Preventing Perioperative Hypothermia

Victoria M Steelman, PhD, RN, CNOR, FAAN
Jon H. Lemke, PhD

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General & Neuraxial Anesthesia

- Shift heat from core to peripheral tissues
- Diminish the response to cold
- Result in most of the patients undergoing surgery experiencing perioperative hypothermia unless effective prevention is used.

Sessler 2008
Adverse Outcomes of Mild Perioperative Hypothermia

- Triples the risk of surgical site infection,$^2$
- Quadruples the risk of morbid cardiac events,$^3$
- Increases blood loss$^4,^5$ and use of blood transfusions
- Increases the duration of action of anesthesia and neuromuscular blocking agents$^6$
- Extends postanesthesia recovery by an average of 90 minutes.$^6$
- Increases the cost of care of a surgical patient by an average of $2500$ to $7000$ per patient.$^7$
Evidence-based Practice

Forced Air Warming (FAW)
Forced Air Warming

• Numerous clinical trials have demonstrated that intraoperative forced air warming is an effective intervention for preventing perioperative hypothermia.\textsuperscript{21-24}
• More effective than
  • cotton blankets,\textsuperscript{19, 24}
  • reflective blankets,\textsuperscript{24} or
  • thermo-lite\textsuperscript{®} insulation.\textsuperscript{21}
Preoperative Forced Air Warming

- To be most effective, forced air warming should be applied for at least 30 minutes preoperatively
  - Decreases the gradient in temperature between the core and periphery
  - Minimizes redistribution hypothermia

Andrzejowski et al. 2008; Horn et al. 2002; Vanni et al. 2003
Original Article

The Gap between Compliance with the Quality Performance Measure "Perioperative Temperature Management" and Normothermia

Victoria M. Steelman, Yelena S. Perkhounkova, Jon H. Lemke

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Quality Performance Measure

- National Quality Forum endorsed
  - TJC, CMS
- Compliance requires either:
  - using active warming intraoperatively or
  - achieving normothermia near the end of anesthesia
- Compliance can be achieved without appropriately using active warming
Aim

To determine to what extent compliance with the NQF-endorsed quality performance measure, is congruent with normothermia at the end of the surgical procedure.
Methods

- Retrospective review
- Patients undergoing surgery with general or neuraxial anesthesia during a 48-month period of time
- $N = 10,763$
Results

• 5.8% of patients for whom the quality performance measure was met were hypothermic
  • Urology (8.5%)
  • Orthopedics (7.7%)
Conclusions

- Patients who receive care compliant with the quality performance measure by receiving active warming are still at risk for hypothermia.
- Effective use of forced air warming is needed.
  - Preoperatively
  - Intraoperatively before induction of anesthesia
Implementing Safe Practices for Prevention of Peri-operative Hypothermia

Purpose of AHRQ grant:
Develop and evaluate a National Tool Kit for the effective use of forced air warming (FAW).
Tool Box Components

• Identify Champions for Change
• Contracts and Executive Level Visibility
• Education: HealthStream, Simulation Labs
• Media Coverage
• Develop Target Procedure List
• Roll Out Meetings
• Posters
• Chili Cook Off
• Timing Studies to assure that Supplies are Optimally Placed
• Tracking and Analysis of Metric Performances
• Daily Data Monitoring
Quality Performance Metrics

- **Process**
  - Percent of OPCC patients receiving expected preoperative FAW.
  - Percent of these OPCC patients with FAW engaged intraoperatively prior to anesthesia.

- **Outcomes**
  - Percent of targeted patients with hypothermia at the end of anesthesia.
  - Percent of all surgical patients with hypothermia at the end of anesthesia.
Observed and Logistic Regression Tended Probabilities of Hypothermia
All Surgery Patients with Surgery Lasting at Least 30 Minutes

Daily audits began 5/20/2014
References

References

References


