

# Postoperative Hypothermia

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The importance of body temperature management has been emphasized during the perioperative period. The three major common complaints of patients recovering from surgery and anesthesia are surgical site pain, nausea and vomiting due to various medications (anesthetics, opioids, antibiotics, etc.), and shivering due to hypothermia. Regulation of body temperature is managed by physical and neuronal mechanisms that balance heat production and loss. During anesthesia and surgery, hypothermia occurs mainly because of a combination of anesthesia-induced impairment of thermoregulatory control, a cool operating room environment, and surgical factors that promote excessive heat loss. Hypothermia is associated with many adverse effects [1], such as increased cardiovascular complications [2], blood loss and transfusion requirements, perioperative hemorrhage [3], and infection rate [4]. Hypothermia also can alter drug metabolism [5], prolong stay in the post-anesthetic care unit or intensive care unit (ICU), decrease patient comfort and satisfaction, and increase cost.

However, there is little study on the effect of hypothermia on long-term mortality. Kim et al. [6] report an association of postoperative body temperature in the surgical ICU with 1-year mortality. The authors showed that not only hypothermia, but also hyperthermia increased the long-term mortality rate. Currently, the Korean Health Insurance Review and Assessment Service is analyzing health care quality in various clinical fields, including ICU quality. Although patient body temperature is not included in the ICU-quality assessment, it is included in the anesthesia-quality assessment, which was first launched in 2018. Hypothermia in the ICU immediately after surgery is closely related to body temperature management during surgery, showing that active temperature management is necessary during surgery and anesthesia.

The goal of preventing hypothermia during anesthesia and surgery is to minimize heat loss by decreasing radiation and convection from the skin, evaporation from the exposed surgical site, and cooling due to cold intravenous fluids. The simplest method of managing body temperature is passive warming, which prevents heat loss by minimizing the exposed area and maintaining adequate operating room temperature. However, passive warming is not highly effective, and active warming methods are recommended [7]. Active warming requires additional equipment or procedure, such as electric blankets, mattresses or blankets with warm-water circulation, forced-air or convective air-warming system, intravenous fluid line warmer, warming of irrigation fluids, heated and humidified breathing circuit, and carbon dioxide warming in laparoscopic surgery.

Since adequate patient temperature after surgery and anesthesia not only increases patient comfort and satisfaction, but also affects long-term mortality, the anesthesiologist and intensivist should manage temperature more actively. For this, further studies about the ef-

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fects of active temperature management in ICU patients are needed.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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