

**Anesthesiology and Critical Care
Physician Performance Measurement Set**

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**Anesthesiology
Work Group**

Alex A. Hannenberg, MD (Co-Chair, anesthesiology)
Jinnet Fowles, PhD (Co-Chair, methodology)

Neal Cohen MD, MPH, MS (anesthesiology)	Kay Jewell, MD, ABHM (internal medicine)
Richard T. Connis, PhD (methodology)	Gerald A. Maccioli MD, FCCM (anesthesiology, critical care)
Todd Dorman MD (anesthesiology, critical care)	David G. Nickinovich, PhD (methodology)
Thomas Esposito, MD, MPH, FACS (surgery)	Mark D. Morasch, MD (vascular surgery)
Ronald A. Gabel, MD (anesthesiology)	William P. Schechter, MD FACS (surgery)
Michael Heisler, MD, MPH (hospital medicine)	Daniel Sessler MD (anesthesiology)
Cynthia P. Helstad, PhD, RN (Wisc. Med. Society)	Lisa J. Thiemann, CRNA, MNA (nurse anesthetists)
Daniel L Herr, MS, MD, FCCM (critical care medicine)	Patrick E. Voight, RN, BSN, MSA, CNOR (perioperative registered nurses)

American Society of Anesthesiologists

Karin Bierstein, JD, MPH

American Medical Association

Karen S. Kmetik, PhD
Mark Antman, DDS, MBA
Kendra Hanley, MS, CHE
Joseph Y. Gave, MPH

Facilitators

Timothy F. Kresowik, MD
Rebecca A. Kresowik

National Committee for Quality Assurance

Phil Renner, MBA

Joint Commission on Accreditation of Healthcare Organizations

Lisa Buczkowski, RN, MS
Elvira Ryan, RN

Physician Performance Measures (Measures) and related data specifications, developed by the Physician Consortium for Performance Improvement® (the Consortium), are intended to facilitate quality improvement activities by physicians.

These Measures are intended to assist physicians in enhancing quality of care. Measures are designed for use by any physician who manages the care of a patient for a specific condition or for prevention. These performance Measures are not clinical guidelines and do not establish a standard of medical care. The Consortium has not tested its Measures for all potential applications. The Consortium encourages the testing and evaluation of its Measures.

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Purpose of Measures:

These clinical performance measures, developed by the American Society of Anesthesiologists and the Physician Consortium for Performance Improvement® (Consortium), are designed for individual quality improvement. Unless otherwise indicated, the measures are also appropriate for accountability if appropriate methodological, statistical, and implementation rules are achieved.

Measure #1: Prevention of Ventilator-Associated Pneumonia -- Head Elevation (approved 06/07)

Measure #2: Prevention of Catheter-Related Bloodstream Infections (CRBSI) – Catheter Insertion Protocol (approved 06/07)

Measure #3: Perioperative Temperature Management (approved 10/07)

Intended Users and Patient Population:

These measures are designed for use by physicians and for calculating reporting or performance measurement at the individual physician level. When existing hospital-level or plan-level measures are available for the same measurement topics, the Consortium attempts to harmonize the measures to the extent feasible.

Measures #1 is designed for anesthesiologists and other physicians caring for patients in the intensive care unit (ICU) in the hospital setting

Measure #2 is designed for anesthesiologists and other physicians caring for patients who undergo central venous catheter insertion in the hospital setting (not restricted to the ICU)

Measure #3 is designed for anesthesiologists providing anesthesia care for patients undergoing a surgical or therapeutic procedure

The Consortium also encourages the use of these measures by health care professionals in addition to physicians, where appropriate.

Measure Specifications

The Consortium seeks to specify measures for implementation using multiple data sources, including paper medical record, administrative (claims) data, and particular emphasis on Electronic Health Record Systems (EHRS). Draft specifications to report on these measures for Anesthesiology using administrative (claims) data are included in this document. We have identified codes for these measures, including ICD-9 and CPT (Evaluation & Management Codes, Category I and where Category II codes would apply). Specifications for additional data sources, including EHRS, will be fully developed at a later date. We welcome comments on the draft specifications included in addition to the measure language.

Measure Exclusions:

For process measures, the Consortium provides three categories of reasons for which a patient may be excluded from the denominator of an individual measure:

- **Medical reasons**

Includes:

- not indicated (absence of organ/limb, already received/performed, other)
- contraindicated (patient allergic history, potential adverse drug interaction, other)

- **Patient reasons**

Includes:

- patient declined
- economic, social, or religious reasons
- other patient reasons

- **System reasons**

Includes:

- resources to perform the services not available
- insurance coverage/payor-related limitations
- other reasons attributable to health care delivery system

These measure exclusion categories are not available uniformly across all measures; for each measure, there must be a clear rationale to permit an exclusion for a medical, patient, or system reason. The exclusion of a patient may be reported by appending the appropriate modifier to the CPT Category II code designated for the measure:

- **Medical reasons**: modifier 1P
- **Patient reasons**: modifier 2P
- **System reasons**: modifier 3P

Although this methodology does not require the external reporting of more detailed exclusion data, the Consortium recommends that physicians document the *specific* reasons for exclusion in patients' medical records for purposes of optimal patient management and audit-readiness. The Consortium also advocates the systematic review and analysis of each physician's exclusions data to identify practice patterns and opportunities for quality improvement. For example, it is possible for implementers to calculate the percentage of patients that physicians have identified as meeting the criteria for exclusion.

Please refer to documentation for each individual measure for information on the acceptable exclusion categories and the codes and modifiers to be used for reporting.

Measures #1-2 in the Anesthesiology measurement set are process measures; measure #3 is a hybrid measure with both process and outcome components.

For **outcome measures**, the Consortium specifically identifies all acceptable reasons for which a patient may be excluded from the denominator. Each specified reason is reportable with a CPT Category II code designated for that purpose.

There are no outcome measures in the Anesthesiology measurement set.

The Consortium continues to evaluate and likely will evolve its methodology for handling exclusions as it gains experience in the use of the measures. The Consortium welcomes comments on its exclusions methodology.

Data Capture and Measure Calculation

The Consortium intends for physicians to collect data on each patient eligible for a measure. Feedback on measures should be available to physicians by patient to facilitate patient management and in aggregate to identify opportunities for improvement across a physician's patient population.

Measure calculations will differ depending on whether a rate is being calculated for **performance** or **reporting** purposes.

The method of calculation for **performance** follows these steps: first, identify the patients who meet the eligibility criteria for the denominator (PD); second, identify which of those patients meet the numerator criteria (A); and third, for those patients who do not meet the numerator criteria, determine whether an appropriate exclusion applies and subtract those patients from the denominator (C). (see examples below)

The methodology also enables implementers to calculate the rates of patient exclusions and to further analyze both low and high rates, as appropriate (see examples below).

The method of calculation for **reporting** differs. One program which currently focuses on reporting rates is the Centers for Medicare and Medicaid Services (CMS) Physician Quality Reporting Initiative (PQRI). Currently, under that program design, there will be a reporting denominator determined solely from claims data (CPT and ICD-9), which in some cases result in a reporting denominator that is much larger than the eligible population for the performance denominator. Additional components of the reporting denominator are explained below.

The components that make up the numerator for reporting include all patients from the eligible population for which the physician has reported, including: the number of patients who meet the numerator criteria (A), the number of patients for whom valid exclusions apply (C) and also the number of patients who do not meet the numerator criteria (D). These components, where applicable, are summed together to make up the inclusive reporting numerator. The calculation for reporting will be the reporting numerator divided by the reporting denominator. (see examples below).

Examples of calculations for reporting and performance are provided for each measure.

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Numerator (A) Includes:

Number of patients meeting numerator criteria

Performance Denominator (PD) Includes:

Number of patients meeting criteria for denominator inclusion

Denominator Exclusions (C) Include:

Number of patients with valid medical, patient or system exclusions (where applicable; will differ by measure)

Performance Calculation

$$\frac{\text{A (\# of patients meeting numerator criteria)}}{\text{PD (\# patients in denominator) - C (\# patients with valid denominator exclusions)}}$$

It is also possible to calculate the percentage of patients excluded overall, or excluded by medical, patient, or system reason where applicable:

Overall Exclusion Calculation

$$\frac{\text{C (\# of patients with any valid exclusion)}}{\text{PD (\# patients in denominator)}}$$

OR

Exclusion Calculation by Type

$$\frac{\text{C}_1 (\# \text{ patients with medical reason})}{\text{PD (\# patients in denominator)}}$$

$$\frac{\text{C}_2 (\# \text{ patients with patient reason})}{\text{PD (\# patients in denominator)}}$$

$$\frac{\text{C}_3 (\# \text{ patients with system reason})}{\text{PD (\# patients in denominator)}}$$

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following components, where applicable. (There may be instances where there are no patients to include in A, C, D, or E).

A. Number of patients meeting additional denominator criteria (for measures where true denominator cannot be determined through ICD-9 and CPT Category I coding alone) AND numerator criteria

C. Number of patients with valid medical, patient or system exclusions (where applicable; will differ by measure)

D. Number of patients not meeting numerator criteria and without a valid exclusion

E. All other patients not meeting additional denominator criteria (for measures where true denominator cannot be determined through ICD-9 and CPT Category I coding alone)

Reporting Denominator (RD) Includes:

RD. Denominator criteria (identifiable through ICD-9 and CPT Category I coding)

Reporting Calculation

A(# of patients meeting additional denominator criteria AND numerator criteria) + **C**(# of patients with valid exclusions) + **D**(# of patients NOT meeting numerator criteria) + **E**(# of patients not meeting additional denominator criteria)

RD (# of patients in denominator)

Anesthesiology and Critical Care
Measure #1: Prevention of Ventilator-Associated Pneumonia -- Head Elevation

This measure may be used as an Accountability measure

Clinical Performance Measure
<p>Numerator: Patients who had an order on the first ventilator day for head of bed elevation (30-45 degrees)</p> <p>Denominator: All patients aged 18 years and older receiving care in the ICU who receive mechanical ventilation</p> <p>Denominator Exclusions: Documentation of medical reason(s) for not ordering head of bed elevation (30-45 degrees) on the first ventilator day</p> <p>Measure: Percentage of ICU patients aged 18 years and older who receive mechanical ventilation and who had an order on the first ventilator day for head of bed elevation (30-45 degrees)</p>
<p>The following clinical recommendation statements are quoted <u>verbatim</u> from the referenced clinical guidelines and represent the evidence base for the measure:</p> <p>Patients should be kept in the semirecumbent position (30–45°) rather than supine to prevent aspiration, especially when receiving enteral feeding. (ATS/IDSA¹) (Level I)</p> <p>In the absence of medical contraindication(s), elevate at an angle of 30-45 degrees the head of the bed of a patient at high risk for aspiration pneumonia (eg, a person receiving mechanically assisted ventilation or who has an enteral tube in place). (CDC²) (Category I)</p>
<p>Rationale for the measure:</p> <p>Mechanically ventilated patients are at high risk for aspiration pneumonia. Elevation of the head of the bed has been shown to reduce the risk of aspiration. Data elements required for the measure can be captured and the measure is actionable by the physician.</p> <p>Existing hospital-level measures for this topic were consulted and, to the extent feasible, harmonization between physician- and hospital-level measurement was achieved.</p>
<p>Data capture and calculations:</p> <p>Calculation for Performance</p> <p>For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.</p> <p>Numerator (A) Includes:</p> <ul style="list-style-type: none"> • Patients who have an order for head of bed elevation (30-45 degrees) on first ventilator day. <p>Denominator (PD) Includes:</p> <ul style="list-style-type: none"> • Patients who are 18 years and older AND • Are receiving mechanical ventilation AND • Are being treated in the Intensive Care Unit (ICU) <p>Denominator Exclusions (C) Include:</p> <ul style="list-style-type: none"> • Documentation of medical reason(s) for not ordering head of bed elevation (30-45 degrees) on the first ventilator day

Performance Calculation

$$\frac{A \text{ (# of patients meeting numerator criteria)}}{PD \text{ (# of patients in denominator)} - C \text{ (# of patients with valid denominator exclusions)}}$$

Components for this measure are defined as:

A	# of patients who have order for head of bed elevation (30-45 degrees) on first ventilator day
PD	# of patients aged 18 years and older AND who are receiving mechanical ventilation AND who are being treated in the ICU
C	# of patients with valid medical reason for not ordering head of bed elevation (30-45 degrees) on the first ventilator day

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

A. Patients receiving mechanical ventilation AND who have an order for head of bed elevation (30-45 degrees) on first ventilator day

C. Patients who do not have an order for the first ventilator day for head of bed elevation (30 to 45 degrees), but for whom there is a valid documented reason for not doing so

D. Patients who do not have an order for the first ventilator day for head of bed elevation (30 to 45 degrees), and there is no documented reason for not doing so

E. Patients who are being treated in the ICU but are not receiving mechanical ventilation

Reporting Denominator (RD) Includes:

- Patients aged 18 years and older AND
- Are being treated in the Intensive Care Unit (ICU)

Reporting Calculation

$$\frac{A(\text{\# of patients meeting additional denominator criteria AND numerator criteria}) + C(\text{\# of patients with valid exclusions}) + D(\text{\# of patients NOT meeting numerator criteria}) + E(\text{\# of patients not meeting additional denominator criteria})}{RD \text{ (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of patients receiving mechanical ventilation AND who have order for head of bed elevation (30-45 degrees) on first ventilator day
C	# of patients with valid medical reason for not ordering head of bed elevation (30-45) degrees on the first ventilator day
D	# of patients who do not have an order for the first ventilator day for head of bed elevation (30 to 45 degrees), and there is <u>no</u> documented reason for not doing so
E	# of patients not receiving mechanical ventilation
RD	# of patients aged 18 years and older AND who are being treated in the ICU

Measure Specifications – Measure #1: Prevention of Ventilator-Associated Pneumonia -- Head Elevation
Measure specifications will be provided for multiple data sources.

A. Administrative claims data

Administrative claims data collection requires users to identify the eligible population (denominator) and numerator using codes recorded on claims or billing forms (electronic or paper). Users report a rate based on all patients in a given practice for whom data are available and who meet the eligible population/denominator criteria.

(Note: The specifications listed below are those needed for performance calculation.)

Denominator (Eligible Population): All ICU patients aged 18 years and older who receive mechanical ventilation

Definition: For the purposes of this measure, mechanical ventilation may include pressure or volume preset ventilators for assisted or controlled breathing OR continuous positive airway pressure ventilation (CPAP)

- E/M codes: (if more than 30 minutes of critical care per day)
 - Critical care 99291(Note: Ventilator management (94002, 94003) and CPAP (94660) are included in the critical care codes and cannot be billed additionally.)

AND

- Report one of the following CPT Category II codes (in development) to confirm the ICU care setting and the use of mechanical ventilation (ventilator management or CPAP):
 - 4168F - Patient receiving care in the intensive care unit (ICU) and receiving mechanical ventilation, 24 hours or less
 - 4169F - Patient either not receiving care in the intensive care unit (ICU) OR *not* receiving mechanical ventilation OR receiving mechanical ventilation greater than 24 hours

Note: Only patients receiving care in the ICU and receiving mechanical ventilation (4168F) will be counted in the denominator of this measure

Denominator Exclusion: Documentation of a medical reason(s) for not ordering head of bed elevation (30-45 degrees) on the first ventilator day

- Append modifier to CPT Category II code (in development): 4167F-1P

Numerator: Patients who had an order on the first ventilator day for head of bed elevation (30-45 degrees)

- Report the CPT Category II code designated for this numerator: 4167F: Head of bed elevation (30-45 degrees) on first ventilator day ordered

B. Electronic Health Record System (in development)

C. Paper Medical Record (in development)

Anesthesiology and Critical Care

Measure #2: Prevention of Catheter-Related Bloodstream Infections (CRBSI) – Central Venous Catheter (CVC) Insertion Protocol

This measure may be used as an Accountability measure

Clinical Performance Measure

Numerator: Patients for whom central venous catheter (CVC) was inserted with all elements of maximal sterile barrier technique (cap AND mask AND sterile gown AND sterile gloves AND a large sterile sheet AND hand hygiene AND 2% chlorhexidine for cutaneous antisepsis [or acceptable alternative antiseptics, per current guideline]) followed

Denominator: All patients who undergo CVC insertion

Denominator Exclusions:

Documentation of medical reason(s) for not following all elements of maximal sterile barrier technique during CVC insertion (including increased risk of harm to patient if adherence to aseptic technique would cause delay in CVC insertion)

Measure: Percentage of patients who undergo CVC insertion for whom CVC was inserted with all elements of maximal sterile barrier technique (cap AND mask AND sterile gown AND sterile gloves AND a large sterile sheet AND hand hygiene AND 2% chlorhexidine for cutaneous antisepsis [or acceptable alternative antiseptics, per current guideline]) followed

NOTE: *For purposes of this measure, maximal sterile barrier technique during CVC insertion is defined to include use of: cap AND mask AND sterile gown AND sterile gloves AND a large sterile sheet AND hand hygiene AND 2% chlorhexidine for cutaneous antisepsis (or acceptable alternative antiseptics, per current guideline).*

The following clinical recommendation statements are quoted verbatim from the referenced clinical guidelines and represent the evidence base for the measure:

Maximal sterile barrier precautions during catheter insertion: Use aseptic technique including the use of a cap, mask, sterile gown, sterile gloves, and a large sterile sheet, for the insertion of CVCs (including PICCS) or guidewire exchange. (CDC/MMWR³) (Category IA)

Hand hygiene: Observe proper hand-hygiene procedures either by washing hands with conventional antiseptic-containing soap and water or with waterless alcohol-based gels or foams. Observe hand hygiene before and after palpating catheter insertion sites, as well as before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter. Palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained. Use of gloves does not obviate the need for hand hygiene. (CDC/MMWR³) (Category IA)

Cutaneous antisepsis: Disinfect clean skin with an appropriate antiseptic before catheter insertion and during dressing changes. Although a 2% chlorhexidine-based preparation is preferred, tincture of iodine, an iodophor, or 70% alcohol can be used. (CDC/MMWR³) (Category IA)

Rationale for the measure:

Catheter-related bloodstream infection is a costly complication of central venous catheter insertion, but may be avoided with routine use of aseptic technique during catheter insertion. This measure is constructed to require that *all* of the listed elements of aseptic technique are followed and documented. Data elements required for the measure can be captured and the measure is actionable by the physician.

Existing hospital-level measures for this topic were consulted and, to the extent feasible, harmonization between physician- and hospital-level measurement was achieved.

Data capture and calculations:

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Numerator (A) Includes:

- Patients for whom central venous catheter (CVC) was inserted with all elements of maximal sterile barrier technique followed

Denominator (PD) Includes:

- All patients who undergo CVC insertion

Denominator Exclusions (C) Include:

- Documentation of medical reason(s) for not following all elements of maximal sterile barrier technique during CVC insertion (including increased risk of harm to patient if adherence to aseptic technique would cause delay in CVC insertion)

Performance Calculation

$$\frac{\text{A (\# of patients meeting numerator criteria)}}{\text{PD (\# of patients in denominator) - C (\# of patients with valid denominator exclusions)}}$$

Components for this measure are defined as:

A	# of patients for whom central venous catheter (CVC) was inserted with all elements of maximal sterile barrier technique followed
PD	# of patients who undergo CVC insertion
C	# of patients with documentation of <u>medical</u> reason(s) for not following all elements of maximal sterile barrier technique during CVC insertion (including increased risk of harm to patient if adherence to aseptic technique would cause delay in CVC insertion)

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

- A. Patients for whom central venous catheter (CVC) was inserted with all elements of maximal sterile barrier technique followed
- C. Patients for whom all elements of maximal sterile barrier technique during CVC insertion were not followed, but for whom there is a valid documented medical reason for not doing so (including increased risk of harm to patient if adherence to aseptic technique would cause delay in CVC insertion)
- D. Patients for whom all elements of maximal sterile barrier technique during CVC insertion were not followed, and there is no documented medical reason for not doing so

Reporting Denominator (RD) Includes:

- All patients who undergo CVC catheter insertion

Reporting Calculation

$$\frac{A(\text{\# of patients meeting numerator criteria}) + C(\text{\# of patients with valid exclusions}) + D(\text{\# of patients NOT meeting numerator criteria})}{RD (\text{\# of patients in denominator})}$$

Components for this measure are defined as:

A	# of patients for whom central venous catheter (CVC) was inserted with all elements of maximal sterile barrier technique followed
C	# of patients with valid medical reason for not following all elements of maximal sterile barrier technique during CVC insertion (including increased risk of harm to patient if adherence to aseptic technique would cause delay in CVC insertion)
D	# of patients for whom all elements of maximal sterile barrier technique during CVC insertion were <u>not</u> followed, and there is <u>no</u> documented medical reason for not doing so
RD	# of patients undergoing CVC catheter insertion

Measure Specifications – Measure #2: Prevention of Catheter-Related Bloodstream Infections (CRBSI) – Central Venous Catheter (CVC) Insertion Protocol

Measure specifications will be provided for multiple data sources.

A. Administrative claims data

Administrative claims data collection requires users to identify the eligible population (denominator) and numerator using codes recorded on claims or billing forms (electronic or paper). Users report a rate based on all patients in a given practice for whom data are available and who meet the eligible population/denominator criteria.

(Note: The specifications listed below are those needed for performance calculation.)

Denominator (Eligible Population): All patients who undergo CVC insertion

- Central Venous Access Device Insertion Procedures – 36555, 36556, 36557, 36558, 36560, 36561, 36563, 36565, 36566, 36568, 36569, 36570, 36571
- Central Venous Access Device Replacement Procedures – 36578, 36580, 36581, 36582, 36583, 36584, 36585
- Insertion and placement of flow-directed catheter-93503

Denominator Exclusion: Documentation of medical reason(s) for not following all elements of maximal sterile barrier technique during CVC insertion (including increased risk of harm to patient if adherence to aseptic technique would cause delay in CVC insertion)

- **Append modifier to CPT Category II code: 6030F-1P**

Numerator: Patients for whom central venous catheter (CVC) was inserted with all elements of maximal sterile barrier technique (cap AND mask AND sterile gown AND sterile gloves AND a large sterile sheet AND hand hygiene AND 2% chlorhexidine for cutaneous antisepsis [or acceptable alternative antiseptics, per current guideline]) followed

- **Report the CPT Category II code designated for this numerator: 6030F: All elements of maximal sterile barrier technique including: cap AND mask AND sterile gown AND sterile gloves AND a large sterile sheet AND hand hygiene AND 2% chlorhexidine for cutaneous antisepsis (or acceptable alternative antiseptics, per current guideline), followed**

B. Electronic Health Record System *(in development)*

C. Paper Medical Record *(in development)*

Anesthesiology and Critical Care Measure #3: Perioperative Temperature Management

This measure may be used as an Accountability measure

Clinical Performance Measure

Numerator:

Patients for whom *either*:

- active warming was used intraoperatively for the purpose of maintaining normothermia, OR
- at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time

Denominator:

All patients, regardless of age, undergoing surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer

Denominator Exclusions:

Documentation of one of the following medical reason(s) for not using active warming intraoperatively for the purpose of maintaining normothermia OR achieving at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time:

- intentional hypothermia
- not indicated due to anesthetic technique: peripheral nerve block without general anesthesia, OR monitored anesthesia care

Measure:

Percentage of patients, regardless of age, undergoing surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer for whom *either* active warming was used intraoperatively for the purpose of maintaining normothermia, OR at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time

Numerator definition:

For purposes of this measure, "active warming" is limited to the following modalities only: forced-air warming, warm water garments

The following clinical recommendation statements are quoted verbatim from the referenced clinical guidelines and represent the evidence base for the measure:

Preoperative patient management

Assessment: Identify patient's risk factors for unplanned perioperative hypothermia. Measure patient temperature on admission. Determine patient's thermal comfort level (ask the patients if they are cold). Assess for other signs and symptoms of hypothermia (shivering, piloerection, and/or cold extremities).

Interventions: Institute preventive warming measures for patients who are normothermic (normothermia is defined as a core temperature range from 36°C-38°C (96.8°F-100.4°F)). A variety of measures may be used, unless contraindicated. Passive insulation may include warmed cotton blankets, socks, head covering, limited skin exposure, circulating water mattresses, and increase in ambient room temperature (minimum 68°F- 75°F). Institute active warming measures for patients who are hypothermic (defined as a core temperature less than 36°C). Active warming is the application of a forced air convection warming system. Apply appropriate passive insulation and increase the ambient room temperature (minimum 68°F-75°F). Consider warmed intravenous (IV) fluids. (ASPAN⁴)

Intraoperative patient management

Assessment: Identify patient's risk factors for unplanned perioperative hypothermia. Determine patient's thermal comfort level (ask

the patients if they are cold). Assess for other signs and symptoms of hypothermia (shivering, piloerection, and/or cold extremities). Monitor patient's temperature intraoperatively.

Intervention: Implement warming methods. (ASPAN⁴)

Maintenance of body temperature in a normothermic range is recommended for most procedures other than during periods in which mild hypothermia is intended to provide organ protection (eg, during high aortic cross-clamping). (Class I Recommendation, Level of Evidence B) (ACC/AHA⁵)

Rationale for the measure:

Anesthetic-induced impairment of thermoregulatory control is the primary cause of perioperative hypothermia. Even mild hypothermia (1-2°C below normal) has been associated in randomized trials with a number of adverse consequences, including: increased susceptibility to infection, impaired coagulation and increased transfusion requirements, cardiovascular stress and cardiac complications, post-anesthetic shivering and thermal discomfort. Several methods to maintain normothermia are available to the anesthesiologist in the perioperative period; various studies have demonstrated the superior efficacy of forced-air warming and warm water garments. Data elements required for the measure can be captured and the measure is actionable by the physician.

Existing hospital-level measures for this topic were consulted and, to the extent feasible, harmonization between physician- and hospital-level measurement was achieved.

Data capture and calculations:

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Numerator (A) Includes:

Patients for whom active warming was used intraoperatively for the purpose of maintaining normothermia, AND Patients for whom at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time

Denominator (PD) Includes:

- All patients, regardless of age, undergoing surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer

Denominator Exclusions (C) Include:

Documentation of one of the following medical reason(s) for not using active warming intraoperatively for the purpose of maintaining normothermia OR achieving at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time:

- intentional hypothermia
- not indicated due to anesthetic technique: peripheral nerve block without general anesthesia, OR monitored anesthesia care

Performance Calculation

$$\frac{A \text{ (\# of patients meeting numerator criteria)}}{PD \text{ (\# of patients in denominator)} - C \text{ (\# of patients with valid denominator exclusions)}}$$

Components for this measure are defined as:

A	# of patients for whom active warming was used intraoperatively for the purpose of maintaining normothermia, PLUS # of patients for whom at least one body temperature equal to or greater than 36 degrees Centigrade (or
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	96.8 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time
PD	# of patients, regardless of age, undergoing surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer
C	# of patients with documentation of medical reason(s) for not using active warming intraoperatively for the purpose of maintaining normothermia OR achieving at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time: <ul style="list-style-type: none"> • intentional hypothermia • not indicated due to anesthetic technique: peripheral nerve block without general anesthesia, OR monitored anesthesia care •

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

A. Patients for whom active warming was used intraoperatively for the purpose of maintaining normothermia, AND Patients for whom at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time

C. Patients with documentation of medical reason(s) for not using active warming intraoperatively for the purpose of maintaining normothermia OR achieving at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time:

- intentional hypothermia
- not indicated due to anesthetic technique: peripheral nerve block without general anesthesia, OR monitored anesthesia care

D. Patients for whom *NEITHER* active warming was used intraoperatively for the purpose of maintaining normothermia NOR was at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time and there are no documented medical reasons for not doing so

Reporting Denominator (RD) Includes:

- All patients, regardless of age, undergoing surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer

Reporting Calculation

$$\frac{A(\# \text{ of patients meeting numerator criteria}) + C(\# \text{ of patients with valid exclusions}) + D(\# \text{ of patients not meeting numerator criteria})}{RD (\# \text{ of patients in denominator})}$$

Components for this measure are defined as:

A	# of patients for whom active warming was used intraoperatively for the purpose of maintaining normothermia, PLUS # of patients for whom at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time
C	# of patients with documentation of medical reason(s) for not using active warming intraoperatively for the purpose of maintaining normothermia OR achieving at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately

	before or the 15 minutes immediately after anesthesia end time: <ul style="list-style-type: none"> • intentional hypothermia • not indicated due to anesthetic technique: peripheral nerve block without general anesthesia, OR monitored anesthesia care •
D	<ul style="list-style-type: none"> • # of patients for whom <i>NEITHER</i> active warming was used intraoperatively for the purpose of maintaining normothermia NOR was at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end and there are no documented medical reasons for not doing so time
RD	# of patients, regardless of age, undergoing surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer

Measure Specifications – Measure #3: Perioperative Temperature Management

Measure specifications will be provided for multiple data sources.

A. Administrative claims data

Administrative claims data collection requires users to identify the eligible population (denominator) and numerator using codes recorded on claims or billing forms (electronic or paper). Users report a rate based on all patients in a given practice for whom data are available and who meet the eligible population/denominator criteria.

(Note: The specifications listed below are those needed for performance calculation.)

Denominator (Eligible Population): All patients, regardless of age, undergoing surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer

➤ Anesthesia CPT Codes: 00100-01860, 01924-01952, 01961-01966, 01968-01969

AND

- Documentation of anesthesia duration of 60 minutes or longer (as recorded on claim)

Numerator: Patients for whom *either*:

- active warming was used intraoperatively for the purpose of maintaining normothermia, OR
- at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) was recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time

(For purposes of this measure, “active warming” is limited to the following modalities only: forced-air warming, warm water garments)

Report the CPT Category II code designated for this numerator: 4250F-Active warming used intraoperatively for the purpose of maintaining normothermia, OR at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15minutes immediately after anesthesia end time

Denominator Exclusion:

Documentation of one of the following medical reason(s) for not using active warming intraoperatively for the purpose of maintaining normothermia OR achieving at least one body temperature equal to or greater than 36 degrees Centigrade (or 96.8 degrees Fahrenheit) recorded within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time:

- intentional hypothermia
- not indicated due to anesthetic technique: peripheral nerve block without general anesthesia, OR monitored anesthesia care
 - **Append modifier to CPT Category II code (in development): 4250F-1P**

B. Electronic Health Record System *(in development)*

C. Paper Medical Record *(in development)*

EVIDENCE CLASSIFICATION/RATING SCHEME

ATS/IDSA Evidence-Based Grading System Used to Rank Recommendations¹

(Management of hospital-acquired, ventilator-associated, and healthcare-associated pneumonia)

Adapted from American Thoracic Society guidelines for the management of adults with community-acquired pneumonia

Level I (high):	Evidence comes from well conducted, randomized controlled trials
Level II (moderate):	Evidence comes from well designed, controlled trials without randomization (including cohort, patient series, and case-control studies). Level II studies also include any large case series in which systematic analysis of disease patterns and/or microbial etiology was conducted, as well as reports of new therapies that were not collected in a randomized fashion
Level III (low):	Evidence comes from case studies and expert opinion. In some instances therapy recommendations come from antibiotic susceptibility data without clinical observations

CDC – Evidence Rankings^{2, 3}

(Guidelines for preventing healthcare associated pneumonia; Guidelines for the prevention of intravascular catheter-related infections)

Category IA:	Strongly recommended for implementation and supported by well-designed experimental, clinical, or epidemiological studies.
Category IB:	Strongly recommended for implementation and supported by some experimental, clinical, or epidemiological studies and strong theoretical rationale.
Category II:	Suggested for implementation and supported by suggestive clinical or epidemiological studies or theoretical rationale.
No recommendation:	Practices for which insufficient evidence or no consensus regarding efficacy exists/unresolved issue.

		Size of Treatment Effect			
		Class I	Class IIa	Class IIb	Class III
		<i>Benefit >>>Risk</i>	<i>Benefit >>Risk</i>	<i>Benefit ≥ Risk</i>	<i>Risk ≥ Benefit</i>
		Procedure/treatment SHOULD be performed/administered	<i>Additional studies with focused objectives needed</i> IT IS REASONABLE to perform procedure/administer treatment	<i>Additional studies with broad objectives needed; additional registry data would be helpful</i> Procedure/treatment MAY BE CONSIDERED	<i>No additional studies needed</i> Procedure/treatment should NOT be performed/administered SINCE IT IS NOT HELPFUL AND MAY BE HARMFUL
Estimate of Certainty (Precision) of Treatment Effect	Level A <i>Multiple (3 to 5) population risk strata evaluated*</i> <i>General consistency of direction and magnitude of effect</i>	Recommendation that procedure or treatment is useful/effective Sufficient evidence from multiple randomized trials or meta-analyses	Recommendation in favor of treatment or procedure being useful/effective Some conflicting evidence from multiple randomized trials or meta-analyses	Recommendation's usefulness/efficacy less well Established Greater conflicting evidence from multiple randomized trials or meta-analyses	Recommendation that procedure or treatment is not useful/effective and may be harmful Sufficient evidence from multiple randomized trials or meta-analyses
	Level B <i>Limited (2 to 3) population risk strata evaluated*</i>	Recommendation that procedure or treatment is useful/effective Limited evidence from single randomized trial or nonrandomized studies	Recommendation in favor of treatment or procedure being useful/effective Some conflicting evidence from single randomized trial or nonrandomized studies	Recommendation's usefulness/efficacy less well Established Greater conflicting evidence from single randomized trial or nonrandomized studies	Recommendation that procedure or treatment is not useful/effective and may be harmful Limited evidence from single randomized trial or nonrandomized studies
	Level C <i>Very limited (1 to 2) population risk strata evaluated*</i>	Recommendation that procedure or treatment is useful/effective Only expert opinion, case studies, or standard-of-care	Recommendation in favor of treatment or procedure being useful/effective Only diverging expert opinion, case studies, or standard-of-care	Recommendation's usefulness/efficacy less well Established Only diverging expert opinion, case studies, or standard-of-care	Recommendation that procedure or treatment is not useful/effective and may be harmful Only expert opinion, case studies, or standard-of-care

Suggested phrases for writing recommendations †	should is recommended is indicated is useful/effective/beneficial	is reasonable can be useful/effective/ beneficial is probably recommended or indicated	may/might be considered may/might be reasonable usefulness/effectiveness is unknown /unclear/uncertain or not well established	is not recommended is not indicated should not is not useful/effective/beneficial may be harmful
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*Data available from clinical trials or registries about the usefulness/efficacy in different subpopulations, such as gender, age, history of diabetes, history of prior myocardial infarction, history of heart failure, and prior aspirin use. A recommendation with Level of Evidence B or C does not imply that the recommendation is weak. Many important clinical questions addressed in the guidelines do not lend themselves to clinical trials. Even though randomized trials are not available, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

†In 2003, the ACC/AHA Task Force on Practice Guidelines developed a list of suggested phrases to use when writing recommendations. All guideline recommendations have been written in full sentences that express a complete thought, such that a recommendation, even if separated and presented apart from the rest of the document (including headings above sets of recommendations), would still convey the full intent of the recommendation. It is hoped that this will increase readers' comprehension of the guidelines and will allow queries at the individual recommendation level.

References

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2. Centers for Disease Control and Prevention (CDC). Guidelines for preventing healthcare associated pneumonia, 2003.
3. O'Grady NP, Alexander M, Dellinger EP, Gerberding JL, Heard SO, Maki DG, Masur H, McCormick RD, Mermel LA, Pearson ML, Raad II, Randolph A, Weinstein RA. Guidelines for the prevention of intravascular catheter-related infections. Centers for Disease Control and Prevention (CDC). *MMWR Recomm Rep.* 2002 Aug 9;51(RR-10):1-29.
4. American Society of PeriAnesthesia Nurses (ASPAN). Clinical guideline for the prevention of unplanned perioperative hypothermia. *J Perianesth Nurs.* 2001 Oct;16(5):305-14.
5. Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof E, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery). *J Am Coll Cardiol* 2007;50:e159-241.