Measure Abbreviation: TEMP 01

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

NQS Domain: Effective Clinical Care

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 (Ranger)

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. 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.[1-5]

Inclusions:
Cases with general or neuraxial anesthetic technique.

Exclusions:

- ASA 5 and 6 cases
- MRI cases (CPT: 01922)
- Obstetric Non-Operative Procedures (CPT: 01958, 01960, 01967)
- Obstetric Non-Operative Procedure Rooms (Rooms tagged as OB-GYN – Labor and Delivery)
- 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

MPOG Concept IDs Used:

Temperature MPOG Concept IDs	
3050	Temp 1- Unspecified Site
3051	Temp 2- Unspecified Site
3052	Temp 1- Monitoring Site
3053	Temp 2- Monitoring Site
3031	Temperature- Temporal Artery
3054	Temperature- Skin
3055	Temperature- Esophageal
3056	Temperature- Blood
3057	Temperature- Tympanic
3058	Temperature- Bladder
3059	Temperature- Nasopharyngeal
3060	Temperature- Axillary
3061	Temperature- Rectal
3062	Temperature- Myocardial
3533	Temperature Route
50191	Monitoring- Temperature Probe Placed
50192	Monitoring- Temperature Probe Location/Type

Case Time MPOG Concept IDs	
50002	AACD Anesthesia Start Date/Time
50003	AACD Patient in Room Date/Time
50004	AACD Induction Start Date/Time
50005	AACD Induction End Date/Time
50006	AACD Procedure Start Date/Time
50007	AACD Procedure Finish Date/Time
50008	AACD Patient out of room Date/Time
50009	AACD Anesthesia End Date/Time

Extubation MPOG Concept IDs	
50127	Intubation Extubated Awake or Deep
50145	Laryngeal Mask Airway removed Deep or Awake
50202	Emergence- Patient Extubated

Warming Method Concept IDs	
50138	Patient Warming Method- Convective Warmer
50320	Warming Attempts- Warm Room
50321	Warming Attempts- Convective Warmer
50322	Warming Attempts- Warm Blanket
50323	Warming Attempts- Radiant Heaters
50324	Warming Attempts- Fluid Warmer
50325	Warming Attempts- Warmer or blankets location detail

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

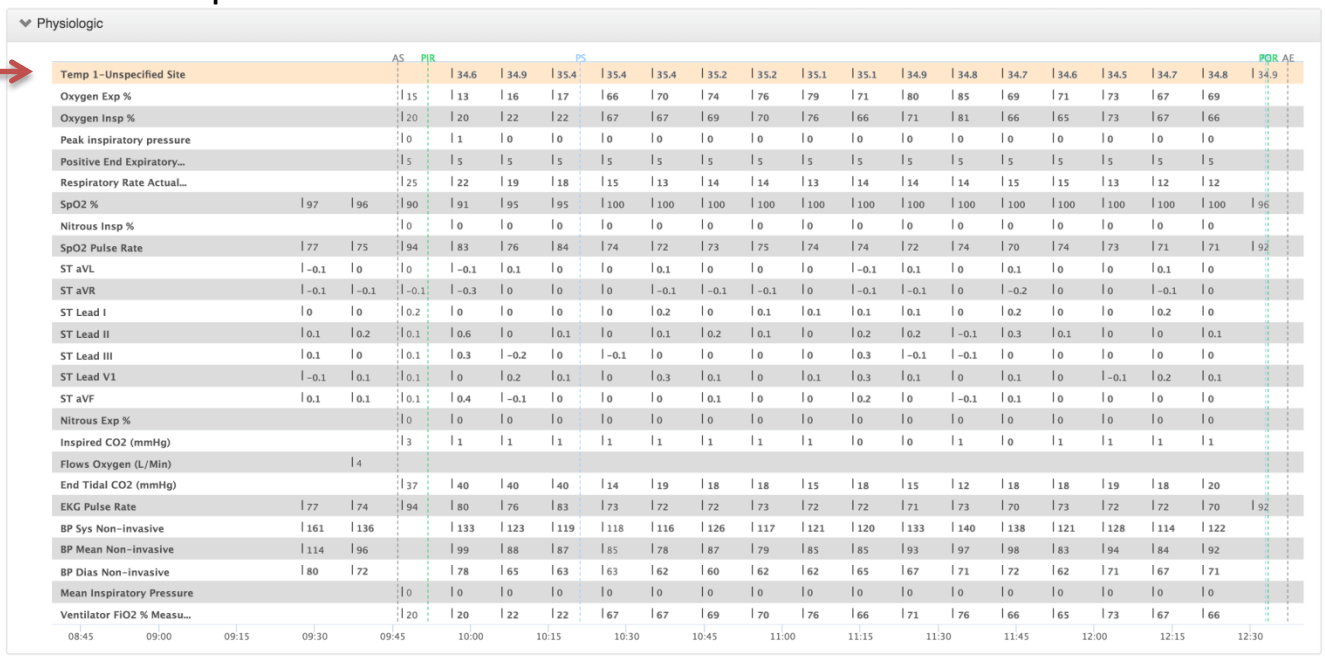
Collations Used:

- AnesthesiaTechniqueGeneral
- AnesthesiaTechniqueNeuraxial
- WarmingMethod_Cleaned
- CaseStart
- ExtubationTimes
- LMARemovalTimes
- SurgeryEnd
- PatientOutOfRoom
- AnesthesiaEnd
- ASA5or6
- ProcedureTypeMri
- ProcedureTypeLaborEpidural

Failed Case Review Grid:

- Link to Case
- Date of Service
- Procedure
- Surgical Service
- Operating Room
- Duration (minutes)
- First Extubation
- Intraop Highest Temperature
- Warming Method
- Has Anesthesia CPT
- Responsible Provider
- MPOG Case ID

Case Viewer Template:



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=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

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:

1. Carpenter L, Baysinger CL. Maintaining perioperative normothermia in the patient undergoing cesarean delivery. *Obstetrical & gynecological survey.* 2012;67(7):436-446.
2. Horn EP, Schroeder F, Gottschalk A, et al. Active warming during cesarean delivery. *Anesthesia and analgesia.* 2002;94(2):409-414, table of contents.
3. Insler SR, Sessler DI. Perioperative thermoregulation and temperature monitoring. *Anesthesiology clinics.* 2006;24(4):823-837.
4. Sessler DI. Temperature monitoring and perioperative thermoregulation. *Anesthesiology.* 2008;109(2):318-338.
5. Sun Z, Honar H, Sessler DI, et al. Intraoperative core temperature patterns, transfusion requirement, and hospital duration in patients warmed with forced air. *Anesthesiology.* 2015;122(2):276-285.