Measure Abbreviation: TEMP 01

Measure Description: Percentage of cases that active warming was administered by the anesthesia provider.

Measure Time Period: Anesthesia Start to Patient Extubated

Measure Type: Process

Scope: Calculated on a per case basis.

Measure Summary:
The active warming (TEMP 01) measure will identify the percentage of cases in which an active warming device was applied between Case Start and Case End or the patient maintained a temperature above 36.0°C without active warming. In the event that the provider opts to not use an active warming device, the case will meet the measure requirements if at least one temperature is greater than or equal to 36.0°C within 30 minutes before extubation.

Active Warming includes:
- Convective warming: forced air
- Conductive warming: circulating water mattress, resistive heating electrical blankets
- Endovascular warming, using a heat exchanging catheter (very rarely used)
- Radiant heaters

Passive Warming interventions (NOT active warming):
- Increasing ambient room temperature
- Thermal insulators such as blankets
- Fluid warmer (except for cesarean section)

Temperature Monitoring Locations: For TEMP 01, any temperature measurement coming from a physiologic monitor will suffice (peripheral or core).

Rationale:
General and neuraxial anesthesia causes vasodilation thus redistributing body heat from the core to peripheries. This redistribution can cause hypothermia. Core temperatures outside the normal range pose significant risks to patients. Pediatric patients are more likely to develop perioperative hypothermia due to a high surface area to weight ratio and inability to regulate their own temperature. Published research has correlated impaired wound healing, adverse cardiac events, altered drug metabolism, and coagulopathies with unplanned perioperative hypothermia. These adverse outcomes resulted in prolonged hospital stays and increased healthcare expenditures. Active warming techniques provide the best results for reducing cutaneous heat loss and preventing hypothermia.

Inclusions:
Cases with general or neuraxial anesthetic technique.
Exclusions:

- ASA 5 and 6 cases
- Diagnostic Procedures (CPT: 01922)
- MRI Rooms (Rooms tagged as Radiology-MRI)
- MRI with procedure text:
  - MRI
  - MR Head
  - MR Brain
  - MR Chest
  - MR Torso
  - MR Abdomen
  - MR Lumbar
  - MR Spine
  - MR Knee
  - MR Femur
  - MR Abdomen
  - OFFSITE - RADIOLOGY PROCEDURE
- Obstetric Non-Operative Procedures (CPT: 01958, 01960, 01967)
- Obstetric Non-Operative Procedures with procedure text: “Labor Epidural”
- Cases less than 60 minutes between Case Start and Case End.

*Algorithm for determining Case Length:

Case Start

1. Anesthesia Induction End. If not available, then
2. Anesthesia Induction Begin. If not available, then
3. Procedure Start. If not available, then
4. Patient in Room. If not available, then
5. Anesthesia Start

Case End

1. Patient Extubated. If not available, then
2. Procedure End. If not available, then
3. Patient Out of Room. If not available, then
4. Anesthesia End
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**MPOG Concept IDs Used:**

<table>
<thead>
<tr>
<th>Temperature MPOG Concept IDs</th>
<th>Case Time MPOG Concept IDs</th>
<th>Warming Method Concept IDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3050 Temp 1- Unspecified Site</td>
<td>50002 Aacd Anesthesia Start Date/Time</td>
<td>50138 Patient Warming Method- Convective Warmer</td>
</tr>
<tr>
<td>3051 Temp 2- Unspecified Site</td>
<td>50003 Aacd Patient in Room Date/Time</td>
<td>50320 Warming Attempts- Warm Room</td>
</tr>
<tr>
<td>3052 Temp 1- Monitoring Site</td>
<td>50004 Aacd Induction Start Date/Time</td>
<td>50321 Warming Attempts- Convective Warmer</td>
</tr>
<tr>
<td>3053 Temp 2- Monitoring Site</td>
<td>50005 Aacd Induction End Date/Time</td>
<td>50322 Warming Attempts- Warm Blanket</td>
</tr>
<tr>
<td>3031 Temperature- Temporal Artery</td>
<td>50006 Aacd Procedure Start Date/Time</td>
<td>50323 Warming Attempts- Radiant Heaters</td>
</tr>
<tr>
<td>3054 Temperature- Skin</td>
<td>50007 Aacd Procedure Finish Date/Time</td>
<td>50324 Warming Attempts- Fluid Warmer</td>
</tr>
<tr>
<td>3055 Temperature- Esophageal</td>
<td>50008 Aacd Patient out of room Date/Time</td>
<td>50325 Warming Attempts- Warmer or blankets location detail</td>
</tr>
<tr>
<td>3056 Temperature- Blood</td>
<td>50009 Aacd Anesthesia End Date/Time</td>
<td></td>
</tr>
<tr>
<td>3057 Temperature- Tympamic</td>
<td>Exubation MPOG Concept IDs</td>
<td></td>
</tr>
<tr>
<td>3058 Temperature- Bladder</td>
<td>50127 Intubation Extubated Awake or Deep</td>
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<tr>
<td>3059 Temperature- Nasopharyngeal</td>
<td>50145 Laryngeal Mask Airway removed Deep or Awake</td>
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<tr>
<td>3060 Temperature- Axillary</td>
<td>50202 Emergence- Patient Extubated</td>
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<tr>
<td>3061 Temperature- Rectal</td>
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<tr>
<td>3062 Temperature- Myocardial</td>
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<tr>
<td>3533 Temperature Route</td>
<td></td>
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</tr>
<tr>
<td>50191 Monitoring- Temperature Probe Placed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50192 Monitoring- Temperature Probe Location/Type</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data Diagnostics Affected:**

- Percentage of Cases with a Temperature Observation
- Percentage of Cases with an Extubation Note
- Percentage of Cases with Anesthesia Induction End Documented
- Percentage of General and Neuraxial Cases with Warming Method Specified
Phenotypes Used:
- AnesthesiaTechniqueGeneral
- AnesthesiaTechniqueNeuraxial
- WarmingMethod_Cleaned
- CaseStart
- ExtubationTimes
- LMARemovalTimes
- SurgeryEnd
- PatientOutOfRoom
- AnesthesiaEnd
- ASA5or6
- ProcedureTypeMri
- ProcedureTypeLaborEpidural

Other Measure Build Details:
- Artifact algorithm:
  - Less than 32.0˚C (89.6F)
  - Greater than 40.0˚C (104.0F)
  - Any minute-to-minute jumps >0.5˚C equivalent.
    Example: 0.125˚C /15s, 0.25˚C / 30s, 1˚C / 2mins
- Conversion from F to C: \( F = \frac{32 + 9}{5} (°C) \)
- If temperature site not present in physiologic concept, refer to intraop notes.

Success:
- Cases with documentation of an active warming device applied OR
- Cases with at least one temperature greater than or equal to 36.0°C within the 30 minutes before case end.

Case End
1. Patient Extubated. If not available, then
2. Procedure End. If not available, then
3. Patient Out of Room. If not available, then
4. Anesthesia End

- Other considerations:
  - For patients undergoing cesarean section (CPT: 01961, 01962, 01963, 01968, 01969), fluid warmer is accepted as an active warming device.

Threshold: 90% success.

Responsible Provider: Provider present at induction end.
Method for determining Responsible Provider:
1. Provider signed in at Anesthesia Induction End. If not available then,
2. Provider signed in at Anesthesia Induction Begin. If not available then,
3. Provider signed in at Procedure Start. If not available then,
4. Provider signed in at Patient in Room. If not available then,
5. Provider signed in at Anesthesia Start

Risk Adjustment (for outcome measures):
Not applicable.

References: