

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.<sup>1-5</sup>

#### Inclusions:

Cases with general or neuraxial anesthetic technique.

(TEMP 01) Measure Specification Page 2 of 6

# 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

# (TEMP 01) Measure Specification Page 3 of 6

# MPOG Concept IDs Used:

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

# 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

## (TEMP 01) Measure Specification Page 4 of 6

## **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

#### (TEMP 01) Measure Specification Page 5 of 6

# Case Viewer Template:

✓ Physiologic

			AS PI	٤		PS														
Temp 1–Unspecified Site				34.6	34.9	35.4	35.4	35.4	35.2	35.2	35.1	35.1	34.9	34.8	34.7	34.6	34.5	34.7	34.8	1
Oxygen Exp %			15	13	16	17	66	70	74	76	79	71	l 80	85	69	71	73	67	69	
Oxygen Insp %			l 20	20	22	22	l 67	l 67	l 69	70	76	l 66	71	81	l 66	l 65	73	l 67	l 66	
Peak inspiratory pressure			lo	1	0	lo	١o	lo	lo	lo	lo	lo	lo	lo	lo	lo	lo	lo	Ιo	
Positive End Expiratory			ls	۱ 5	۱ 5	ls	۱ 5	۱5	l s	l s	۱5	۱ 5	۱ 5	۱ 5	۱ 5	۱ 5	۱ 5	۱ 5	۱ 5	
Respiratory Rate Actual			l 25	22	19	18	15	13	14	14	13	14	14	14	15	15	13	12	12	
SpO2 %	97	96	l 90	91	95	l 95	100	100	100	100	100	100	100	100	100	100	100	100	100	
Nitrous Insp %			lo	l o	lo	lo	lo	lo	lo	Ιo	lo	lo	lo	l o	lo	lo	l o	lo	lo	
SpO2 Pulse Rate	77	75	194	83	76	84	74	72	73	75	74	74	72	74	70	74	73	71	71	
ST aVL	-0.1	lo	lo	-0.1	0.1	lo	l o	0.1	lo	lo	0	l -0.1	0.1	l o	0.1	lo	l o	0.1	lo	
ST aVR	-0.1	-0.1	I-0.1	-0.3	Ιo	lo	Ιo	-0.1	-0.1	-0.1	lo	l-0.1	-0.1	Ιo	-0.2	lo	Ιo	-0.1	Ιo	
ST Lead I	lo	lo	l 0.2	Ιo	Ιo	lo	١o	0.2	lo	0.1	0.1	0.1	0.1	l o	0.2	lo	Ιo	0.2	lo	
ST Lead II	0.1	l 0.2	l 0.1	l 0.6	Ιo	l 0.1	Ιo	l 0.1	l 0.2	0.1	lo	l 0.2	l 0.2	-0.1	l 0.3	0.1	Ιo	Ιo	0.1	
ST Lead III	0.1	lo	l 0.1	0.3	-0.2	lo	-0.1	lo	lo	lo	lo	0.3	-0.1	-0.1	lo	lo	lo	lo	lo	
ST Lead V1	-0.1	0.1	l 0.1	Ιo	0.2	l 0.1	Ιo	l 0.3	0.1	Ιo	0.1	l 0.3	0.1	Ιo	0.1	lo	-0.1	l 0.2	0.1	
ST aVF	0.1	0.1	l 0.1	0.4	-0.1	lo	lo	lo	0.1	lo	lo	0.2	lo	-0.1	0.1	lo	lo	lo	lo	
Nitrous Exp %			lo	Ιo	Ιo	lo	Ιo	Ιo	Ιo	Ιo	10	Ιo	lo	Ιo	Ιo	lo	Ιo	lo	Ιo	
Inspired CO2 (mmHg)			13	1	11	1	1	1	1	1	1	lo	١o	1	lo	1	1	1	1	
Flows Oxygen (L/Min)		4																		
End Tidal CO2 (mmHg)			l 37	l 40	40	l 40	14	19	18	18	15	18	15	12	18	18	19	18	20	
EKG Pulse Rate	77	74	194	l 80	l 76	l 83	73	72	72	73	72	72	71	73	70	73	72	72	l 70	19
BP Sys Non-invasive	161	136		133	123	119	118	116	126	1117	121	120	133	140	138	121	128	114	122	
BP Mean Non-invasive	114	96		99	88	l 87	I 85	78	87	79	85	85	93	97	98	83	94	84	92	
BP Dias Non-invasive	80	72		78	65	63	l 63	62	60	62	62	65	67	71	72	62	71	67	71	
Mean Inspiratory Pressure			lo	10	0	lo	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ventilator FiO2 % Measu		120	20	22	22	67	67	69	70	76	66	71	76	66	65	73	67	66		
08:45 09:00 09:15	09:30	0	9:45	10:00		10:15	10.30	)	10:45	11.0	0	11.15	11	30	11:45	1	2.00	12.15		12:30

### **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.

# (TEMP 01) Measure Specification Page 6 of 6

# 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.