

Perioperative Temperature Measurement Considerations Relevant to Reporting Requirements for National Quality Programs

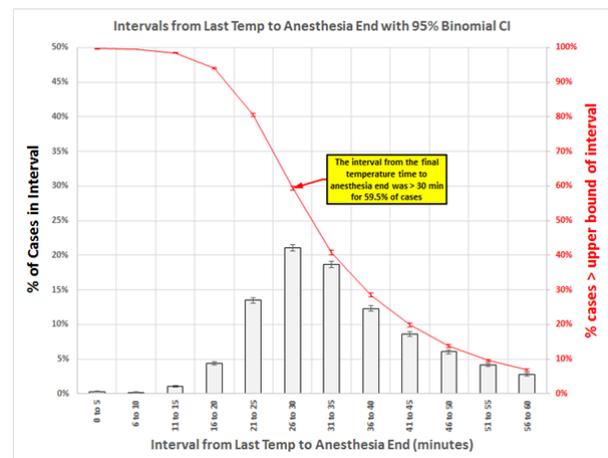
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Introduction: Perioperative hypothermia may increase the incidences of wound infection, blood loss, transfusion, and cardiac morbidity.¹⁻⁵ National quality programs for perioperative normothermia specify a temperature $\geq 35.5^{\circ}\text{C}$ during the interval from 30 min before to 15 min after the anesthesia end time.⁶ Using data from 4 academic hospitals, we evaluated timing and measurement considerations relevant to the current requirements for both the Physician Quality Reporting System (PQRS #424) and the National Quality Forum (NQF 2681).

Methods: Electronic databases at 4 academic hospitals were queried to obtain intraoperative temperatures and intervals between the end of anesthesia and: discontinuation of temperature monitoring; end of surgery; and extubation. Inclusion criteria included age > 16 , use of a tracheal tube or supraglottic airway, and case duration ≥ 60 min. The fractions of cases with intervals > 30 min were determined. The effect of signal processing of temperatures⁷ on the fraction of cases with temperatures $< 35.5^{\circ}\text{C}$ was determined.

Results: Among the hospitals, averages (binned by quarters) of 34.5% to 59.5% of cases had temperature monitoring discontinued > 30 min from the end of anesthesia. Even if temperature measurement



References:

- ¹ Kurz A, et al. N Engl J Med 1996; 334:1209–15
- ² Schmied H, et al. Lancet 1996; 347:289–92
- ³ Winkler M, et al. Anesth Analg 2000; 91:978–84
- ⁴ Rajagopalan S, et al. Anesthesiology 2008; 108:71–7
- ⁵ Frank SM, et al. JAMA 1997; 277:1127–34
- ⁶ http://www.qualityforum.org/Projects/s-z/Surgery_Measures_2014/Final_Report.aspx
- ⁷ Sun Z, et al. Anesthesiology 2015; 122:276–85

had been continued until extubation, averages of 5.9% to 20.8% of cases would have exceeded the 30-minute window. Disregarding the interval until the end of anesthesia, averages of 10.0% to 21.8% of cases had final intraoperative temperatures $< 35.5^{\circ}\text{C}$ (i.e., a performance failure). Not signal processing temperatures increased the performance failure rate by averages of 1.4% to 3.3%.

Conclusions: Because of timing considerations, a substantial fraction of cases would have been ineligible to use national quality programs' reporting of intraoperative temperature, thus requiring retrieval of post anesthesia care unit temperatures. A large percentage of patients had final intraoperative temperatures below the 35.5°C outcome threshold, which would also require postoperative measurements to meet the quality metric. Institutions considering reporting on these metrics should recognize the difficulties in meeting national quality metrics for perioperative normothermia.