

## **Normothermia – System for Patient Warm-Up - A Retrospective Study**

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**Introduction:** Inadvertent perioperative hypothermia, defined as a core temperature below 96.8F (36°C), is associated with adverse outcomes including surgical site infections, impaired wound healing, myocardial events, prolonged hospitalization, and decreased patient comfort. While intraoperative warming is standard of care, limited evidence exists regarding the benefit of preoperative warming interventions.

**Identification of the Problem:** The Procedural Collaborative at University Medical Center performed a research study on the effects of preoperative and perioperative warming systems on patients. The AstoPad warming system is a reusable patient warming system that is placed underneath the patient preoperatively that will assist in maintaining/elevating the patients' temperature prior to entering the operating room.

**Purpose of the Study:** The investigators collected patient temperatures from preoperative, intraoperative, and postoperative phase prior to and after implementation of the AstoPad to see if there was any change in patient temperatures throughout all operative phases.

**Methodology:** This retrospective study was conducted at University Medical Center over a 25-month period (April 2021–April 2023)[n=16,480], adult patients (18–80 years) undergoing total joint replacement, open abdominal procedures, or hysterectomy were included. The AstoPad, a reusable preoperative warming system, was introduced in November 2022. Patient temperatures were recorded preoperatively, intraoperatively, and postoperatively using temporal or endotracheal thermometry. Data was analyzed with linear mixed-effects models to assess temperature changes across operative phases in patients managed with and without AstoPad.

**Results:** In the control cohort (no AstoPad), mean body temperature decreased significantly from preoperative to intraoperative ( $p < 0.01$ ) but increased postoperatively ( $p < 0.01$ ). In the AstoPad cohort (n=293), no significant change was observed between preoperative and intraoperative phases ( $p = 0.07$ ), although postoperative temperatures increased significantly relative to baseline ( $p < 0.01$ ). Overall comparisons showed no clinically meaningful advantage of AstoPad use in maintaining normothermia. Surgical site infection rates did not differ between groups.

**Discussion:** Preoperative warming with the AstoPad device did not provide a significant benefit compared with conventional methods such as room temperature control and warmed blankets.

**Conclusion:** These simpler strategies remain cost-effective and equally effective in maintaining perioperative normothermia

**Implications for perianesthesia nurses and future research:** PeriAnesthesia nurses need to follow warming protocols from the appropriate nursing organization to ensure

proper normothermia throughout the patient's procedural experience and continually assess its effectiveness.