

## **Pre-warming Surgical Patients**

Primary Investigator: Ashley Durbin MSN RN

Indiana University Health, Methodist Hospital, Indianapolis, Indiana

Co-Investigator: Casey Orr MSN RN CAPA

**Introduction:** Anesthesia causes vasodilation, allowing warmer blood from the core to mix with cooler blood from the periphery, resulting in a drop in core body temperature intraoperatively. Intraoperative hypothermia can be associated with various adverse effects and potential harm to the patient. Pre-warming before surgery increases the patient's peripheral temperature, reducing the temperature gradient between the core and periphery. Pre-warming helps to maintain normothermia and mitigate the effects of heat redistribution.

**Identification of the problem:** Surgical patients identified in the urology and orthopedic populations were becoming hypothermic intraoperatively. Hypothermia was defined as less than 36.0 degrees Celsius.

**QI question/Purpose if the study:** Does pre-warming surgical patients identified in the urology and orthopedic populations decrease the risk of hypothermia intraoperatively?

**Methods:** Over a six-week time frame, 50 orthopedic and 50 urological surgical cases were analyzed for pre-operative and intraoperative core temperatures. The patients were pre-warmed for at least 30 minutes in Same Day Surgery Assessment (SDSA) before their surgical procedure. For the procedure, the patients received general anesthesia and were monitored intraoperatively via esophageal or nasopharyngeal temperature methods. An upper body Bair Hugger at 43 degrees Celsius with no fluid warmer was also used on each patient during the case for consistency. Patient temperatures were then assessed intraoperatively 5 minutes after anesthesia induction and every 15 minutes after induction for the first hour. Final case temperatures were also analyzed. Patient temperatures were recorded pre-operatively using an Exergen temporal thermometer.

**Outcomes/Results:** In the urology patients being studied, pre-implementation temperatures averaged 35.3 degrees Celsius and post-implementation averaged 36.0 degrees Celsius. In the orthopedic patients, pre-implementation temperatures averaged 36.0 degrees Celsius with a post-implementation increase to an average of 36.3 degrees Celsius. These findings lead to a notable improvement in post-implementation temperatures for both surgical groups.

**Discussion:** Results show pre-warming can effectively decrease the risk of intraoperative hypothermia. Findings demonstrated a consistent increase in intraoperative temperatures showing less hypothermia and minimized the degree of temperature drift at all analyzed time intervals. This study highlights the efficacy of pre-warming in preventing hypothermia and suggests the potential to improve patient outcomes by mitigating the negative effects associated with intraoperative temperature fluctuations.

**Statement of Successful Practice:** A total of 100 patients were analyzed in the study and temperatures from urology and orthopedic patients demonstrated an increase in temperature pre-operatively and intraoperatively with the use of pre-warming in SDSA. Pre-warming was adopted at Methodist Hospital starting January 2021.

**Implications for Advancing the Practice of Perianesthesia Nursing:** Pre-warming can decrease hypothermia intraoperatively reducing negative patient effects from hypothermia. This project aligns with current American Society of PeriAnesthesia Nursing recommendation of pre-warming patients.