



**Measure Abbreviation:** TEMP 02

**Measure Description:** Percentage of cases with increased risk of hypothermia that the anesthesia provider documented core temperature.

**NQS Domain:** Effective Clinical Care

**Measure Type:** Process

**Scope:** Calculated on a per case basis.

**Measure Summary:** TEMP 02 is the core temperature monitoring measure that will identify the percentage of cases in the anesthesia provider documented at least one core temperature intraoperatively for any patient receiving a general anesthetic.

Core or Near Core Temperature Monitoring Includes:

- Pulmonary Artery Temperature
- Distal Esophageal Temperature
- Nasopharyngeal Temperature
- Tympanic Membrane Temperature
- Bladder Temperature
- Rectal Temperature
- Axillary Temperature (arm must be at patient side)
- Oral Temperature

Peripheral Temperatures (not compliant):

- Skin Temperature
- Temporal Artery Temperature

**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. Core temperature measurements are less variable than skin temperature measurements and more accurately represent body temperature.<sup>1-3</sup>

**Inclusions:**

All surgical patients receiving general anesthesia

**Exclusions:**

- ASA 5 and 6 cases
- Neuraxial anesthesia as primary technique
- MRI Cases (CPT: 01922)

**Exclusions (continued):**

- Cases  $\leq$ 30 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		Case Time MPOG Concept IDs	
3031	Temperature- Temporal Artery	50002	AACD Anesthesia Start Date/Time
3050	Temp 1- Unspecified Site	50003	AACD Patient in Room Date/Time
3051	Temp 2- Unspecified Site	50004	AACD Induction Start Date/Time
3052	Temp 1- Monitoring Site	50005	AACD Induction End Date/Time
3053	Temp 2- Monitoring Site	50006	AACD Procedure Start Date/Time
3054	Temperature- Skin	50007	AACD Procedure Finish Date/Time
3055	Temperature- Esophageal	50008	AACD Patient out of room Date/Time
3056	Temperature- Blood	50009	AACD Anesthesia End Date/Time
3057	Temperature- Tympanic		
3058	Temperature- Bladder		
3059	Temperature- Nasopharyngeal		
3060	Temperature- Axillary		
3061	Temperature- Rectal		
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 Cases with Temperature Location Documented

**Collations Used:**

- AnesthesiaStart
- AnesthesiaEnd
- AnesthesiaTechniqueGeneral
- CaseStart
- ASA5or6
- ProcedureTypeMri
- CaseDuration

**Failed Case Review Grid:**

- Link to Case
- Date of Service
- Procedure
- Surgical Service
- Operating room
- Has Anesthesia CPT
- Responsible Provider
- MPOG Case ID

**Case Viewer Template:**

	AS	PIR	PS	POR	AE															
Temp 1-Unspecified Site		34.6	34.9	35.4	35.4	35.2	35.1	35.1	34.9	34.8	34.7	34.6	34.5	34.7	34.8	34.9				
Oxygen Exp %	15	13	16	17	66	70	74	76	79	71	80	85	69	71	73	67	69			
Oxygen Insp %	20	20	22	22	67	67	69	70	76	66	71	81	66	65	73	67	66			
Peak Inspiratory pressure	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Positive End Expiratory...	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5			
Respiratory Rate Actual...		22	19	18	15	13	14	14	13	14	14	14	15	15	13	12	12			
SpO2 %	97	96	90	91	95	95	100	100	100	100	100	100	100	100	100	100	100	96		
Nitrous Insp %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SpO2 Pulse Rate	77	75	94	83	76	84	74	72	73	75	74	74	72	74	70	74	73	71	71	92
ST aVL	-0.1	0	0	-0.1	0.1	0	0	0.1	0	0	0	-0.1	0.1	0	0.1	0	0	0.1	0	
ST aVR	-0.1	-0.1	-0.1	-0.3	0	0	0	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	-0.2	0	0	-0.1	0	
ST Lead I	0	0	0.2	0	0	0	0	0.2	0	0.1	0.1	0.1	0.1	0	0.2	0	0	0.2	0	
ST Lead II	0.1	0.2	0.1	0.6	0	0.1	0	0.1	0.2	0.1	0	0.2	0.2	-0.1	0.3	0.1	0	0	0.1	
ST Lead III	0.1	0	0.1	0.3	-0.2	0	-0.1	0	0	0	0	0.3	-0.1	-0.1	0	0	0	0	0	
ST Lead V1	-0.1	0.1	0.1	0	0.2	0.1	0	0.3	0.1	0	0.1	0.3	0.1	0	0.1	0	-0.1	0.2	0.1	
ST aVF	0.1	0.1	0.1	0.4	-0.1	0	0	0	0.1	0	0	0.2	0	-0.1	0.1	0	0	0	0	
Nitrous Exp %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Inspired CO2 (mmHg)		3	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	
Flows Oxygen (L/Min)		4																		
End Tidal CO2 (mmHg)		37	40	40	40	14	19	18	18	15	18	15	12	18	18	19	18	20		
EKG Pulse Rate	77	74	94	80	76	83	73	72	72	73	72	72	71	73	70	73	72	72	70	92
BP Sys Non-invasive	161	136		133	123	119	118	116	126	117	121	120	133	140	138	121	128	114	122	
BP Mean Non-invasive	114	96		99	88	87	85	78	87	79	85	85	93	97	98	83	94	84	92	
BP Dias Non-invasive	80	72		78	65	63	63	62	60	62	62	65	67	71	72	62	71	67	71	
Mean Inspiratory Pressure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ventilator FIO2 % Measu...	20	20	22	22	67	67	69	70	76	66	71	76	66	65	73	67	66			

**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 at least one core temperature documented between Anesthesia Start and 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. 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.
2. Insler SR, Sessler DI. Perioperative thermoregulation and temperature monitoring. *Anesthesiology clinics*. 2006;24(4):823-837.
3. Sessler DI. Temperature monitoring and perioperative thermoregulation. *Anesthesiology*. 2008;109(2):318-338.