

# GUIDELINE FOR PREVENTION OF UNPLANNED PERIOPERATIVE HYPOTHERMIA

**T**he Guideline for Prevention of Unplanned Perioperative Hypothermia was developed by the AORN Recommended Practices Committee and was approved by the AORN Board of Directors. It was presented as proposed recommendations for comments by members and others. The guideline is effective January 1, 2008. The recommendations in the guideline are intended to be achievable and represent what is believed to be an optimal level of practice. Policies and procedures will reflect variations in practice settings and/or clinical situations that determine the degree to which the guideline can be implemented. AORN recognizes the various settings in which perioperative registered nurses practice; therefore, this guideline is adaptable to various practice settings. Practice settings include traditional operating rooms, ambulatory surgery centers, physicians' offices, cardiac catheterization suites, endoscopy suites, radiology departments, and all other areas where operative and other invasive procedures may be performed.

## Purpose

This document provides guidance to perioperative registered nurses in optimizing patient care practices to maintain normothermia and prevent unplanned hypothermia. Hypothermia, defined as a core body temperature less than 36° C (96.8° F), presents a constant challenge for perioperative registered nurses because many surgical patients are at risk for unplanned hypothermia during surgery. There are three phases of unplanned hypothermia: the redistribution phase, the linear decrease phase, and the thermal plateau phase. This guideline focuses on the prevention of the redistribution phase of unplanned hypothermia. Planned or therapeutic hypothermia is outside the scope of this document.

In the redistribution phase of unplanned hypothermia, a rapid shift of body heat from the body's core to its periphery occurs, resulting in a core temperature drop of approximately 1.6° C (2.7° F) during the first hour after induction of anesthesia.<sup>1,2</sup> The initial temperature drop of the redistribution phase is followed by a slow linear decrease phase during the second and subsequent hours of anesthesia, in which heat loss exceeds the body's ability to metabolically produce heat. In this second phase, warming the patient can effectively limit further heat loss. After approximately three to five hours of anesthesia, the patient's core temperature often plateaus and is characterized by a core body

temperature that remains constant, even during prolonged surgery.<sup>3,4</sup>

Unplanned hypothermia is among the most common complications of surgery. It results from anesthesia-induced thermoregulation impairment and the heat loss inherent to surgery and the surgical environment.<sup>5</sup> The risk of hypothermia is greater in some patients (eg, neonates,<sup>6,7</sup> trauma patients,<sup>8</sup> patients with extensive burns<sup>9</sup>). All patients, however, are at risk of hypothermia as the duration of anesthesia time increases.<sup>1,2,10,11</sup>

Randomized clinical trials have demonstrated that mild hypothermia increases the incidence of serious adverse consequences including surgical site infections<sup>12</sup> and adverse cardiac events including ventricular tachycardia.<sup>13,14</sup> In trauma patients, hypothermia is associated with increased mortality.<sup>15</sup> Mild hypothermia inhibits platelet activation, resulting in increased blood loss.<sup>16,17</sup> A 2° C (3.6° F) drop in temperature increases blood loss by approximately 500 mL.<sup>18</sup> Mild hypothermia also alters medication metabolism and increases the duration of muscle relaxant action.<sup>19,20</sup> Hypothermia extends postanesthesia recovery time<sup>21,22</sup> and prolongs hospitalization.<sup>12,23</sup> The risk of these complications is considered greater for frail, elderly patients undergoing extensive surgery than it is for young, generally healthy patients undergoing comparatively minor procedures.<sup>24</sup>

## Recommendation I

**The perioperative registered nurse should assess the patient for risk of unplanned perioperative hypothermia.**

- I.a. Perioperative registered nurses should evaluate the patient's risk for unplanned hypothermia. Sources of data include chart review, physical assessment and patient interview, and review of the anesthesia planned and proposed surgical procedure.
- I.b. Infancy or neonatal status should be considered. Neonates and infants are more susceptible to hypothermia than adults because they have a high ratio of body surface area to weight, which leads to more heat loss through their skin.<sup>6,7</sup> Studies show that greater temperature decreases occurred in infants and neonates when undergoing major surgery involving an open procedure.<sup>7</sup>
- I.c. The extent and severity of a patient's traumatic injuries should be considered.

