patients in June refused warming devices after leaving the hot summer temperatures for the hospital's chilly air-conditioned halls. We refocused efforts on staff education to remind that, just because patients are

enjoying the cool indoors, it doesn't mean it's good for them from a surgical perspective. A subsequent review of data in July, after adjustments to the surgical suite's air conditioning unit and a re-emphasis on educating the PACU staff, revealed 90 percent of patients were normothermic. The other 10 percent had core temperatures in the range of 35.7°C to 35.9°C, barely below the 36°C goal.

A new norm

Improved documentation in PACU led to more accurate and reliable patient warming data. Published literature, our own local research, documentation of patients' verbal feedback and results of patients' surveys showed our warming efforts are effective in improving patient satisfaction. We'll continue to monitor our warming results, but remain confident that normothermia is the new norm in our surgical wing. **OSM**

Ms. Smith (p.smith@nrh.org) works in the Ambulatory and Surgical Services Department of North Eastern Vermont Regional Hospital in St. Johnsbury, Vt.

Reference

1. Odom-Forren, Jan. *Preventing Surgical Site Infections. Nursing* 2006; 36:59-63. *Site Infections. Nursing* 2006; 36:59-63.