Exploring the Incidence of Unplanned Perioperative Hypothermia (UPH) in the Ambulatory Surgical Population

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• To Sheila Tucker for all of your help with data abstraction and management!
Problem

- Unplanned perioperative hypothermia (UPH) (core temperature < 36° C) may occur in 20% to 40% of inpatient surgeries
- Associated with numerous adverse outcomes, including a 68% increase in the incidence of surgical site infection (SSI)
- Outpatient surgeries account for 75% of all procedures
- Incidence of UPH in the ambulatory surgical population has not been elucidated
Purpose

• The purpose of this study was to describe the incidence of UPH in the ambulatory surgery population in a large regional-referral healthcare setting

• Specific Aims:
  – Determine the incidence of UPH in the ambulatory surgical population
  – Determine the relationship of preoperative and intraoperative warming interventions to the development of UPH in the ambulatory surgical population
Methodology

- Retrospective exploratory design using electronic medical record abstraction
- Sample
  - Purposeful convenience sample of all adult ambulatory surgical procedures over a 1 year period
- Independent variables
  - Risk factors & confounding variables associated with the development of UPH
- Dependent variables
  - Postoperative patient temperature and incidence of UPH
Results: Sample Demographics

- N = 6521 charts
- Mean age: 53.9 (± 16.7)
- Gender
  - 39.2% male
  - 60.8% female
- Ethnicity
  - 86.6 % white
  - 4.0 % black
  - 1.0% Latino
  - 8.3 % other/unspecified
Results: Procedure/Patient

- Mean BMI: 29.0 (± 7.1)
- Mean OR time: 74.8 min (± 32.9)
- Mean surgical time: 45.1 min (± 28.9)
Results

ASA Class

- ASA 1: 50.7%
- ASA 2: 31.4%
- ASA 3: 6.2%
- ASA 4: 10.4%

Type Procedure

- Open: 45.0%
- Closed: 43.9%
- Other: 11.1%

Anesthesia Type

- Regional: 64.6%
- General: 26.1%
- Combined: 7.0%
- MAC: 2.2%
Outcome Measures

• Mean temperatures
  – Preoperative: 98.1°F (± 0.5)
  – First postop: 97.9°F (± 0.6)
• Incidence of UPH: 1.0%
• Confounding variables examined: Preop temp, procedure type, anesthesia type, OR & surgery time, warming measures, co-morbidities (arterial & cardiovascular disease, diabetes, coagulopathies)
Odds of Developing UPH

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age*</td>
<td>1.02</td>
<td>(1.00, 1.03)</td>
<td>&lt; 0.05*</td>
</tr>
<tr>
<td>Female*</td>
<td>0.88</td>
<td>(0.84, 0.93)</td>
<td></td>
</tr>
<tr>
<td>BMI*</td>
<td>0.54</td>
<td>(0.35, 0.84)</td>
<td></td>
</tr>
<tr>
<td>Preop Temp*</td>
<td>0.76</td>
<td>(0.51, 1.13)</td>
<td></td>
</tr>
<tr>
<td>MAC*</td>
<td>0.63</td>
<td>(0.35, 1.12)</td>
<td></td>
</tr>
<tr>
<td>ASA*</td>
<td>0.45</td>
<td>(0.21, 0.97)</td>
<td></td>
</tr>
<tr>
<td>CV Disease</td>
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</tbody>
</table>
Discussion

- Incidence of UPH in the ambulatory surgical population is much lower than previously reported for inpatient surgeries
- Previous risk factors of increased age & lower BMI supported
- Female gender shown to be protective
- Higher preoperative temperature shown to be protective
  - Supportive of preoperative warming
References


Questions