

## **Benefits of Passive Warming on Surgical Patients Undergoing Regional Anesthetic Procedures**

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**Introduction:** Perioperative normothermia is vital to reduction of surgical morbidity and mortality and improved surgical patient outcomes. Preoperative patient warming with active or passive warming measures is a key factor to maintaining normothermia throughout the perioperative process.

**Identification of the problem:** Potential for development of perioperative hypothermia is associated with use of regional anesthetic procedures (RAPs). Use of active warming during RAP placement is not feasible because of sterility requirements and patient positioning during RAP placement.

**QI question/Purpose of the study:** To determine if application of preoperative passive warming methods would maintain body temperature in patients receiving RAPs and contribute to reduced length of stay in PACU at a Level 1 trauma center in Middle Tennessee.

**Methods:** After being deemed IRB Exempt, this QI project utilized a convenience sample of 120 patients receiving RAP in conjunction with an elective orthopedic, abdominal, or thoracic surgical procedure. Passive warming trial: 53 patients received warming via thermal insulated surgical cap (\$1.54/ea) & activated chemical warmer (\$0.54/ea) placed on the inner, upper aspect of one arm. Retrospective review: 67 patients received warming using forced warm air gown (\$9.75/ea). All preoperative warming measures remained in place approximately 90 minutes. Tympanic temperature was assessed upon admission, at transfer to OR, after induction of general anesthesia, and upon arrival to PACU.

**Outcomes/Results:** No difference in mean temperatures was found between groups post-induction or upon admission to PACU. Additionally, 51.9% of passive group (n = 28) experienced an increase in temperature compared to 48.2% (n = 26) of retrospective group. A statistically significant, positive correlation was found between admission temperature and transfer to OR temperature with age (p = 0.18). Passive group averaged 13.5-minute shorter PACU LOS.

**Discussions:** Passive warming affords the RAP population opportunity to receive benefits of pre-operative warming. Older participants responded better to passive warming measures: as age increased, temperature also increased. Passive warming measures were found to be less expensive than forced-air systems (savings of > \$7 per patient).

**Conclusions:** Passive warming methods maintained patient temperatures throughout the perioperative process. Additionally, passive warming demonstrated a statistically significant increase in temperature from admission to transfer to OR in older participants and a clinically significant decrease in PACU LOS.

**Implications for Perianesthesia Nurses and Future Research:** Passive warming is a suitable, cost-effective alternative when forced-air warming is not feasible. Additional inquiry into the use of passive warming is warranted.