### Perioperative Temperature Management (Outcome)

**Description:** Percentage of patients, regardless of age, who undergo surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer for whom at least one body temperature greater than or equal to 35.5 degrees Celsius (or 95.9 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time.

**Denominator:** All patients, regardless of age, who undergo surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer.

**Instructions:** The anesthesia time used for this measure should be the time recorded in the anesthesia record.

**Numerator:** Patients for whom at least one body temperature greater than or equal to 35.5 degrees Celsius (or 95.9 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time.

**Rationale:** A drop in core temperature during surgery, known as perioperative hypothermia, can result in numerous adverse effects, which can include adverse myocardial outcomes, subcutaneous vasoconstriction, increased incidence of surgical site infection, and impaired healing of wounds. The desired outcome, reduction in adverse surgical effects due to perioperative hypothermia, is affected by maintenance of normothermia during surgery.

Unintended perioperative hypothermia occurs in up to 20% of surgical patients. An observational cohort study in a pediatric setting found that more than 50% of children experienced intraoperative hypothermia. Pediatric patients undergoing major surgery were at greater risk of intraoperative hypothermia.

**Clinical Recommendation Statements:**

#### Preadmission/Preoperative Recommendations

**Assessment:** Assess for risk factors for perioperative hypothermia (Class I, Level C); Measure patient temperature on admission (Class I, Level C); Determine patient’s thermal comfort level (Class I, Level C); Assess for signs and symptoms of hypothermia (Class I, Level C); Document and communicate all risk factor assessment findings to all members of the anesthesia/surgical team (Class I, Level A).

**Interventions:** Implement passive thermal care measures (Class I, Level B); Maintain ambient room temperature at or above 24 degrees Celsius (Class I, Level C); Institute active warming for patients who are hypothermic (Class IIb, Level B); Consider preoperative warming to reduce the risk of intra/postoperative hypothermia (Class IIb, Level B).

#### Intraoperative Recommendations

**Assessment:** Identify patient’s risk factors for unplanned preoperative hypothermia (Class I, Level C); Frequent intraoperative temperature monitoring should be considered in all cases (Class I, Level C); Assess for signs and symptoms of hypothermia (Class IIb, Level C); Determine patient’s thermal comfort level (Class IIb, Level C); Document and communicate all risk factor assessment findings to all members of the anesthesia/surgical team (Class I, Level A).

**Interventions:** Limit skin exposure to lower ambient environmental temperatures (Class I, Level C); Initiate passive warming measures (Class I, Level C); Maintain ambient room temperature from 20-25 degrees Celsius based on AORN and architectural recommendations (Class I, Level C); Patients undergoing a procedure with an anticipated anesthesia time greater than 30 minutes (Class I, Level C) and/or who are hypothermic preoperatively (Class I, Level A), and/or patients at risk for hypothermia (Class I, Level C) or at increased risk for suffering its complications (Class I, Level C) – Forced air warming should be implemented (Class I, Level A); There is evidence to suggest that alternative active warming measures...
may maintain normothermia when used alone or in combination with forced air warming (Class Iib, Level B). These warming measures include: Warmed IV fluids (Class Iia, Level B), Warmed irrigation fluids (Class Iib, Level B), Circulating water garments (Class Iib, Level B), Circulating water mattresses (Class Iib, Level B), Radiant heat (Class Iib, Level B), Gel pad surface warming (Class Iia, Level B), Resistive heating (Class Iia, Level B) (ASPA, 2010).

Maintenance of body temperature in a normothermic range is recommended for most procedures other than during periods in which mild hypothermia is intended to provide organ protection (e.g., during high aortic cross-clamping) (Class I Recommendation, Level of Evidence B) (ACC/AHA, 2007)

Composition of the Group that Developed the Measure:

Work Group Members: Alexander A. Hannenberg, MD, Co-chair; Andrew J. Patterson, MD, PhD, Co-chair; William R. Andrews, MD, MS; Rebecca A. Aslakson, MD, PhD; Daniel R. Brown, MD, PhD; Neal H. Cohen, MD, MPH, MS; Peggy Duke, MD; Heidi L. Frankel, MD; Lorraine M. Jordan, BSN, MS, PhD; Jeremy M. Kahn, MD, MS; Jason N. Katz, MD, MHS; Gerald A. Maccioli, MD; Catherine L. Scholl, MD; Todd L. Slesinger, MD; Victoria M. Steelman, PhD, RN; Avery Tung, MD

Work Group Staff: Meredith Herzog, American Board of Medical Specialties; Maureen Amos, American Society of Anesthesiologists; Mark Antman, DDS, MBA, American Medical Association; Elvia Chavarria, MPH, American Medical Association; Jodie Dvorkin, MD, MPH, American Medical Association; Kendra Hanley, MS, American Medical Association; Jennifer Heffernan, MPH, American Medical Association; Toni Kaye, MPH, American Medical Association; Kimberly Smuk, RHIA, American Medical Association; Elvira L. Ryan, MBA, BSN, RN, The Joint Commission

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