



2017 AQI NACOR QCDR Measure Specifications for MIPS Reporting

Updated: July 14, 2017

Anesthesia Quality Institute

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Introduction to 2017 AQI NACOR QCDR Measure Specifications

Thank you for your interest in reporting quality measures for the Merit-based Incentive Payment System (MIPS) via the Anesthesia Quality Institute – National Anesthesia Clinical Outcomes Registry Qualified Clinical Data Registry (AQI NACOR QCDR). This booklet includes measure specifications for the QCDR measures contained in the AQI NACOR QCDR available for reporting the MIPS Quality component.

The requirements for satisfactorily participating in a QCDR include:

INDIVIDUAL REPORTING OPTION via AQI NACOR QCDR

Of the measures available via the AQI NACOR QCDR, report at least 6 measures AND report each measure for at least 50 percent of the eligible clinician's (EC) cases meeting the measure denominator criteria, for all payers. Of these measures, the EC would report on at least 1 outcome measure, OR, if an outcome measure is not available, report on at least 1 high-priority measure, defined as the following types of measures – appropriate use, care coordination, efficiency, patient experience and patient safety.

Eligible clinicians (ECs) reporting at the individual level are assessed on an individual basis. Although they may be part of a group practice, their MIPS assessment is based upon their individual performance.

GROUP PRACTICE REPORTING via AQI NACOR QCDR

The AQI NACOR QCDR is offering group reporting in 2017. Those electing to report as a group will be scored across the TIN for all MIPS categories. Of the measures available via the AQI NACOR QCDR, groups must collectively report 6 measures for at least 50 percent of cases meeting the measure denominator criteria, for all payers. Of these measures, the group must report on at least 1 outcome measure, OR, if an outcome measure is not available, report on at least 1 high-priority measure, defined as the following types of measures – appropriate use, care coordination, efficiency, patient experience and patient safety.

There are low-volume and non-patient facing exemptions for MIPS reporting in 2017. ECs and groups with \$30,000 or less in Medicare Part B allowed charges for 100 or fewer Medicare beneficiaries meet the low-volume threshold criteria and are not required to report under MIPS. For group participation, low-volume exemptions will be determined based on patient volume across all NPIs billing under the TIN. Non-patient facing clinicians are those that bill less than 100 or fewer patient-facing encounters during the period in which the Centers for Medicare and Medicaid Services (CMS) determines non-patient facing status. Unless an EC or group receives notification from CMS stating they meet the low-volume and/or non-patient facing thresholds, they must participate in the MIPS program each year by meeting the criteria for satisfactory reporting – for example, satisfactory participation in a QCDR, in order to avoid the negative MIPS payment adjustment.

Individual ECs and practices are responsible for identifying a sufficient number of measures via the QCDR to report throughout the year. This policy is consistent with other reporting mechanism as well. For the QCDR reporting option, you may use official MIPS measures and AQI NACOR QCDR measures available through the AQI NACOR QCDR reporting mechanism. For available MIPS measures, please consult the AQI website.

For purposes of measure reporting via the AQI NACOR QCDR, Physician Anesthesiologists, Certified Anesthesiologist Assistants (CAAs) and Certified Registered Nurse Anesthetists (CRNAs) are able to report measures when the term “qualified anesthesia provider” is used.

As required by regulation, practices will have access to their performance reports for all MIPS categories at least four times a year. It is the responsibility of the individual ECs and/or groups to ensure that AQI is receiving all required

data. Any adjustments to collecting such data remain under the purview and responsibility of the individual EC and the practice. If you have trouble accessing the reports or have questions on how to read the reports, please contact ArborMetrix at nacorsupport@arbormetrix.com.

Measure specifications are reviewed and updated on a yearly basis. It is the responsibility of the individual EC and/or the practice to make appropriate modifications to their data capture and reporting systems - on an annual basis. Each year, ASA physician leaders, committees and staff review the measures for applicability to the practice of anesthesiology, determine the feasibility of reporting such measures and take into consideration measure feedback received throughout the year. When appropriate, ASA collaborates with other QCDRs to harmonize measure specifications. Practices and individual ECs are invited to attend virtual office hours for announcements and clarification on measures. Each year, CMS reviews the measures and may accept or reject measure based upon their assessment. Measure specifications as posted in this book are final for the year 2017 and cannot be amended or changed by the practice for reporting purposes.

If the practice cannot gather and submit *all* the specified denominator or quality-data codes in the numerator, the practice may not report that measure. Questions related to reporting individual measures should be sent to gra@asahq.org.

DISCLAIMER

Participation in the ASA[®] Quality Service does not guarantee satisfactory participation in CMS MIPS program. Successful submission to CMS is contingent upon each individual eligible clinician (EC) and/or group meeting the MIPS program requirements and the timeliness, quality, and accuracy of the data they provide for reporting.

The information provided is not to be construed as practice management or legal advice. Every reasonable effort has been made to ensure the accuracy of the information presented at the time of posting, but AQI and ASA do not warrant or guarantee that the information presented is exhaustive or error-free. AQI and ASA further disclaim all liability for loss or damage incurred by third parties arising from the use of the information. Please consult your legal advisor or other qualified professional for guidance and information specific to your situation.



2016 Non-PQRS QCDR Measures Removed from 2017 AQI NACOR QCDR MEASURE SET

Please note that several previously used AQI NACOR QCDR measures have been retired by CMS or the ASA/AQI.

2016 Measure Number	Measure Title	Reason for Not Including in 2017 Specifications
ASA #10	Composite Anesthesia Safety	Measure was retired by CMS for attribution issues.
ASA #14	Assessment of Acute Postoperative Pain	Measure was removed.
ASA #28	Rate of Post-Operative Stroke or Death in Asymptomatic Patients Undergoing Carotid Artery Stenting (CAS)	Measure was retired by CMS.
ASA #29	Rate of Post-Operative Stroke or Death in Asymptomatic Patients Undergoing Carotid Endarterectomy (CEA)	Measure was retired by CMS.
ASA #30	Rate of Endovascular Aneurysm Repair (EVAR) of Small or Moderate Non-Ruptured Abdominal Aortic Aneurysm (AAA) Who Die While in the Hospital	Measure was retired by CMS.
ASA #31	Total Knee Replacement: Venous Thromboembolic and Cardiovascular Risk Evaluation	Measure was retired by CMS.
ASA #32	Total Knee Replacement: Preoperative Antibiotic Infusion with Proximal Tourniquet	Measure was retired by CMS.
ASA #37	Unplanned Transfer or Admission to Hospital	Measure was retired by CMS.

Modifications to 2016 non-PQRS QCDR Measures for 2017 AQI NACOR QCDR Measures

The table below identifies changes that were made to the ASA non-PQRS QCDR measures available in 2016 in preparation for the 2017 performance year. This table only serves as a general reference in support of but not superseding the final measure specifications for each measure within the booklet. ***Users will need to refer to the full measure specification for complete code numbers, descriptions and instructions.***

NOTE: All 2016 AQI registry codes have been updated in 2017.

Although measures go through routine measure maintenance processes, an () indicates that the measure may have undergone significant revisions as part of a harmonization effort with multiple anesthesia QCDRs.

2017 Measure ID	2016 Measure ID	Measure Title	Category Modified
AQI18	ASA 23	Coronary Artery Bypass Graft (CABG): Prolonged Intubation – INVERSE MEASURE	<ul style="list-style-type: none"> • Instructions Updated • Rationale Updated
AQI28	ASA 38	New Corneal Injury Not Diagnosed in the Postanesthesia Care Unit/Recovery Area after Anesthesia care*	<ul style="list-style-type: none"> • Measure Description Updated • Denominator Criteria Updated (Added CPT Codes: 00567, 01958, 01960, 20526, 20550, 20551, 20552, 20553, 20600, 20604, 20605, 20606, 20610, 20611, 27096, 36555, 36556, 36570, 36571, 36578, 36580, 36581, 36582, 36583, 36584, 36585, 62263, 62264, 62270, 62272, 62273, 62280, 62281, 62282, 62320, 62321, 62322, 62323, 62324, 62325, 62326, 62327, 62350, 62355, 62360, 62361, 62362, 62365, 62370, 63650, 63661, 63662, 63663, 63664, 63685, 63688, 64400, 64402, 64405, 64408, 64410, 64413, 64415, 64416, 64417, 64418, 64420, 64421, 64425, 64430, 64435, 64445, 64446, 64447, 64448, 64449, 64450, 64461, 64462, 64463, 64479, 64480, 64483, 64484, 64486, 64487, 64488, 64489, 64490, 64491, 64492, 64493, 64494, 64495, 64505, 64508, 64510, 64517, 64520, 64530, 64600, 64605, 64610, 64620, 64630, 64633, 64634, 64635, 64636, 64640, 64680, 64681, 72275, 93503, 95990, 95991) • Denominator Exclusions Updated (Removed “Patients who undergo ophthalmologic surgery or patients with a diagnosis of either eye trauma or corneal injury before anesthesia care”; Added: 10A22, 10A23, 10A24, 10A25) • Numerator Updated • Numerator Definition Updated • Numerator AQI Registry Codes Updated (Removed: ASA38A, ASA38B; Added: 10A26, 10A27) • Rationale Updated

AQI29	ASA 8	Prevention of Post-Operative Vomiting (POV) – Combination Therapy (Pediatrics)	<ul style="list-style-type: none"> • Instructions Updated • Denominator AQI Registry Codes Updated • Denominator Criteria Updated (Removed: ASA08A, ASA08B; Added: 10A37, 10A38; Removed CPT Code: 01953) • Denominator Exclusions Updated (Added: 10A39) • Numerator Quality Data Codes Updated (Removed: 4558F, 4558F-1P, 4558F-8P; Added: G9775, G9776, G9777)
AQI31	ASA 13	Postanesthesia Care Unit (PACU) Re-intubation Rate – INVERSE MEASURE*	<ul style="list-style-type: none"> • Measure Description Updated • Instructions Updated • Denominator AQI Registry Codes Updated • Denominator Definition Updated • Denominator Criteria Updated (Removed: ASA13H, ASA13J; Added: 10A32, 10A33; Removed CPT Code: 01958; Added CPT Codes: 00174, 00218, 00604, 00832, 00842, 00872, 00916, 00950, 01234, 01430, 01432, 01780, 01852, 01932, 01933, 01953, 01960, 01962, 01968, 01969) • Denominator AQI Registry Codes Updated • Denominator Exclusions Updated (Removed: Patients transferred directly to the ICU from the OR; Added: 10A25, 10A34) • Numerator Updated • Numerator Definition Updated • Numerator Criteria Updated (Removed: Performance Not Met – Medical Performance Exclusion) • Numerator AQI Registry Codes Updated (Removed: ASA13A, ASA13B, ASA13G; Added: 10A35, 10A36) • Rationale Updated
AQI32	ASA 15	Procedural Safety for Central Line Placement*	<ul style="list-style-type: none"> • Measure Title Updated • Measure Description Updated • Instructions Updated • Numerator Definition • Denominator Definition Updated • Denominator Criteria Updated (Removed CPT Codes: 36575, 36576, 36589, 36590, 36592, 36595, 36596, 36597, 36598) • Denominator Exclusions Updated (Removed: “ASA Physical Status indicating case is emergent by using “E” designation”) • Numerator Definition Updated • Numerator AQI Registry Codes Updated • Numerator Criteria Updated (Removed: ASA15B, ASA15A; Added: 10A40, 10A41; Removed CPT Codes: 32035, 32036, 32551) • Rationale Updated

AQI34	ASA 11	Perioperative Cardiac Arrest – INVERSE MEASURE*	<ul style="list-style-type: none"> • Measure Title Updated • Measure Description Updated • Denominator Criteria Updated (Added CPT Codes: 00174, 00218, 00530, 00534, 00537, 00566, 00604, 00832, 00842, 00872, 00916, 00950, 01234, 01430, 01432, 01780, 01852, 01932, 01933, 01960, 01962) • Denominator Exclusion Updated (Removed: “ASA Physical Status indicating case is emergent by using “E” designation”; Added CPT Code: 99116) • Numerator Updated • Numerator Definition Updated • Numerator AQI Registry Codes Updated (Removed: ASA11A, ASA11B; Added: 10A28, 10A29) • Rationale Updated
AQI35	ASA 12	Perioperative Mortality Rate – INVERSE MEASURE*	<ul style="list-style-type: none"> • Measure Title Updated • Measure Description Updated • Denominator Criteria Updated (Added CPT Codes: 00174, 00218, 00604, 00832, 00842, 00916, 00950, 01234, 01430, 01432, 01780, 01852, 01932, 01933, 01960, 01962) • Denominator Exclusion Updated (Removed: “ASA Physical Status indicating case is emergent by using “E” designation”) • Numerator Updated • Numerator Definition Updated • Numerator AQI Registry Codes (Removed: ASA12A, ASA12B Added: 10A30, 10A31) • Rationale Update
AQI37	ASA 20	Surgical Safety Checklist – Applicable Safety Checks Completed Before Induction of Anesthesia	<ul style="list-style-type: none"> • Denominator Criteria Updated (Removed: ASA20C; Added: 10A42) • Numerator AQI Registry Codes Updated (Removed: ASA20A, ASA20B; Added: 10A43, 10A44)
AQI41	ASA 24	Coronary Artery Bypass Graft (CABG): Stroke – INVERSE MEASURE	<ul style="list-style-type: none"> • Measure Description Updated • Instructions Updated • Numerator Definition Updated • Rationale Updated
AQI42	ASA 25	Coronary Artery Bypass Graft (CABG): Post-Operative Renal Failure – INVERSE MEASURE	<ul style="list-style-type: none"> • Instructions Updated • Numerator Definition Updated • Rationale Updated

AQI48	ASA 16	Anesthesia: Patient Experience	<ul style="list-style-type: none"> • Denominator Criteria Updated (Added CPT Codes: 00174, 00218, 00326, 00561, 00604, 00832, 00834, 00836, 00842, 00872, 00916, 00950, 01234, 01430, 01432, 01780, 01852, 01932, 01933, 01960, 01962, 20526, 20550, 20551, 20552, 20553, 20600, 20604, 20605, 20606, 20610, 20611, 27096, 36555, 36556, 36570, 36571, 36578, 36580, 36581, 36582, 36583, 36584, 36585, 62263, 62264, 62270, 62272, 62273, 62280, 62281, 62282, 62310, 62311, 62318, 62319, 62350, 62355, 62360, 62361, 62362, 62365, 62370, 63650, 63661, 63662, 63663, 63664, 63685, 63688, 64400, 64402, 64405, 64408, 64410, 64413, 64415, 64416, 64417, 64418, 64420, 64421, 64425, 64430, 64435, 64445, 64446, 64447, 64448, 64449, 64450, 64461, 64462, 64463, 64479, 64480, 64483, 64484, 64486, 64487, 64488, 64489, 64490, 64491, 64492, 64493, 64494, 64495, 64505, 64508, 64510, 64517, 64520, 64530, 64600, 64605, 64610, 64620, 64630, 64633, 64634, 64635, 64636, 64640, 64680, 64681, 72275, 93503, 95990, 95991) • Denominator Exclusion Updated (Removed: “ASA Physical Status indicating case is emergent by using “E” designation”; Added: 10A11) • Numerator Updated • Numerator Definition Updated • Numerator AQI Registry Codes Updated (Removed: ASA16A, ASA16B, ASA16F, ASA16G; Added: 10A12, 10A13, 10A14) • Numerator Criteria Updated • Rationale Updated
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New AQI NACOR QCDR Measures Available for Reporting in 2017

The table below identifies new measures added to the AQI NACOR QCDR measure set for reporting in 2017. This table only serves a general reference in support of but not superseding final measure specifications for each measure within the booklet.

Measure Title	Measure Description	Measure Steward
Adherence to Blood Conservation Guidelines for Cardiac Operations using Cardiopulmonary Bypass (CPB) – Composite	Percentage of patients, aged 18 years and older, who undergo a cardiac operation using cardiopulmonary bypass for whom selected blood conservation strategies were used	American Society of Anesthesiologists / Anesthesia Quality Institute
Application of Lung-Protective Ventilation during General Anesthesia	Percentage of patients, aged 18 years and older, who received general anesthesia for a procedure via endotracheal tube who had a median exhaled tidal volume less than or equal to 10 mL/kg of predicted-body-weight (PBW) during positive pressure ventilation (PPV).	American Society of Anesthesiologists / Anesthesia Quality Institute
Assessment of Patients for Obstructive Sleep Apnea	Percentage of patients, aged 18 years and older, who underwent an elective surgical procedure under anesthesia who were screened preoperatively for Obstructive Sleep Apnea (OSA) using a standardized tool prior to the surgical procedure.	American Society of Anesthesiologists / Anesthesia Quality Institute
Treatment of Hyperglycemia with Insulin	The percentage of patients, aged 18 years and older, who undergo elective inpatient surgery and who have a blood glucose level of > 200mg/dL and who receive insulin prior to anesthesia end time.	American Society of Anesthesiologists / Anesthesia Quality Institute

Copyright Statement (ASA/AQI Measures)

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The following applies to each Measure that contains the (†) symbol within its title:

† The efforts and contributions of Anesthesia Business Group, ePREOP and TeamHealth to harmonize this Measure with other similar anesthesia quality measures and to update this Measure on an ongoing basis is acknowledged.

The following applies to each Measure that contains the (++) symbol within its title:

++ The efforts and contributions of Anesthesia Business Group, ePREOP, MEDNAX and MiraMed to harmonize this Measure with other similar anesthesia quality measures and to update this Measure on an ongoing basis is acknowledged.

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‡ The efforts and contributions of ePREOP, MEDNAX and MiraMed to harmonize this Measure with other similar anesthesia quality measures and to update this Measure on an ongoing basis is acknowledged.

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Definitions¹

Composite Measure: A combination of two or more individual performance measures in a single performance measure that results in a single score (NQF Composite Performance Measure Evaluation Guidance).

Continuous Score: A measure score in which each individual value for the measure can fall anywhere along a continuous scale, and can be aggregated using a variety of methods such as the calculation of a mean or median (for example, mean number of minutes between presentation of chest pain to the time of administration of thrombolytics). NOTE: The AQI NACOR QCDR does not include any continuous score measures for 2017.

CPT Category II Codes: CPT Category II or CPT II codes, developed through the CPT Editorial Panel for use in performance measurement, encode the clinical action(s) described in a measure's numerator. CPT II codes consist of five alphanumeric characters in a string ending with the letter "F." CPT II codes are not modified or updated during the reporting period and remain valid for the entire program year as published in the measure specifications manuals and related documents for MIPS.

CPT II Modifiers: CPT II modifiers are unique to CPT II codes and may be used to report measures by appending the appropriate modifier to a CPT II code as specified for a given measure. The modifiers for a code cannot be combined and their use is guided by the measure's coding instructions, which are included in the numerator coding section of the measure specifications. Use of the modifiers is unique to CPT II codes and may not be used with other types of CPT codes. Only CPT II modifiers may be appended to CPT II codes. Descriptions of each modifier are provided below to help identify circumstances when the use of a modifier may be appropriate. Note that reporting an exclusion or reporting modifier will alter an EP's performance rate. Accurate reporting on all selected measures will count toward the reporting requirements, whether the clinical action is reported as complete or not complete (or performance met or not met).

- CPT II code modifiers fall into two categories; exclusion modifiers and the 8P reporting modifier. Exclusion modifiers may be appended to a CPT II code to indicate that an action specified in the measure was not provided due to medical, patient, or system reason(s) documented in the medical record. These modifiers serve as denominator exclusions for the purpose of measuring performance. Not all exclusions will apply to every measure, and some measures do not allow any performance exclusions.

Denominator (Eligible Cases): The lower part of a fraction used to calculate a rate, proportion, or ratio. It can be the same as the initial population or a subset of the initial population to further constrain the population for the purpose of the measure.

Denominator exception: Those conditions that should remove a patient, procedure, or unit of measurement from the denominator of the performance rate only if the numerator criteria are not met. Denominator exceptions allow for adjustment of the calculated score for those providers with higher risk populations. Denominator exceptions are used only in proportion measures. Denominator exceptions allow for the exercise of clinical judgment and should be specifically defined where capturing the information in a structured manner fits the clinical workflow. These cases are removed from the denominator; however, the number of patients with valid exceptions may still be reported. Allowable reasons fall into three general categories:

- Medical reasons
- Patient reasons
- System reasons

¹ ASA and AQI have gathered these definitions from a number of sources including, but not limited to, CMS PQRS Implementation Guide, [CMS Measure Blueprint](#) and other official CMS documents, the final [MACRA](#) regulation, the [National Quality Forum Phrase Book](#), [Quality Payment Program](#) documents, ASA reference documents and other materials. For specific references, please contact the ASA Department of Quality and Regulatory Affairs (QRA) at qra@asahq.org.

Denominator Exclusion: Patients who should be removed from the measure population and denominator before determining if numerator criteria are met. Denominator exclusions are used in proportion and ratio measures to help narrow the denominator. (For example, patients with bilateral lower extremity amputations would be listed as a denominator exclusion for a measure requiring foot exams.)

Denominator statement: A statement that describes the population evaluated by the performance measure.

eCQM: Electronic clinical quality measures (eCQMs) are standardized performance measures derived solely for use in EHRs. NOTE: The AQI NACOR QCDR does not include any eCQMs for 2017.

G-codes for MIPS: A set of Centers for Medicare & Medicaid Services (CMS)-defined temporary Healthcare Common Procedure Coding System (HCPCS codes) used to report quality measures on a claim. G-codes are maintained by CMS.

Initial (patient) population: Refers to all events to be evaluated by a specific performance eMeasure involving patients who share a common set of specified characteristics within a specific measurement set to which a given measure belongs. All patients counted (for example, as numerator, as denominator) are drawn from the initial population.

Intermediate Outcome Measure: An intermediate outcome measure assesses a factor or short-term result that contributes to an ultimate outcome.

Inverse Measure: An inverse measure is a measure that represents a poor clinical quality action as meeting performance for the measure. For this measure, a lower performance rate indicates a higher quality of clinical care.

Measure: A mechanism to assign a quantity to an attribute by comparison to a criterion. A measure may stand alone or belong to a composite, subset, set, and/or collection of measures. A healthcare performance measure is a way to calculate whether and how often the healthcare system does what it should. Measures are based on scientific evidence about processes, outcomes, perceptions, or systems that relate to high-quality care. See CMS Measure Blueprint.

Merit-Based Incentive Payment System (MIPS): The Merit-Based Incentive Payment System is a quality reporting program that encourages individual clinicians (ECs) and group practices to report information on the quality of care to Medicare in four categories: Quality, Cost, Improvement Activities and Advancing Care Information. The MIPS replaces three Medicare reporting programs: Medicare Meaningful Use, the Physician Quality Reporting System (PQRS) and the Value-Based Payment Modifier.

MIPS Eligible Clinician (EC): A physician, a physician assistant, nurse practitioner, clinical nurse specialist, a certified registered nurse anesthetist and a group that includes such clinicians who bill under Medicare Part B.

National Quality Strategy (NQS): The National Quality Strategy was first published in March 2011 as the [National Strategy for Quality Improvement in Health Care](#), and is led by the Agency for Healthcare Research and Quality on behalf of the U.S. Department of Health and Human Services (HHS).

Mandated by the Patient Protection and Affordable Care Act, the National Quality Strategy was developed through a transparent and collaborative process with input from a range of stakeholders. More than 300 groups, organizations, and individuals, representing all sectors of the health care industry and the general public, provided comments. Based on this input, the National Quality Strategy established a set of [three overarching aims](#) that builds on the Institute for Healthcare Improvement's Triple Aim[®], supported by [six priorities](#) that address the most common health concerns that Americans face. To align with National Quality Strategy, stakeholders can use [nine levers](#) to align their core business or organizational functions to drive improvement on the aims and priorities.

To advance these aims, the National Quality Strategy focuses on six priorities (domains):

- Making care safer by reducing harm caused in the delivery of care.
- Ensuring that each person and family is engaged as partners in their care.
- Promoting effective communication and coordination of care.
- Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease.
- Working with communities to promote wide use of best practices to enable healthy living.
- Making quality care more affordable for individuals, families, employers, and governments by developing and spreading new health care delivery models.

Numerator: The upper portion of a fraction used to calculate a rate, proportion, or ratio. Also called the measure focus, it is the target process, condition, event, or outcome. Numerator criteria are the processes or outcomes expected for each patient, procedure, or other unit of measurement defined in the denominator. A numerator statement describes the clinical action that satisfies the conditions of the performance measure.

Numerator exclusions: Patients who are included in the initial patient population, who do not meet the measure numerator criteria, but who do meet the specific numerator exclusionary criteria. Numerator exclusions are not considered to be part of a given measure's numerator.

Outcome Measure: A measure that assesses the results of healthcare that are experienced by patients: clinical events, recovery and health status, experiences in the health system, and efficiency/cost. See CMS Measure Blueprint.

Performance Measure Reporting Modifier: The 8P reporting modifier is intended to be used as a “reporting modifier” to allow the reporting of circumstances when an action described in a measure's numerator is not performed and the reason is not otherwise specified.

Performance Timeframe: A designated timeframe within which the action described in a performance measure should be completed. This timeframe is generally included in the measure description and may or may not coincide with the measure's data reporting frequency requirement.

Process Measure: A measure that focuses on steps that should be followed to provide good care. There should be a scientific basis for believing that the process, when executed well, will increase the probability of achieving a desired outcome. See CMS Measure Blueprint.

Proportion Measure: A score derived by dividing the number of cases that meet a criterion for quality (the numerator) by the number of eligible cases within a given time frame (the denominator) where the numerator cases are a subset of the denominator cases (for example, percentage of eligible women with a mammogram performed in the last year).

Qualified Clinical Data Registry (QCDR): A CMS-approved entity that collects medical and/or clinical data for the purpose of patient and disease tracking to foster improvement in the quality of care provided to patients. A QCDR will complete the collection and submission of MIPS quality measures data on behalf of individual eligible clinicians (ECs).

Quality: Quality is how good something is. For healthcare, it is often expressed in a range. When a person receives high-quality healthcare, he or she has received the right services, at the right time, and in the right way to achieve the best possible health. See [NQF Phrase Book](#).

Quality-Data Codes: QDCs are non-payable Healthcare Common Procedure Coding System (HCPCS) codes composed of specified CPT Category II codes and/or G-codes that describe the clinical action required by a measure's numerator. Clinical actions can apply to more than one condition and, therefore, can also apply to more than one

measure. Where necessary, to avoid shared CPT Category II codes, G-codes are used to distinguish clinical actions across measures. Some measures require more than one clinical action and may have more than one CPT Category II code, G-code, or a combination associated with them. EPs should review numerator reporting instructions for each measure carefully.

Quality Improvement: Quality improvement (QI) encompasses all of the work people are doing to improve healthcare and the health of individuals and populations. QI is both systematic and ongoing. Healthcare professionals and providers, consumers, researchers, employers, health plans, suppliers and other stakeholders all contribute to effective quality improvement. Clinical quality improvement is a type of QI specifically designed to raise the standards for preventing, diagnosing, and treating poor health. ([NQF Phrase Book](#))

Risk-Adjustment: Statistical process used to identify and adjust for extraneous variables not associated with care delivery that threaten validity because they affect the outcome being measured outside of the health system's control/ The purpose is a fairer and more accurate comparison of outcomes of care across healthcare organizations or providers.

Specifications: Measure instructions that address the following: data elements, data sources, point of data collection, timing and frequency of data collection and reporting, specific instruments to be used (if appropriate), and implementation strategies.

Measure Title**AQI18: Coronary Artery Bypass Graft (CABG): Prolonged Intubation – INVERSE MEASURE****Measure Description**

Percentage of patients aged 18 years and older undergoing isolated CABG surgery who require postoperative intubation > 24 hours

NQS Domain

Effective Clinical Care

High Priority Status

No

Instructions

This measure is to be reported each time an isolated CABG procedure is performed during the reporting period. It is anticipated that qualified anesthesia providers and eligible clinicians who provide services for isolated CABG will submit this measure. This measure is intended to reflect the quality of services provided for isolated CABG or isolated reoperation CABG patients. Isolated CABG refers to CABG using arterial and/or venous grafts only.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure's denominator. The measure must capture both the surgical and related anesthesia code. G-codes are used to report the numerator of the measure.

Denominator

All patients, aged 18 years and older, undergoing isolated CABG surgery

Denominator Criteria (Eligible Cases):

All patients, aged 18 years and older, on date of encounter

AND

Patient encounter during the reporting period (CPT): 33510, 33511, 33512, 33513, 33514, 33516, 33533, 33534, 33535, 33536

AND

00566, 00567

OR

Patient encounter during the reporting period (CPT): 33510, 33511, 33512, 33513, 33514, 33516, 33533, 33534, 33535, 33536

AND

Patient encounter during the reporting period (CPT): 33530

AND

00562

Denominator Exclusions

- Organ donors as designated by ASA Physical Status 6

Numerator

Patients undergoing isolated CABG who require intubation > 24 hours following exit from the operating room

Numerator Quality-Data Coding Options for Reporting Satisfactorily***Performance Met:***

G8569

Prolonged postoperative intubation (> 24 hrs) required

OR

Performance Not Met:

G8570

Prolonged postoperative intubation (>24 hrs) not required

Measure Type:	Outcome
NQF Number:	Not applicable
eCQM:	Not applicable

Rationale

Prolonged intubation and/or prolonged ventilation following coronary artery bypass graft (CABG) surgery is associated with increased mortality and morbidity.ⁱ A review of the literature suggests several predictors associated with prolonged ventilation following CABG including increased incidence of pneumonia and pulmonary atelectasis, history of hypertension, COPD, kidney disease and endocarditis among others.^{i,ii} Most complications were associated with prolonged length of stay in the ICU and hospital and increased resource use.ⁱ

Physician anesthesiologists and other qualified anesthesia providers must maintain respiratory function of patients throughout the perioperative period and play a critical role in patients' respiratory care. As physician anesthesiologists and other qualified anesthesia providers control the patient breathing function, their decision-making and care related to airway management can greatly impact outcomes related to prolonged intubation and ventilation. One retrospective study found that physicians in the perioperative period are altering their management of types to reduce adverse respiratory outcomes. For example, research shows aortic aneurysm, combined and valve procedures, and preoperative renal dysfunction and stroke were strong predictors for prolonged ventilation.ⁱⁱⁱ Changes to care and procedures to reduce adverse respiratory outcomes require the engagement of physician anesthesiologist and other qualified anesthesia provider expertise and skill to ensure appropriate patient care.

Data Source:	Claims/Paper Medical Record, Registry
Measure Steward:	American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)
Number of Multiple Performance Rates:	Not applicable
Inverse Measure:	Yes
Proportion Measure Scoring:	Yes
Continuous Measure Scoring:	No
Risk Adjustment:	No

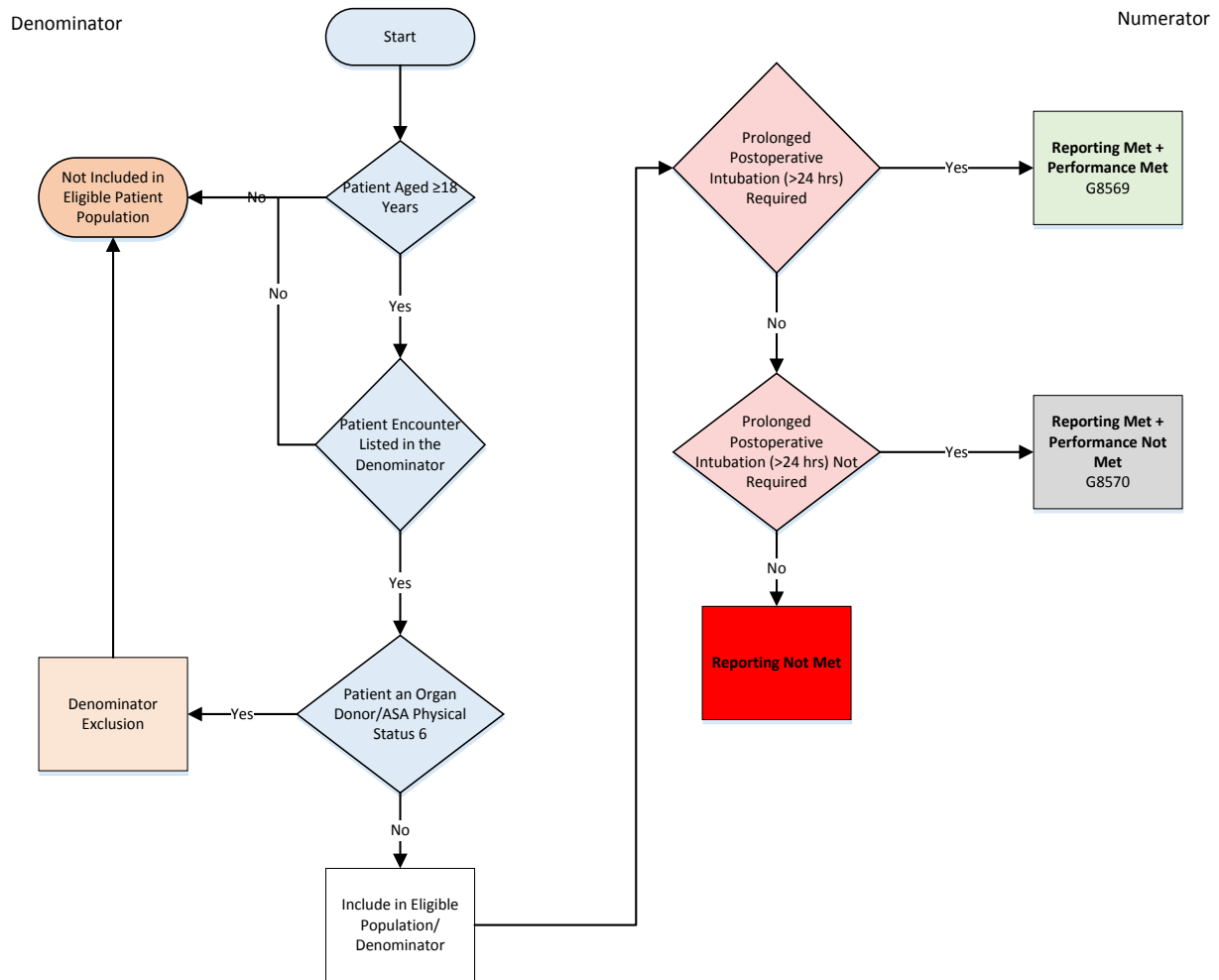
References

ⁱ Ji, Q., et. al., (2012). "Risk factors for ventilator dependency following coronary artery bypass grafting." *Int J Med Sci* 9(4): 306-310.

ⁱⁱ Totonchi Z., et. al., (2014). "Predictors of prolonged mechanical ventilation after open heart surgery." *J Cardiovasc Thorac Res* 6(4): 211-216.

ⁱⁱⁱ Knapik, P., et. al., (2011). "Prolonged ventilation post cardiac surgery – tips and pitfalls of the prediction game." *J Cardiothorac Surg* 6: 158.

Coronary Artery Bypass Graft (CABG): Prolonged Intubation 2017 QCDR Measure Flow



Measure Title**AQI28: New Corneal Injury Not Diagnosed in the Postanesthesia Care Unit/Recovery Area after Anesthesia Care****Measure Description**

Percentage of patients, aged 18 years or older, who undergo anesthesia care and did not have a new diagnosis of corneal injury prior to anesthesia end time.**

NQS Domain

Person and Caregiver-Centered Experience and Outcomes

High Priority Status

Yes

Instructions:

This measure is to be reported each time a patient underwent a procedure* with anesthesia not involving patients with pre-existing eye trauma or those patients undergoing ophthalmologic surgery.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure's denominator. Registry codes are used to report the measure numerator.

Denominator

All patients, aged 18 and older, who undergo anesthesia care*, except those with pre-existing eye trauma or those patients undergoing ophthalmologic surgery.

Definition: * Anesthesia care includes general, regional and monitored anesthesia care.

Denominator Criteria (Eligible Cases):

Patients, aged 18 years or older, on date of encounter

AND**Patient encounter during the reporting period (CPT):**

00100, 00102, 00104, 00120, 00124, 00126, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01958, 01960, 01961, 01962, 01963, 01965, 01966, 01967, 01968, 01969, 01991, 01992, 20526, 20550, 20551, 20552, 20553, 20600, 20604, 20605,

20606, 20610, 20611, 27096, 36555, 36556, 36570, 36571, 36578, 36580, 36581, 36582, 36583, 36584, 36585, 62263, 62264, 62270, 62272, 62273, 62280, 62281, 62282, 62320, 62321, 62322, 62323, 62324, 62325, 62326, 62327, 62350, 62355, 62360, 62361, 62362, 62365, 62370, 63650, 63661, 63662, 63663, 63664, 63685, 63688, 64400, 64402, 64405, 64408, 64410, 64413, 64415, 64416, 64417, 64418, 64420, 64421, 64425, 64430, 64435, 64445, 64446, 64447, 64448, 64449, 64450, 64461, 64462, 64463, 64479, 64480, 64483, 64484, 64486, 64487, 64488, 64489, 64490, 64491, 64492, 64493, 64494, 64495, 64505, 64508, 64510, 64517, 64520, 64530, 64600, 64605, 64610, 64620, 64630, 64633, 64634, 64635, 64636, 64640, 64680, 64681, 72275, 93503, 95990, 95991

Denominator Exclusions

- Organ Donors as designated by ASA Physical Status 6
- Patient undergoes ophthalmologic surgery or has a diagnosis of either eye trauma or corneal injury before anesthesia care: **10A22**
- Patients is sedated pharmacologically at time of PACU discharge: **10A23**
- Patient has a co-occurring condition that limits ability to communicate at the time of PACU discharge (e.g. severe dementia, developmental delay or mechanical ventilation): **10A24**
- Patient bypassed the PACU: **10A25**

Denominator Note: Measure not applicable to anesthesia care described by code 00300 when the underlying surgical procedure is described by CPT Codes: 67800, 67801, 67805, 67808, 67810, 67840, 67850, 67875, 67900, or 67938.

Numerator

Patients who undergo anesthesia care and who do not have a new diagnosis of corneal injury prior to anesthesia end time**.

Definition: A corneal injury is either a corneal abrasion (a scratch or scrape on the cornea, the clear front window of the eye that transmits and focuses light into the eye) or exposure keratitis (inflammation of the cornea from drying of the corneal tear film). Includes both exposure keratitis and corneal abrasion. For the purposes of this measure, the distinction does not need to be made with fluorescein examination of the cornea under ultraviolet light; however, it can be diagnosed in this manner. Corneal injury also includes any new symptom of eye pain treated with topical antibiotic (e.g., erythromycin) while in the post-anesthesia care unit/recovery area. Other causes of eye pain (e.g. acute angle-closure glaucoma) can be excluded by instilling one drop of local anesthetic (e.g., proparacaine) into the eye. If the pain is immediately and completely relieved, corneal injury is confirmed and acute angle-closure glaucoma is excluded.¹

** Anesthesia End (Finish) Time is the time at which the anesthesiologist turns over care of the patient to a post anesthesia care team (either PACU or ICU). This time ends when the anesthesia team is no longer furnishing anesthesia services to the patient, that is when the patient may be placed safely under postoperative care and when the anesthesia team has completed transfer of patient care.¹

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A26 Patient was NOT newly diagnosed with exposure keratitis or corneal abrasion in the postanesthesia care unit or recovery room.

OR

Performance Not Met:

10A27 Patient was diagnosed with new exposure keratitis or corneal abrasion in the postanesthesia care unit or recovery room.

Measure Type: Outcome

NQF Number: Not applicable

eCQM Number: Not applicable

Rationale

Corneal abrasion/injury is the most common ophthalmologic complication that occurs during general anesthesia for non-ocular surgery. These injuries are usually just painful for the patient, but can lead to significant microbial keratitis with possibility of permanent scarring. There is no standardized method for protecting the eyes during an anesthetic for non-ocular surgery. Adhesive tape, individual single, sterile packaged eye covers, small bio-occlusive dressings, used with or without eye ointment are some of the options used. Some practitioners may simply observe closed, non-taped eyes. The specific type of eye ointment also varies significantly. Some ointment is made with petrolatum, some is water soluble, with or without preservatives. If ointment is used, preservative-free eye ointment is preferred, because preservative can cause corneal epithelial sloughing and conjunctiva hyperemia. None of the methods described in the literature are entirely effective at preventing corneal injury and some are associated with unwanted side effects. It is important to know that petrolatum is flammable and should be avoided when cautery will be used near the face. Several large studies have demonstrated that applying these techniques while measuring performance can lead to significant improvements in patient care. Measuring the incidence of corneal injury will give practices the data they need to assess performance, compare to national benchmarks, and if gaps are identified, undertake measures to improve eye protection for patients. The net result will be reduced corneal injuries and patient discomfort. All eye trauma cases and all eye surgery cases will be excluded from the measure. Reporting separately those procedures done on the face, including the ear, nose, and mandible, will serve as stratification allowing comparison of procedures which most anesthesiologists believe have a higher risk of corneal injury and which also remove the eyes from the direct control of qualified anesthesia providers.

Data Source: Claims/Paper Medical Record, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

Inverse Measure: No

Proportion Measure Scoring: Yes

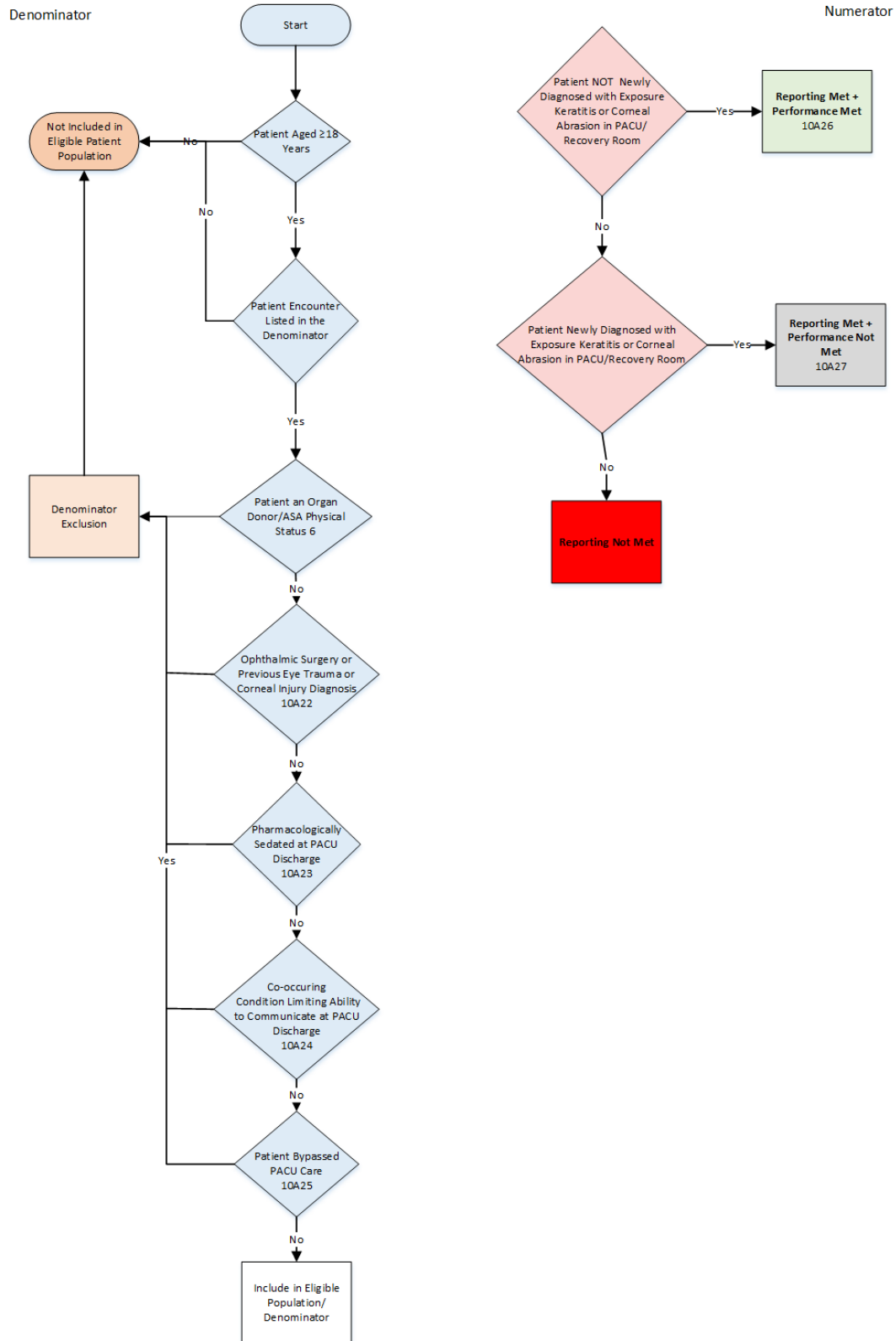
Continuous Measure Scoring: No

Risk Adjustment: No

References

ⁱASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>

New Corneal Injury Not Diagnosed in the Postanesthesia Care Unit/Recovery Area After Anesthesia Care
2017 QCDR Measure Flow



Measure Title

AQI29: Prevention of Post-Operative Vomiting (POV) – Combination Therapy (Pediatrics)◆

Measure Description

Percentage of patients aged 3 through 17 years of age, who undergo a procedure under general anesthesia in which an inhalational anesthetic is used for maintenance AND who have two or more risk factors for post-operative vomiting (POV), who receive combination therapy consisting of at least two prophylactic pharmacologic anti-emetic agents of different classes preoperatively or intraoperatively.

NQS Domain

Person and Caregiver-Centered Experience and Outcomes

High Priority Status

Yes

Instructions

This measure is to be reported each time a patient having risk factors for POV undergoes inhalation general anesthetic.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes, patient demographics and registry codes are used to identify patients who are included in the measure's denominator. CPT Category II codes are used to report the numerator of the measure.

When reporting with claims, submit the listed CPT codes, and the appropriate CPT Category II code or the appropriate CPT Category II code with the modifier. The modifiers allowed for this measure are: 1P - medical reasons, 8P - reason not otherwise specified. All measure-specific coding should be reported on the claims representing the eligible encounter as the denominator codes.

Denominator

All patients, aged 3 through 17 years of age, who undergo a procedure under general anesthesia in which an inhalational anesthetic is used for maintenance AND who have two or more risk factors for POV.

Denominator Definition: Risk factors for POV are:

- Surgery \geq 30 minutes
- Age \geq 3 years
- Strabismus surgery
- History of POV or PONV in parent or sibling

Denominator Criteria (Eligible Cases):

Patients aged \geq 3 years old and \leq 17 years old

AND

Patient received general anesthetic with inhalational anesthetic for maintenance: **10A37**

AND

Patient has two or more risk factors for POV: **10A38**

AND

Patient encounter during the reporting period (CPT):

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750,

00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01958, 01960, 01961, 01962, 01963, 01965, 01966, 01968, 01969, 01991, 01992

Denominator Exclusions

- Organ Donors as designated by ASA Physical Status 6
- Cases in which an inhalational anesthetic is used only for induction: **10A39**

Numerator

Patients who receive combination therapy consisting of at least two prophylactic pharmacologic anti-emetic agents of different classes preoperatively or intraoperatively

Definition: The recommended pharmacologic anti-emetics for POV prophylaxis in pediatric patients at risk of POV include (but may not be limited to):

- 5-hydroxytryptamine (5-HT₃) receptor antagonists (recommended as the first choice for prophylaxis for POV in children)
- Dexamethasone
- Antihistamines
- Butyrophenones

The foregoing list of medications/drug names is based on clinical guidelines and other evidence. The specified drugs were selected based on the strength of evidence for their clinical effectiveness. This list of selected drugs may not be current. Physicians and other health care professionals should refer to the FDA's web site page entitled "Drug Safety Communications" for up-to-date drug recall and alert information when prescribing medications.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

G9775

Patient received at least 2 prophylactic pharmacologic anti-emetic agents of different classes preoperatively and/or intra-operatively

OR

Denominator Exception:

G9776

Documentation of medical reason(s) for not administering combination therapy of at least two prophylactic pharmacologic anti-emetic agents of different classes (e.g. intolerance or other medical reason)

OR

Performance Not Met:

G9777

Patient did not receive at least 2 prophylactic pharmacologic anti-emetic agents of different classes preoperatively and/or intraoperatively

Measure Type: Process
NQF Number: Not applicable
eCQM: Not applicable

Rationale

Postoperative nausea and vomiting (PONV) is an important patient-centered outcome of anesthesia care. PONV is highly dis-satisfying to patients, although rarely life-threatening. A large body of scientific literature has defined risk factors for PONV and has demonstrated effective prophylactic regimes based on these risk factors, and demonstrated high variability in this outcome across individual centers and providers. Between 62-73% of children experience POV when prophylactic anti-emetics are not administered.ⁱ Beyond the discomfort associated with the condition, POV is a comorbidity which can cause significant postoperative complications, including dehydration and postoperative bleeding.ⁱⁱ In several studies, incidence of POV decreased significantly in children receiving combination therapy compared to control groups not receiving combination therapy for POV.^{iii,iv,v} Further, a number of papers have shown that performance can be assessed at the level of individual providers -- the outcome is common enough that sufficient power exists to assess variability and improvement at this level. A separate measure is needed for pediatric patients because the risk factors and recommended prophylaxis are different from adults.

Clinical Recommendation Statements:

The following evidence statements are quoted verbatim from the referenced clinical guidelines:

Society for Ambulatory Anesthesia (SAMBA) recommendations^{vi}:

Administer prophylactic antiemetic therapy to children at increased risk for POV; as in adults, use of combination therapy is most effective.

All prophylaxis in children at moderate or high risk for POV should include combination therapy using a 5-HT3 antagonist and a second drug. Because the effects of interventions from different drug classes are additive, combining interventions has an additive effect in risk reduction.

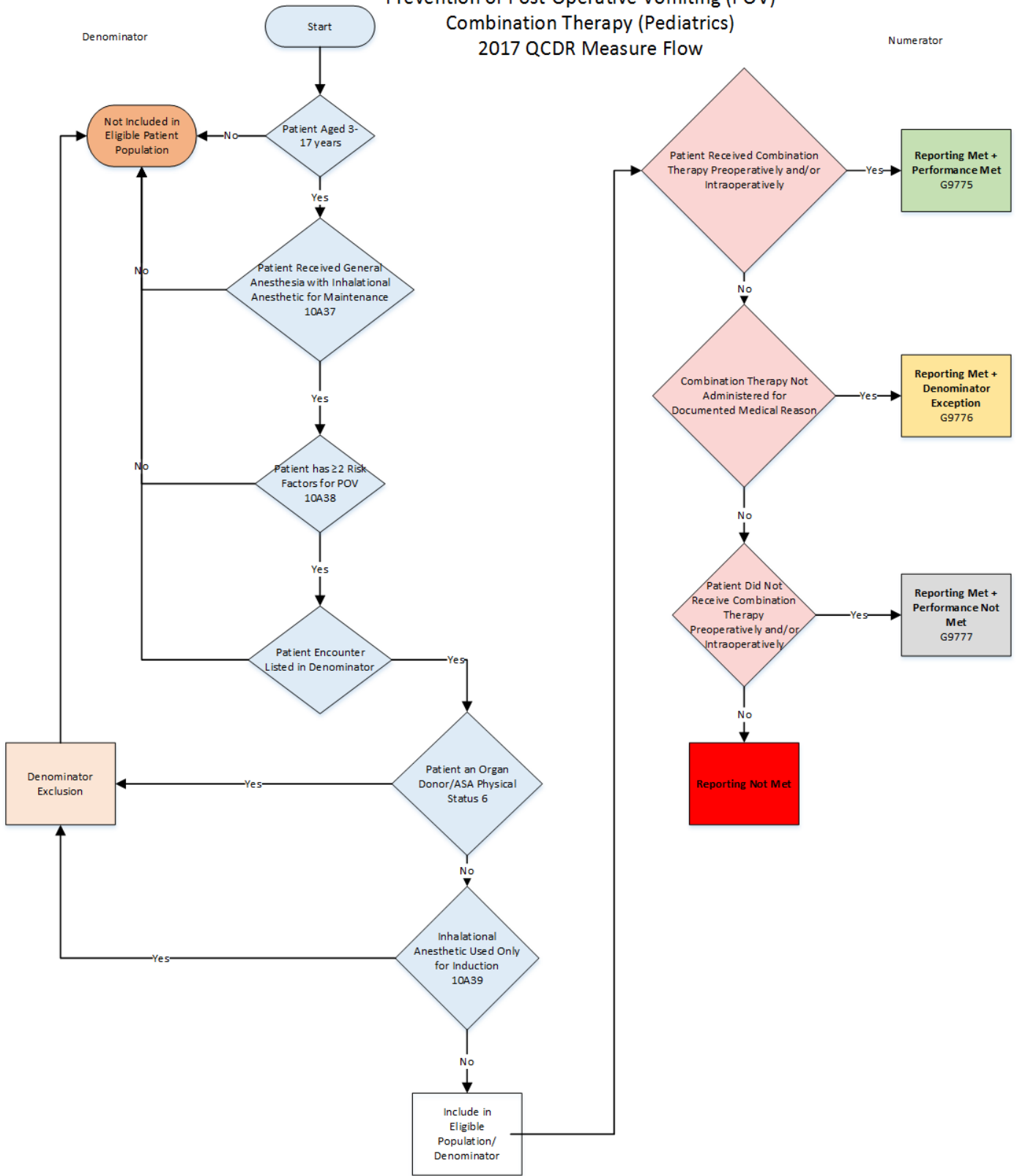
Data Source: Claims/Paper Medical Record, Registry
Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)
Number of Multiple Performance Rates: Not applicable
Inverse Measure: No
Proportion Measure Scoring: Yes
Continuous Measure Scoring: No
Risk Adjustment: No

References

ⁱ Fujii, Y. (2009). "Current management of vomiting after tonsillectomy in children." *Curr Drug Saf* 4(1): 62-73.

- ⁱⁱ Kovac, A. L. (2007). "Management of postoperative nausea and vomiting in children." *Pediatr Drugs* 9(1): 47-69.
- ⁱⁱⁱ Abd-Elshafy AK, et.al. (2016). "A new look on adding dexamethasone as an adjuvant to caudal bupivacaine; efficacy on postoperative pain and vomiting in pediatric patients." *Pain Physc* 19:E841-E852.
- ^{iv} Fazel, M. R., et al. (2007). "The effect of dexamethasone on postoperative vomiting and oral intake after adenotonsillectomy." *Int J Pediatr Otorhinolaryngol* 71(8): 1235-1238.
- ^v Fearon, J. A., et al. (2015). "A Randomized Controlled Trial of Oral Versus Intravenous Administration of a Nonnarcotic Analgesia Protocol Following Pediatric Craniostyosis Corrections on Nausea and Vomiting Rates." *J Craniofac Surg* 26(6): 1951-1953.
- ^{vi} Gan TJ, Meyer TA, Apfel CC, et al. Society for Ambulatory Anesthesia Guidelines for Management of Postoperative Nausea and Vomiting. *Anesth Analg* 2007;105:1615–28

Prevention of Post-Operative Vomiting (POV)— Combination Therapy (Pediatrics) 2017 QCDR Measure Flow



Measure Title:**AQI31: Postanesthesia Care Unit (PACU) Re-intubation Rate – INVERSE MEASURE†****Measure Description**

Percentage of patients, regardless of age, who received general anesthesia for a procedure via endotracheal tube who were extubated in the operating room or the postanesthesia care unit (PACU), and required re-intubation prior to PACU discharge.

NQS Domain

Patient Safety

High Priority Status

Yes

Instructions:

This measure is to be reported each time a patient, regardless of age, undergoes a procedure under the care of an anesthesia provider under general anesthesia via endotracheal tube who was extubated in the operating room or the postanesthesia care unit (PACU).

Measure Reporting via the Qualified Clinical Data Registry

CPT codes, registry codes and patient demographics are used to identify patients who are included in the measure's denominator. Registry codes are used to report the numerator of this measure.

Denominator

All patients, regardless of age, who received general anesthesia for a procedure via endotracheal tube who were extubated in the operating room or postanesthesia care unit.

Denominator Criteria (Eligible Cases):

All patients, regardless of age

AND

Patient received general anesthesia for a procedure via endotracheal tube: **10A32**

AND

Patient was extubated in the operating room or postanesthesia care unit (PACU): **10A33**

AND**Patient encounter during the reporting period (CPT):**

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00561, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744,

01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01960, 01961, 01962, 01963, 01965, 01966, 01968, 01969, 01991, 01992

Denominator Exclusions

- Organ Donors as designated by ASA Physical Status 6
- Patients who bypassed PACU care: **10A25**
- Patient received a planned trial of extubation documented in the medical record prior to removal of the original airway device: **10A34**

Numerator

Patients who required re-intubation in the postanesthesia care unit

Definition: Reintubation is defined as the need to insert an endotracheal tube resulting from the inability to sustain adequate spontaneous breathing occurring after the removal of an artificial airwayⁱ

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A35 Patient required re-intubation in the postanesthesia care unit.

Performance Not Met:

10A36 Patient did not require re-intubation in the postanesthesia care unit.

Measure Type: Intermediate Outcome

NQF Number: Not applicable

eCQM Number: Not applicable

Rationale

Anesthesiologists and qualified anesthesia providers are responsible for safe and appropriate airway management of patients undergoing a procedure under the care of an anesthesia provider during the perioperative period. The need for early repeat airway management of surgical patients is strongly associated with subsequent serious adverse outcomes including, but not limited to, prolonged hospital stays, transfer to the Intensive Care Unit (ICU) and increased costs of care. Assessment of this measure under a unified definition is an important tool for benchmarking the performance of anesthesia practices and individual anesthesiologists and qualified anesthesia providers.

Data Source: Claims/Paper Medical Record, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

Inverse Measure: Yes

Proportion Measure Scoring: Yes

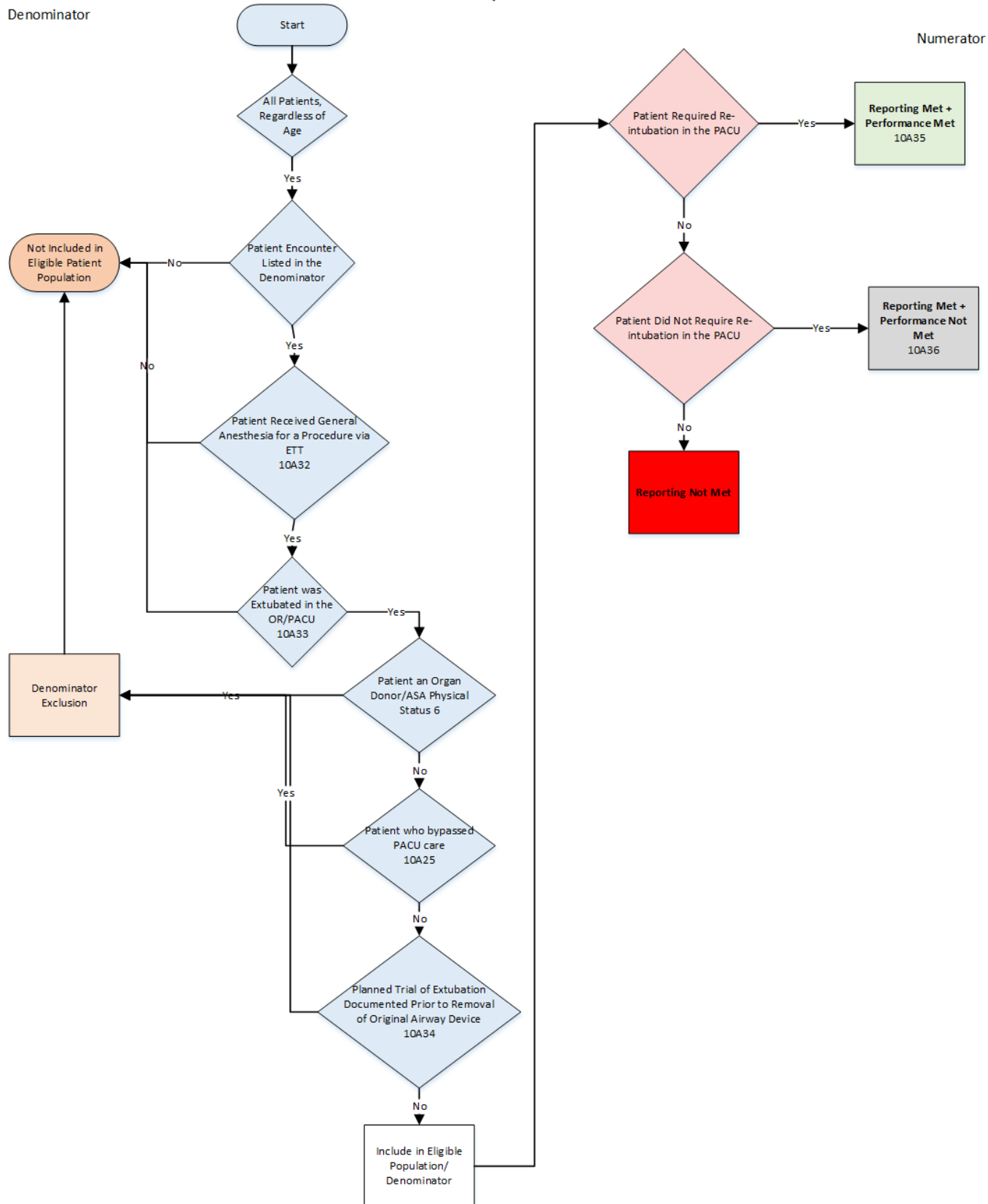
Continuous Measure Scoring: No

Risk Adjustment: No

References

ⁱ ASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>

Postanesthesia Care Unit (PACU) Re-intubation Rate 2017 QCDR Measure Flow



Measure Title:**AQI32: Procedural Safety for Central Line Placement##****Measure Description**

Percentage of patients, regardless of age, who underwent a central venous cannulation insertion and did not experience a central line placement injury.

NQS Domain

Patient Safety

High Priority Status

Yes

Instructions:

This measure is to be reported each time a central venous cannulation is attempted during the reporting period and the appropriate denominator criteria were recorded. It is anticipated that clinicians who attempt central venous cannulation insertions will submit this measure.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure's denominator. CPT Category codes are used to report the numerator of the measure.

Denominator

All patients, regardless of age, who undergo central venous cannulation insertion.

Denominator Criteria (Eligible Cases):

All patients, regardless of age

AND

Patient encounter during the reporting period (CPT): 36555, 36556, 36557, 36558, 36560, 36561, 36563, 36565, 36566, 36568, 36569, 36570, 36571, 36578, 36580, 36581, 36582, 36583, 36584, 36585, 93503

Denominator Exclusions

- Organ Donors as designated by ASA Physical Status 6

Numerator

Patients who did not experience a central line placement injury.

Definition: A Central Line Placement Injury includes a pneumothorax, hemothorax or thoracic duct, cardiac or vascular injury that results from an attempted or completed insertion of a central venous catheter.

Numerator Note: The measure should be reported as “Performance Not Met” for patients whom central venous catheter (CVC) with documented arterial injury (from the medical record or PSI code) or pneumothorax (512.89) requiring thoracostomy placement. For this indicator, the trauma can only be attributed to the attempted placement of central venous line by the anesthesia team and cannot be attributed to other causes.

Numerator Quality-Data Coding Options for Reporting Satisfactorily***Performance Met:***

10A40 Patient did not experience a central line placement injury

OR***Performance Not Met***

10A41 Patient experienced a central line placement injury

Measure Type: Intermediate Outcome

NQF Number: Not applicable

eCQM Number: Not applicable

Rationale

A number of patients undergoing anesthesia for various surgical procedures require a more precise and sophisticated level of cardiovascular monitoring than can be obtained from standard, noninvasive techniques. Placement of an arterial catheter, central venous catheter and/or flow directed pulmonary artery catheter may be required to obtain additional and more precise information necessary for safe and effective anesthesia and life support in the perioperative period.

Anesthesiologists and qualified anesthesia providers are often responsible for placing arterial catheters, central venous catheters and pulmonary artery catheters. Anesthesiologists and qualified anesthesia providers protect patient safety and are responsible for preventing injuries that may occur because of central line placement. Scientific literature has documented that the risk for these complications can be reduced through evidence-based practices that address placement and management of central venous catheters and the reduction of infections, mechanical, thrombotic and other adverse outcomes associated with central venous catheterization.

Practice guidelines in support of this measure also address how clinicians can improve the management of arterial trauma or injury arising from central venous catheterization. Central line placement injuries may result in adverse events and contribute to patient discomfort. Arterial injury and pneumothorax each require additional treatment that adds to health care cost and increases patient discomfort as well. Capturing this data in a uniform fashion allows for an assessment of variability across practices and identify outliers at the individual physician level.

Data Source: Claims/Paper Medical Record, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

Inverse Measure: No

Proportion Measure Scoring: Yes

Continuous Measure Scoring: No

Risk Adjustment: No

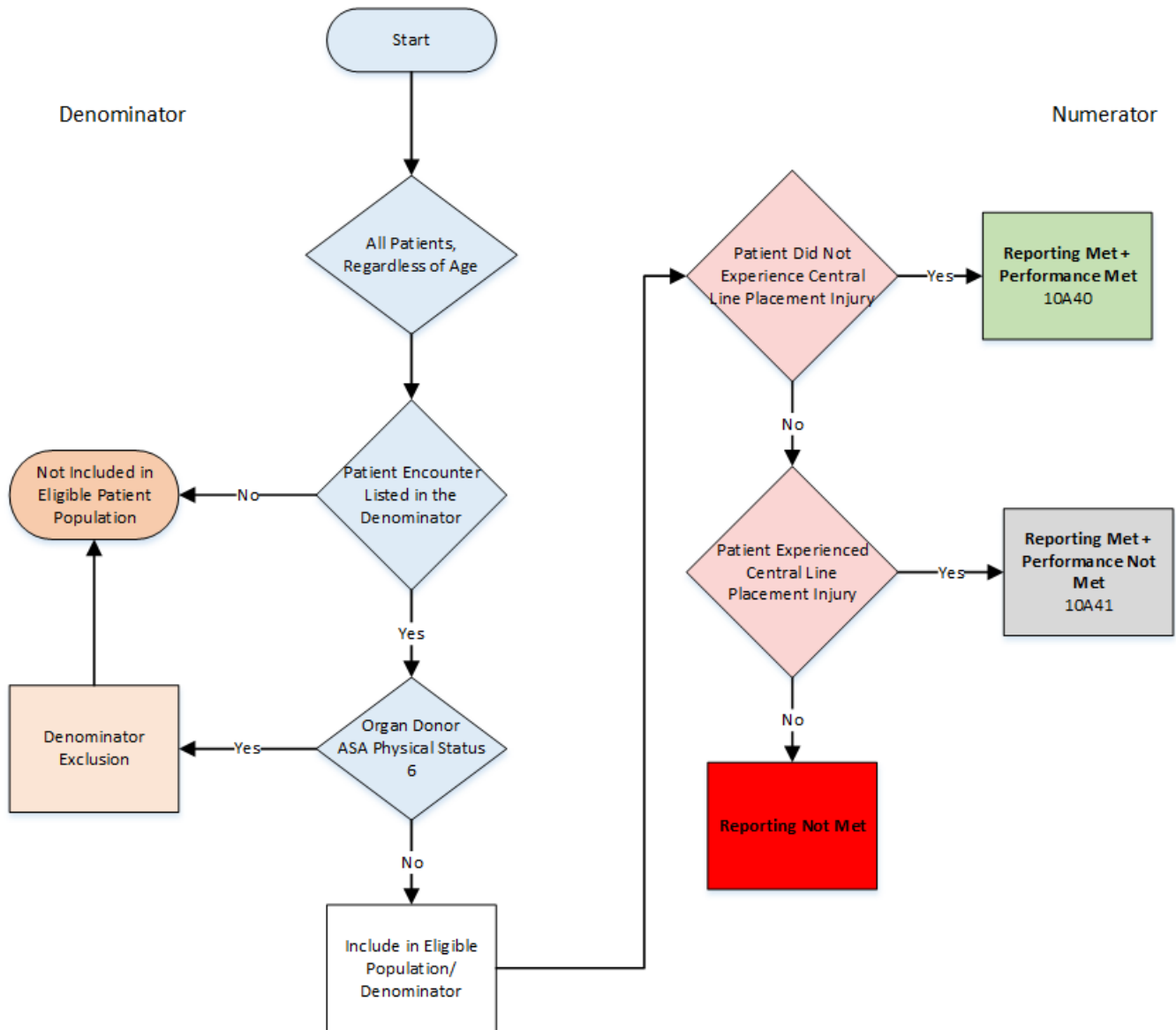
References

ⁱ ASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>

ⁱⁱ American Society of Anesthesiologists. Statement on Intravascular Catheterization Procedures. Approved 16 October 2013.

ⁱⁱⁱ American Society of Anesthesiologists Task Force on Central Venous Access. Practice Guidelines for Central Venous Access: A Report by the American Society of Anesthesiologists Task Force on Central Venous Access. *Anesthesiology*, 2012 Mar;116(3): 539-573.

Procedural Safety for Central Line Placement 2017 QCDR Measure Flow



Measure Title**AQI34: Perioperative Cardiac Arrest – INVERSE MEASURE****Measure Description**

Percentage of patients, regardless of age, who undergo a procedure under anesthesia and who experience a cardiac arrest under the care of a qualified anesthesia provider prior to anesthesia end time.**

NQS Domain

Patient Safety

High Priority Status

Yes

Instructions

This measure is to be reported each time a patient undergoes a surgical, therapeutic or diagnostic procedure under anesthesia that does not include planned cardiac arrest.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure's denominator. Registry Codes are used to report the numerator of the measure.

Denominator

All patients, regardless of age, who undergo a procedure* under anesthesia.

Definition: *Any procedure including surgical, therapeutic or diagnostic

Denominator Criteria (Eligible Cases):

All patients, regardless of age

AND**Patient encounter during the reporting period (CPT):**

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00566, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01958, 01960, 01961, 01962, 01963, 01965, 01966, 01967, 01968, 01969, 01991, 01992

Denominator Exclusions

- Organ Donors as designated by ASA Physical Status 6
- Cases with a documented planned cardiac arrest (i.e., use of CPT Code 99116 for deep hypothermia)

Numerator

Patients who experienced an unanticipated cardiac arrest under the care of a qualified anesthesia provider prior to anesthesia end time**.

Definition: Cardiac arrest is the unplanned cessation of the mechanical activity of the heart as confirmed by the absence of signs of effective circulation. Cardiac compression and/or defibrillation may be required for treatment.ⁱ

** Anesthesia End (Finish) Time is the time at which the anesthesiologist turns over care of the patient to a post anesthesia care team (either PACU or ICU). This time ends when the anesthesia team is no longer furnishing anesthesia services to the patient, that is when the patient may be placed safely under postoperative care and when the anesthesia team has completed transfer of patient care.ⁱ

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A28 Patient experienced an unanticipated cardiac arrest

OR

Performance Not Met:

10A29 Patient did not experience unanticipated cardiac arrest

Measure Type: Outcome

NQF Number: Not applicable

eCQM: Not applicable

Rationale

Cardiac arrest in the perioperative period is an unplanned event where the actions of an anesthesiologist or other qualified anesthesia provider are essential to preventing patient harm and, should cardiac arrest occur, to effectively treat cardiac arrest and prevent further complications. Prevention of cardiac arrest is a core goal of anesthesia providers as they are the clinicians responsible for cardiopulmonary function of the patient and in ensuring proper airway management.

The *Perioperative Cardiac Arrest* measure reflects the performance of qualified anesthesia providers in preventing perioperative cardiac arrest. A number of recent studies have identified the central role anesthesiologists play in preventing cardiac arrest of patients. Approximately 23-28% of perioperative cardiac arrests are directly attributable to complications from anesthesia.^{ii, iii, iv} One study found that 54% of cardiac arrests under neuraxial anesthesia were directly related to the anesthetic.ⁱⁱⁱ Overall, airway management and medication factors were the most common causes of anesthesia-related cardiac arrests, with airway management issues accounting for 64% of anesthesia-related cardiac arrests.^{iii, iv} Studies found mortality resulting from cardiac arrest cases directly related to anesthesia was approximately 30%.ⁱⁱ

These findings suggest anesthetic complications may occur in part due to physician decision-making related to airway management and other factors, which can significantly influence and affect patient outcomes, including mortality.ⁱⁱ With about 25% of perioperative cardiac arrests attributable to anesthesia-related causes, this measure addresses a

serious medical event often related to the decisions of the qualified anesthesia provider s.ⁱⁱ Moreover, it is the responsibility of the qualified anesthesia providers to manage perioperative cardiac arrest, including resuscitating and treating the patient as well investigating the etiology of the cardiac arrest regardless of its cause. Although several providers impact patient safety and outcomes, qualified anesthesia providers play a leading role in ensuring patient safety in the perioperative period. One study examining closed claims of anesthesia malpractice found delays in recognition and treatment of hemorrhage and communication breakdowns including between the anesthesiologist and surgeon contributed to adverse patient outcomes.^v Evidence supports the integral position of anesthesiologists and other qualified anesthesia providers during the perioperative period, and demonstrates how anesthesiology practice can influence patient outcomes, including perioperative cardiac arrest.

Data Source: Claims/Paper Medical Record, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

Inverse Measure: Yes

Proportion Measure Scoring: Yes

Continuous Measure Scoring: No

Risk Adjustment: No

References

ⁱ ASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>

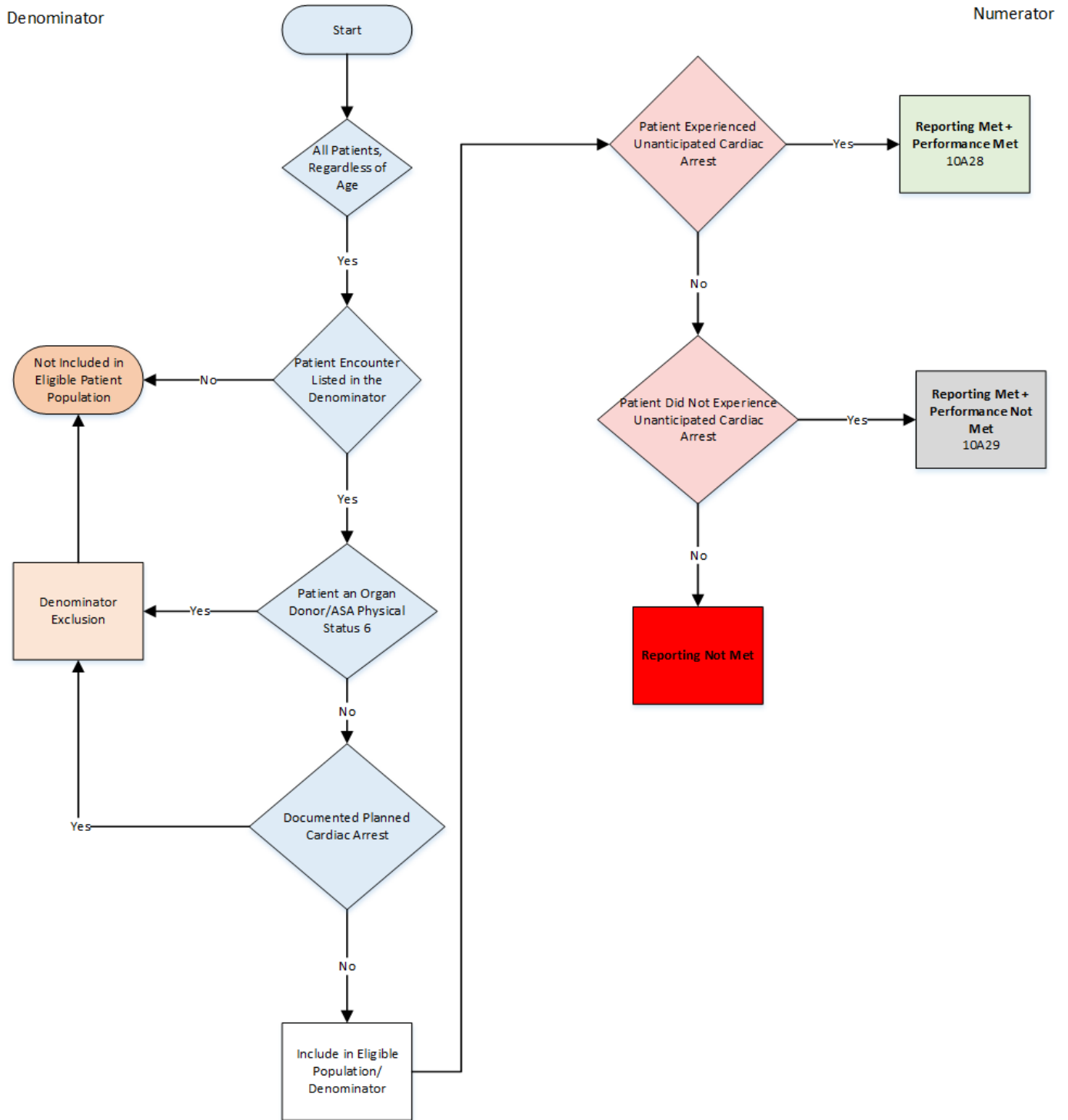
ⁱⁱ Ellis SJ, Newland MC, Simonson JA, Peters KR, Romberger DJ, Mercer DW, Tinker JH, Harter RL, Kindscher JD, Qiu F, Lisco SJ. Anesthesia-related cardiac arrest. *Anesthesiology*. 2014; 120:829-38.

ⁱⁱⁱ Kopp SL, Horlocker TT, Warner ME, Hebl JR, Vachon CA, Schroeder DR, Gould AB, Sprung J. Cardiac Arrest During Neuraxial Anesthesia: Frequency and Predisposing Factors Associated with Survival. *Anesth Analg*. 2005; 100(3):855-65.

^{iv} Nunes JC, Braz JRC, Oliveira TS, de Carvalho LR, Castiglia YMM, Braz LG. Intraoperative and Anesthesia-Related Cardiac Arrest and Its Mortality in Older Patients: A 15-Year Survey in a Tertiary Teaching Hospital. *PLOS ONE*. 2014; 9(8).

^v Dutton RP, Lee LA, Stephens LS, Posner KL, Davies JM, Domino KB. Massive hemorrhage: A report from the Anesthesia Closed Claims Project. *Anesthesiology*. 2014; 121:450-58.

Perioperative Cardiac Arrest 2017 QCDR Measure Flow



Measure Title**AQI35: Perioperative Mortality Rate – INVERSE MEASURE††****Measure Description**

Percentage of patients, regardless of age, who undergo a procedure* under anesthesia and who experience mortality under the care of an anesthesia provider prior to anesthesia end time.**

NQS Domain

Patient Safety

High Priority Status

Yes

Instructions:

This measure is to be reported each time a patient undergoes a surgical, therapeutic or diagnostic procedure under anesthesia.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure's denominator. Registry codes are used to report the numerator of the measure.

Denominator

All patients, regardless of age, who undergo a procedure* under anesthesia.

Definition: *Any procedure including surgical, therapeutic or diagnostic

Denominator Criteria (Eligible Cases):

All patients, regardless of age

AND**Patient encounter during the reporting period (CPT):**

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00561, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01958, 01960, 01961, 01962, 01963, 01965, 01966, 01967, 01968, 01969, 01991, 01992

Denominator Exclusions

- Organ Donors as designated by ASA Physical Status 6

Numerator

Patients who experience mortality under the care of an anesthesia provider prior to anesthesia end time.**

Definition: Death or mortality is defined as the irreversible cessation of all vital functions as indicated by permanent stoppage of the heart, respiration and brain activity; the end of life.¹

** Anesthesia End (Finish) Time is the time at which the anesthesiologist turns over care of the patient to a post anesthesia care team (either PACU or ICU). This time ends when the anesthesia team is no longer furnishing anesthesia services to the patient, that is when the patient may be placed safely under postoperative care and when the anesthesia team has completed transfer of patient care.¹

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A30 Patient experienced mortality under the care of a qualified anesthesia provider prior to anesthesia end time.

OR

Performance Not Met:

10A31 Patient did not experience mortality under the care of a qualified anesthesia provider prior to anesthesia end time.

Measure Type: Outcome

NQF Number: Not applicable

eCQM Number: Not applicable

Rationale

Anesthesiologists and qualified anesthesia providers provide a multi-faceted approach to ensuring patient safety during a procedure and in the postanesthesia care unit. Among other responsibilities, anesthesiologists and qualified anesthesia providers are responsible for the cardiopulmonary management of the patient. The mortality rate reflects deaths that occur while a patient is undergoing a procedure under the care of an anesthesia provider during the perioperative period. The measure extends beyond the intraoperative component of care (within the operating room) since a significant number of complications develop during the recovery phase (after leaving the operating room).

Patient mortality is a primary concern for anesthesiologists and qualified anesthesia providers, patients and the families and caregivers of the patients. Immediate perioperative death either in the operating room or postanesthesia care unit is a catastrophic event that should rarely occur. All deaths should trigger an investigation into the causes and events that led to the death with subsequent new procedures or training put in place to prevent such deaths from happening in the future.

Capturing this data in a uniform fashion allows for an assessment of variability across practices and identify outliers at the individual physician level.

Data Source: Claims/Paper Medical Record, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

Inverse Measure:	Yes
Proportion Measure Scoring:	Yes
Continuous Measure Scoring:	No
Risk Adjustment:	No

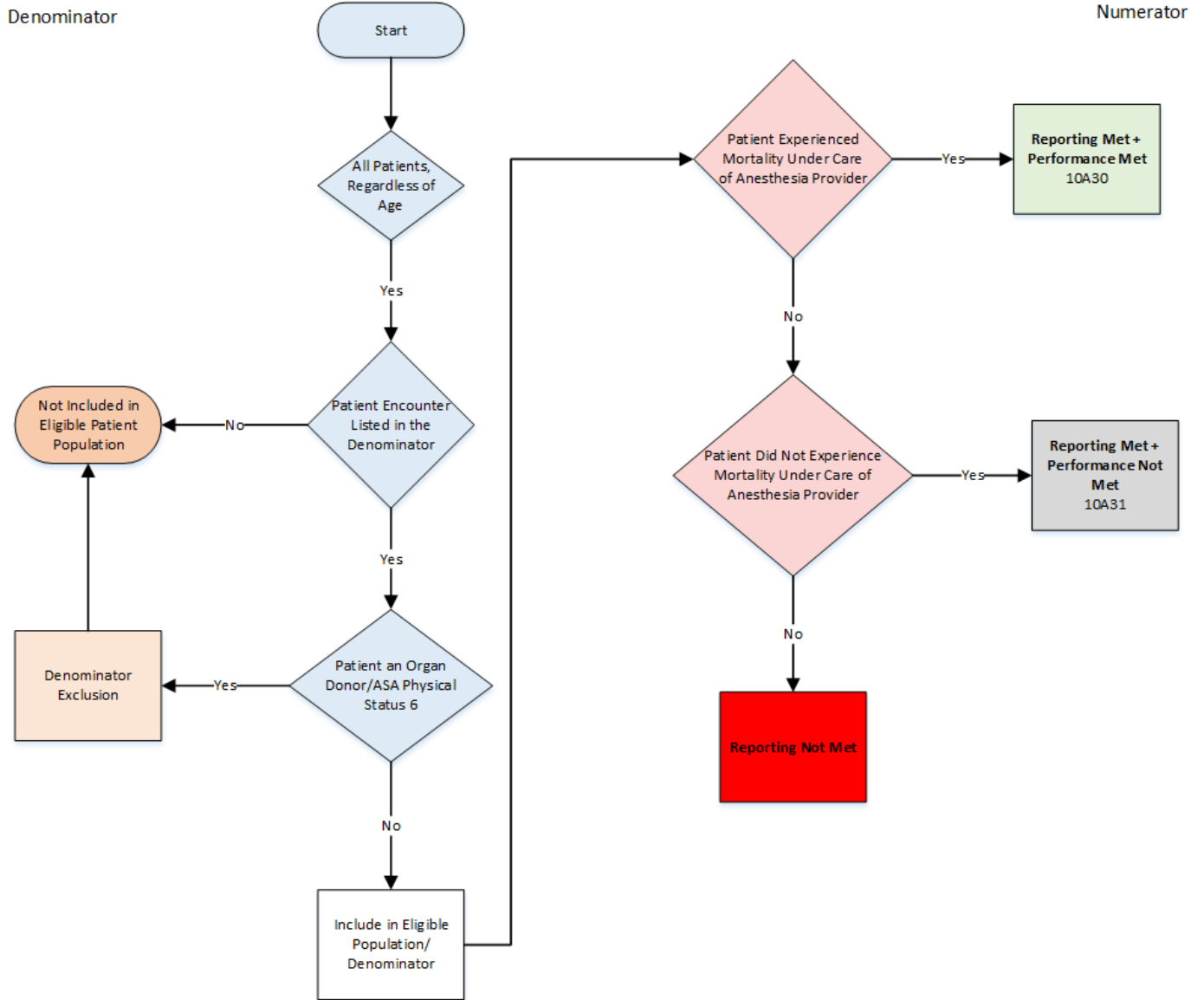
References

ⁱ ASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>

ⁱⁱ Bainbridge, Daniel, et al. "Perioperative and anaesthetic-related mortality in developed and developing countries: a systematic review and meta-analysis." *The Lancet* 380.9847 (2012): 1075-1081.

ⁱⁱⁱ Landoni, Giovanni, et al. "Randomized evidence for reduction of perioperative mortality." *Journal of cardiothoracic and vascular anesthesia* 26.5 (2012): 764-772.

Perioperative Mortality Rate 2017 QCDR Measure Flow



Measure Title

AQI37: Surgical Safety Checklist – Applicable Safety Checks Completed Before Induction of Anesthesia♦

Measure Description

Percentage of patients, regardless of age, who undergo a surgical procedure under general anesthesia who have documentation that all applicable safety checks from the World Health Organization (WHO) Surgical Safety Checklist (or other surgical checklist that includes the applicable safety checks for the specific procedure) were performed before induction of general anesthesia.

NQS Domain

Patient Safety

High Priority Status

Yes

Instructions

This measure is to be reported each time a patient undergoes a surgical procedure under general anesthesia.

Measure Reporting via the Qualified Clinical Data Registry

For this measure, report the appropriate registry codes for each patient for whom all applicable safety checks of the WHO Surgical Safety Checklist (or other surgical checklist that includes the safety checks for specific procedure) were performed before induction of general anesthesia.

Denominator

All patients, regardless of age, who undergo a surgical procedure under general anesthesia.

Denominator Criteria (Eligible Cases):

All patients, regardless of age

AND

Patient underwent a surgical procedure under general anesthesia: **10A42**

AND

Patient encounter during the reporting period (CPT): 00100, 00102, 00103, 00104, 00120, 00124, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00561, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01961, 01962, 01963, 01965, 01966, 01968, 01969, 01991, 01992

Denominator Exclusions

- Organ Donors as designated by ASA Physical Status 6

Numerator

Patients who have documentation that all applicable safety checks of the WHO Surgical Safety Checklist (or other surgical checklist that includes the safety checks for specific procedure) were performed before induction of general anesthesia.

Definition:

The WHO Surgical Safety Checklist includes the following items

Before Induction of Anesthesia

- Has the patient confirmed his/her identity, site, procedure and consent?
- Is the site marked?
- Is the anesthesia machine and medication check complete?
- Is the pulse oximeter on the Patient And Functioning?
- Does the Patient have a:
 - Known Allergy?
 - Difficult Airway/Aspiration Risk?
 - Risk of >500 ml Blood Loss (7ml/kg in children)?

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A43 All applicable safety checks of the WHO Surgical Safety Checklist (or other surgical checklist that includes the safety checks for specific procedure) performed before induction of anesthesia

OR

Performance Not Met:

10A44 All applicable safety checks of the WHO Surgical Safety Checklist (or other surgical checklist that includes the safety checks for specific procedure) NOT performed before induction of anesthesia

Measure Type: Process

NQF Number: Not applicable

eCQM: Not applicable

Rationale

In 2009, the World Health Organization (WHO) Safe Surgery Saves Lives Study Group published a study showing that utilization of a surgical safety checklist resulted in reduced perioperative mortality and complication rates. Since then, surgical safety checklists have been widely implemented around the world. Further studies confirm the WHO findings that implementation of the surgical safety checklist improves communication among members of the surgical team and reduces perioperative morbidity and mortality.

While the number of surgery-related sentinel events has decreased over the past several years, operative care still remains one of the top ten root causes for sentinel events. To address patient safety concerns in the operating room, surgical safety checklists have been widely implemented in recent years. However, compliance with surgical safety checklists and safety checklist protocols has been shown to vary widely. The level of checklist compliance has been shown to vary depending on the implementation strategy.

WHO Guidelines for Safe Surgery

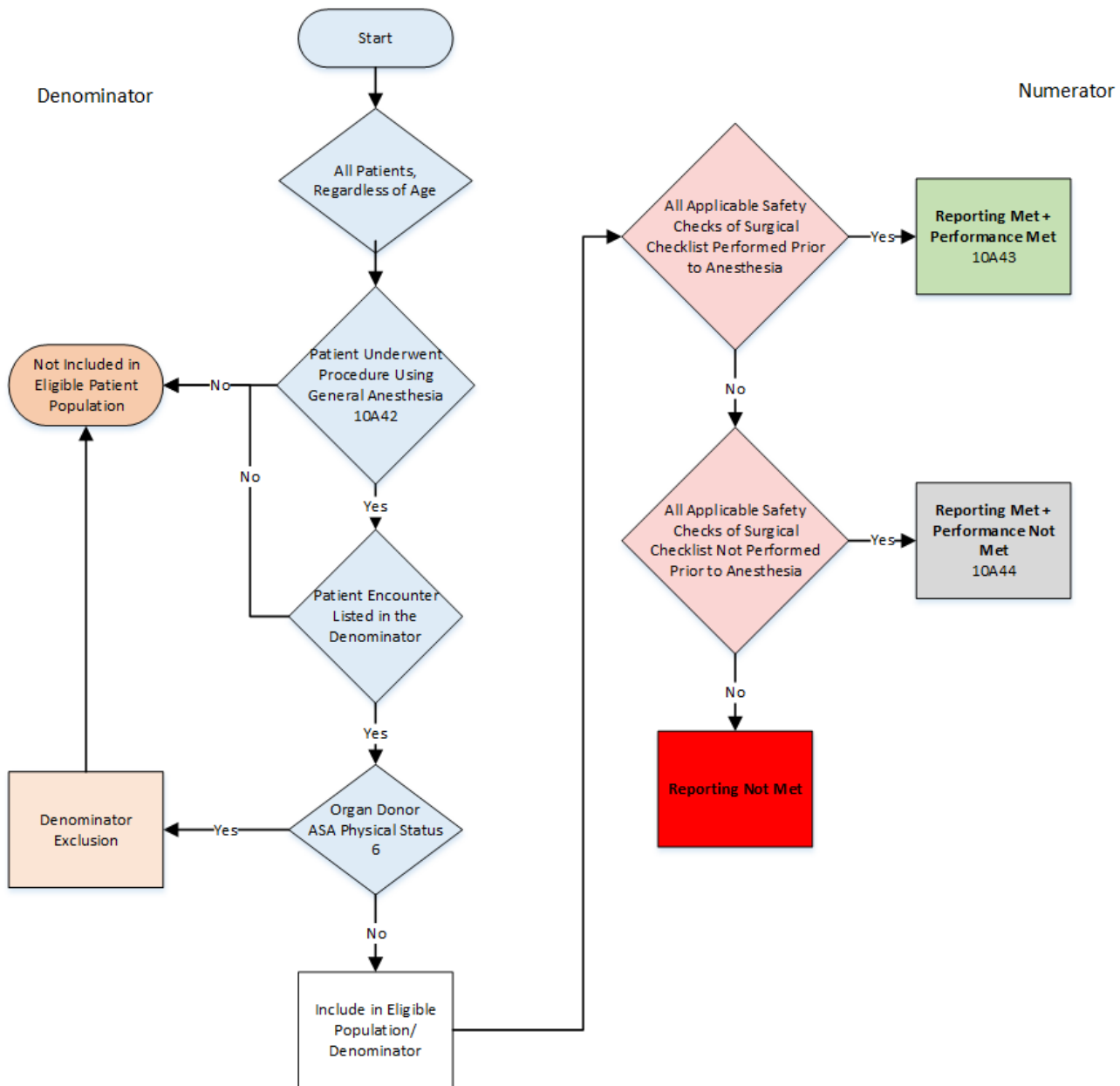
The World Health Organization's Surgical Safety Checklist reinforces established safety practices and ensures beneficial preoperative, intraoperative and postoperative steps are undertaken in a timely and efficient way.

Introducing key safety elements into the operating routine, teams could maximize the likelihood of the best outcome for all surgical patients without placing an undue burden on the system or the providers.

WHO Surgical Safety Checklist is available at <http://www.who.int/patientsafety/safesurgery/en/>

Data Source:	Claims/Paper Medical Record, Registry
Measure Steward:	American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)
Number of Multiple Performance Rates:	Not applicable
Inverse Measure:	No
Proportion Measure Scoring:	Yes
Continuous Measure Scoring:	No
Risk Adjustment:	No

Surgical Safety Checklist—Applicable Safety Checks Completed Before Induction of Anesthesia 2017 QCDR Measure Flow



Measure Title**AQI41: Coronary Artery Bypass Graft (CABG): Stroke – INVERSE MEASURE****Measure Description**

Percentage of patients aged 18 years and older undergoing isolated CABG surgery who have a *postoperative* stroke that did not resolve within 24 hours

NQS Domain

Effective Clinical Care

High Priority Status

No

Instructions

This measure is to be reported each time an isolated CABG procedure is performed during the reporting period. It is anticipated that eligible clinicians who provide services, identified by CPT Codes listed below, for isolated CABG will submit this measure. This measure is intended to reflect the quality of surgical services provided for isolated CABG or isolated reoperation CABG patients. Isolated CABG refers to CABG using arterial and/or venous grafts only.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure's denominator. The measure must capture both the surgical and related anesthesia code. G-codes are used to report the numerator of the measure. Note that a lower calculated performance rate for this measure indicates better clinical care or control.

Denominator

All patients, aged 18 years and older, undergoing isolated CABG Surgery

Denominator Criteria (Eligible Cases):

All patients, aged 18 years or older, on date of encounter

AND

Patient encounter during the reporting period (CPT): 33510, 33511, 33512, 33513, 33514, 33516, 33533, 33534, 33535, 33536

AND

00566, 00567

Denominator Exclusions

- Organ donors as designated by ASA Physical Status 6

Numerator

Patients undergoing isolated CABG surgery who have a postoperative stroke

Definition: A stroke is the sudden death of neurons in a localized area of brain due to inadequate blood flow that produces motor, sensory, or cognitive dysfunction (e.g., hemiplegia, hemiparesis, aphasia, sensory deficit, impaired memory) that persists for more than 24 hours.

Numerator Quality-Data Coding Options for Reporting Satisfactorily**Performance Met:**

G8573 Stroke following isolated CABG surgery

OR

Performance Not Met:

G8574 No stroke following isolated CABG surgery

Measure Type:	Outcome
NQF Number:	Not applicable
eCQM:	Not applicable

Rationale

Stroke is a devastating complication after coronary bypass surgery. A standardized definition of stroke for anesthesia eligible clinicians will allow for comparing stroke incidence and evaluating management strategies for reducing this devastating complication. The Anesthesia Quality Institute (AQI) defines stroke as the sudden death of neurons in a localized area of brain due to inadequate blood flow that produces motor, sensory, or cognitive dysfunction (e.g., hemiplegia, hemiparesis, aphasia, sensory deficit, impaired memory) that persists for more than 24 hours.ⁱ

Research demonstrates the incidence of stroke increases with patient age and is often associated with increased length of hospital stay and morbidity and mortality. Outcomes are better when patient age is younger and with beating-heart surgery rather than on-pump surgery.ⁱⁱ Research demonstrates varying incidence of stroke following CABG surgery, ranging from 1.1% - 5.7%.ⁱⁱⁱ Predictors of post-CABG stroke include, advanced age, prior cardiovascular complications and prolonged intraoperative cardiopulmonary bypass time.ⁱⁱⁱ Qualified anesthesia providers assume a unique and critical role during the perioperative period as they can provide safe and appropriate anesthesia care for patients, in relation to the aforementioned predictors of stroke. The expertise and decision-making of qualified anesthesia providers can greatly influence patient outcomes, including stroke.

Data Source:	Claims/Paper Medical Record, Registry
Measure Steward:	American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)
Number of Multiple Performance Rates:	Not applicable
Inverse Measure:	Yes
Proportion Measure Scoring:	Yes
Continuous Measure Scoring:	No
Risk Adjustment:	No

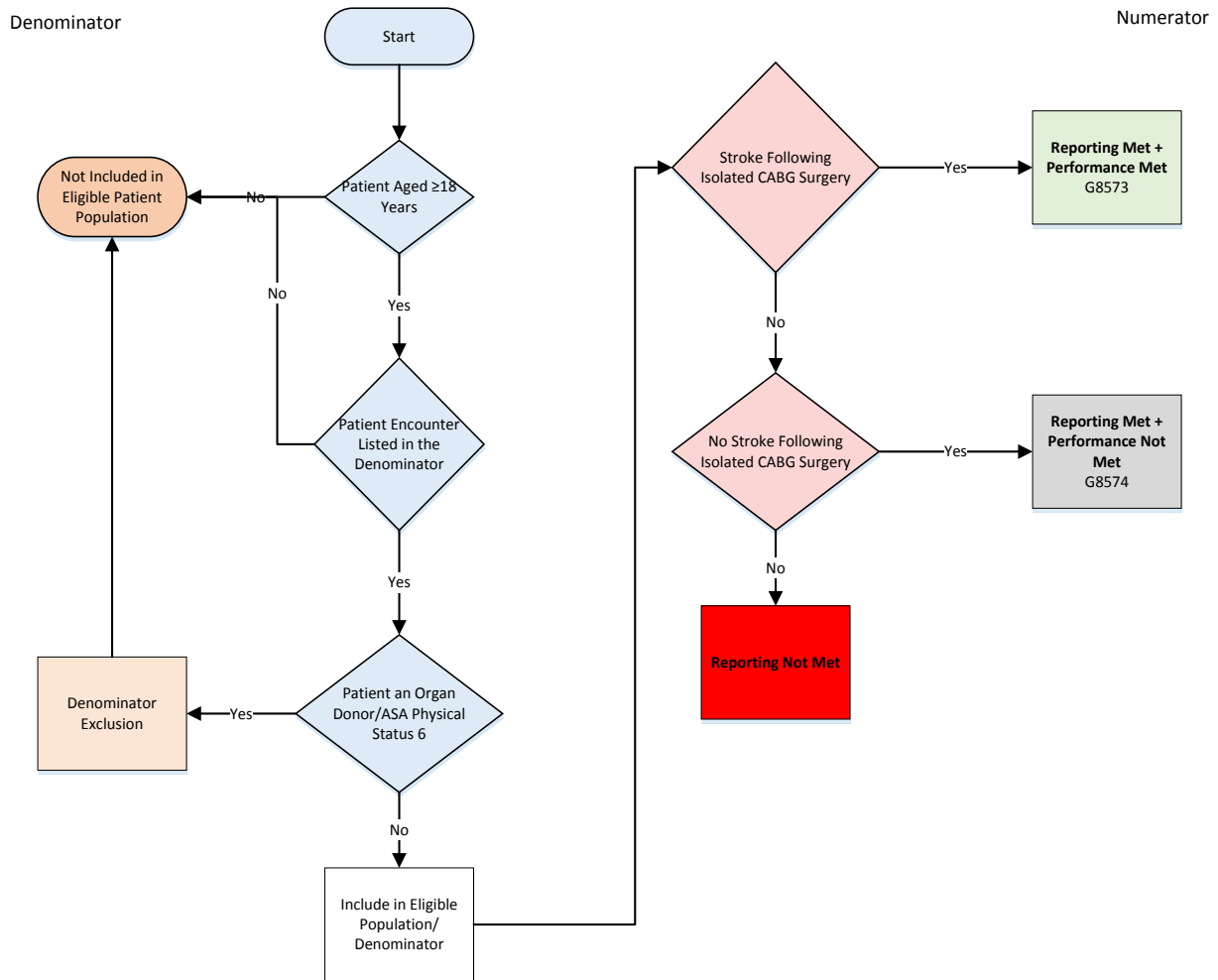
References

ⁱ ASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>

ⁱⁱ Goto, T. & Maekawa, K., (2014). "Cerebral dysfunction after coronary artery bypass surgery." J Anesth. 28: 242-248.

ⁱⁱⁱ Mao, et. al., (2015). "Predictors associated with strike after coronary artery bypass grafting: A systematic review." J Neurol Sci. 357: 1-7.

Coronary Artery Bypass Graft (CABG): Stroke 2017 QCDR Measure Flow



Measure Title**AQI42: Coronary Artery Bypass Graft (CABG): Post-Operative Renal Failure – INVERSE MEASURE****Measure Description**

Percentage of patients aged 18 years and older undergoing isolated CABG surgery (without pre-existing renal failure) who develop postoperative renal failure or require dialysis

NQS Domain

Effective Clinical Care

High Priority Status

No

Instructions

This measure is to be reported each time an isolated CABG procedure is performed during the reporting period. It is anticipated that eligible clinicians who provide services, identified by CPT Codes listed below, for isolated CABG will submit this measure. This measure is intended to reflect the quality of surgical services provided for isolated CABG or isolated reoperation CABG patients. Isolated CABG refers to CABG using arterial and/or venous grafts only.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure's denominator. The measure must capture both the surgical and related anesthesia code. G-codes are used to report the numerator of the measure. Note that a lower calculated performance rate for this measure indicates better clinical care or control.

Denominator

All patients, aged 18 years and older, undergoing isolated CABG surgery

Denominator Criteria (Eligible Cases):

All patients, aged 18 years and older, on date of encounter

AND

Patient encounter during the reporting period (CPT): 33510, 33511, 33512, 33513, 33514, 33516, 33533, 33534, 33535, 33536

AND

00566, 00567

Denominator Exclusions

- Organ donors as designated by ASA Physical Status 6

Numerator

Patients who develop postoperative renal failure or require dialysis.

Definition: Kidney failure is defined as either: (1) a level of GFR to <15 mL/min/1.73 m², which is accompanied in most cases by signs and symptoms of uremia, or (2) a need for initiation of kidney replacement therapy (dialysis or transplantation) for treatment for complications of decreased GFR, which would otherwise increase the risk of mortality and morbidity.¹

Numerator Quality-Data Coding Options for Reporting Satisfactorily***Performance Met:***

G8575

Developed postoperative renal failure or required dialysis

OR

Performance Not Met:

G8576 No postoperative renal failure/dialysis not required

Measure Type: Outcome
NQF Number: Not applicable
eCQM: Not applicable

Rationale

Coronary artery bypass graft (CABG) surgeries are among the most frequently performed cardiac surgeries each year.ⁱⁱ Literature suggests the development of renal failure following coronary artery bypass graft (CABG) surgery is associated with poor patient outcomes, including a higher risk for mortality.ⁱⁱⁱ Incidence of renal failure following CABG surgery ranges from 1.1% to 11%, with the incidence of acute kidney injury which can lead to renal failure is much higher, with reported incidence approximately 20%.^{iii, iv} There has been a substantial increase in postoperative morbidity, mortality, and cost associated with this relatively common complication, regardless of whether incidence varies between providers.

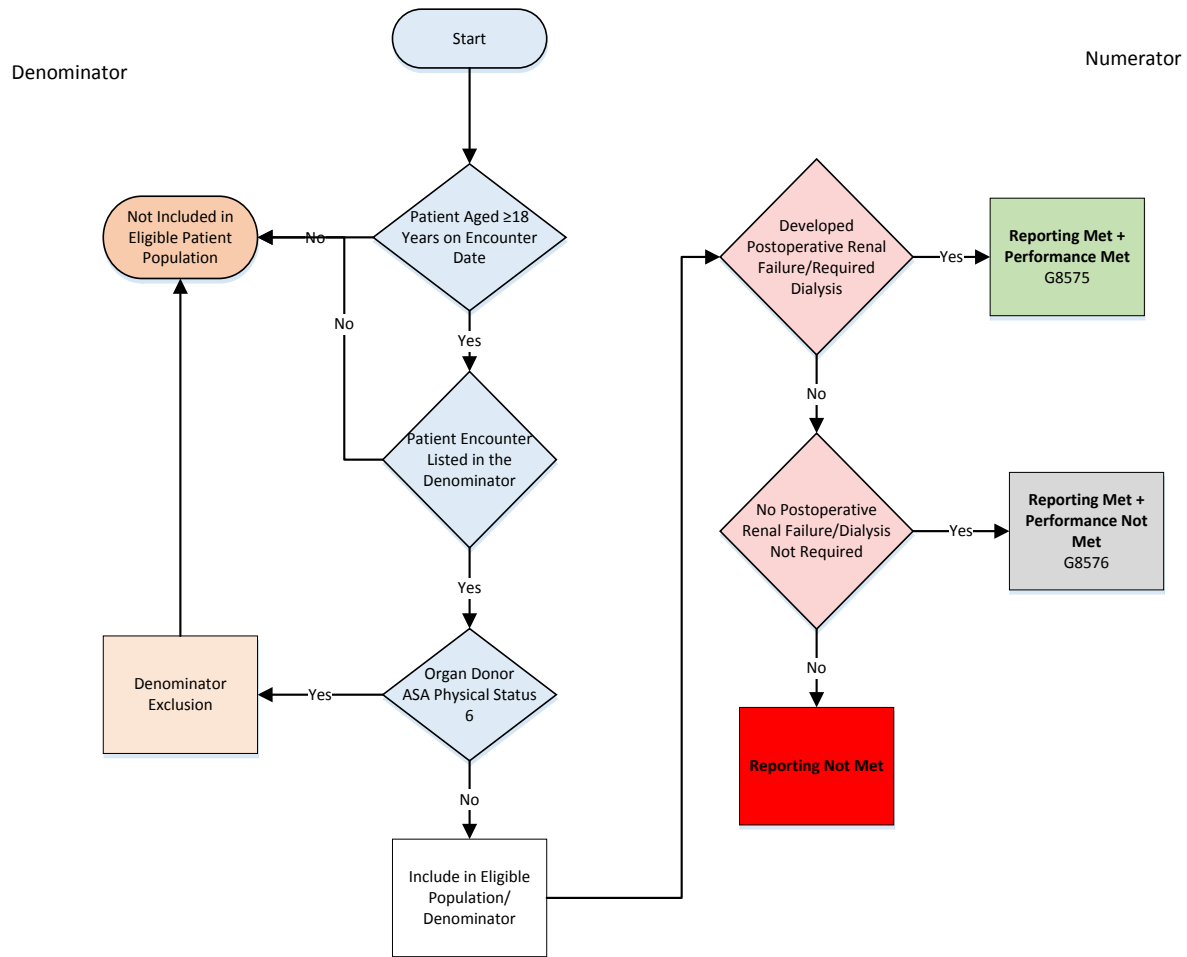
Qualified anesthesia providers play an integral role in managing patient organ function during surgery, including kidney function. Changing patient population trends require anesthesiologists, surgeons and other members of the perioperative team to use their unique expertise to adjust care and effectively and appropriately manage patients throughout the perioperative period.ⁱⁱⁱ A retrospective study examining elective CABG surgery outcomes found development of renal failure following surgery led to increased mortality and morbidity, as well as increased length of stay and use of resources.^{iv} Another study found that minimal increases in creatinine following CABG surgery increased mortality risk significantly.^{iv} Analysis of recent trends in patient characteristics reveals the growing complexity of comorbidities an average CABG patient may have including, diabetes and hypertension.

Data Source: Claims/Paper Medical Record, Registry
Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)
Number of Multiple Performance Rates: Not applicable
Inverse Measure: Yes
Proportion Measure Scoring: Yes
Continuous Measure Scoring: No
Risk Adjustment: No

References

ⁱ ASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>.
ⁱⁱ El Bardissi, A.W., et. al. (2012). "Trends in isolated coronary artery bypass grafting: An analysis of the Society of Thoracic Surgeons adult cardiac surgery database." J Thorac Cardiovasc Surg 143(2): 273-281.
ⁱⁱⁱ Li, S-Y., et. al. (2012). "Acute kidney injury network classification predicts in-hospital and long-term mortality in patients undergoing elective coronary artery bypass grafting surgery." Eur J Cardiothorac Surg 39: 323-328.
^{iv} Huen, S. C., & Parikh, C.R. (2012). "Predicting Acute Kidney Injury after cardiac surgery: A systematic review." Ann Thorac Surg 93:337-347.

Coronary Artery Bypass Graft (CABG): Post-Operative Renal Failure 2017 QCDR Measure Flow



Measure Title:**AQI48: Anesthesia: Patient Experience Survey†****Measure Description**

Percentage of patients, aged 18 and older, who were surveyed on their patient experience and satisfaction with anesthesia care.

NQS Domain

Person and Caregiver-Centered Experience and Outcomes

High Priority Status

Yes

Instructions:

This measure is to be reported each time a patient underwent a procedure* with anesthesia during the reporting period.

Measure Reporting via the Qualified Clinical Data Registry

CPT codes and patient demographics are used to identify patients who are included in the measure denominator. Registry codes are used to report the measure numerator.

Denominator

Patients, aged 18 and older, who undergo a procedure* under anesthesia.

Definition: *Any procedure including surgical, therapeutic or diagnostic

Denominator Criteria (Eligible Cases):

Patients, aged 18 years and older, on date of encounter

AND**Patient encounter during the reporting period (CPT):**

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00561, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01958, 01960, 01961, 01962, 01963, 01965, 01966, 01967, 01968, 01969, 01991, 01992, 20526, 20550, 20551, 20552, 20553, 20600, 20604, 20605, 20606, 20610, 20611, 27096, 36555, 36556, 36570, 36571, 36578, 36580, 36581, 36582, 36583, 36584, 36585, 62263, 62264,

62270, 62272, 62273, 62280, 62281, 62282, 62310, 62311, 62318, 62319, 62350, 62355, 62360, 62361, 62362, 62365, 62370, 63650, 63661, 63662, 63663, 63664, 63685, 63688, 64400, 64402, 64405, 64408, 64410, 64413, 64415, 64416, 64417, 64418, 64420, 64421, 64425, 64430, 64435, 64445, 64446, 64447, 64448, 64449, 64450, 64461, 64462, 64463, 64479, 64480, 64483, 64484, 64486, 64487, 64488, 64489, 64490, 64491, 64492, 64493, 64494, 64495, 64505, 64508, 64510, 64517, 64520, 64530, 64600, 64605, 64610, 64620, 64630, 64633, 64634, 64635, 64636, 64640, 64680, 64681, 72275, 93503, 95990, 95991

Denominator Exclusions

- Organ Donors as designated with ASA Physical Status 6
- Patient died within 30 days of the procedure: **10A11**

Numerator

Patients who received a survey within 30 days of the procedure to assess their experience and satisfaction with anesthesia.

Definition: Practices and eligible clinicians may customize their patient experience and satisfaction with anesthesia surveys to meet local needs but, **at a minimum**, surveys must include a core set of questions that address **three of the four** following criteria related to patient experience and satisfaction **and** one mandatory question described below.

1. Pre-operative Education and Preparation
2. Patient and/or Family Communication
3. Care Team Response to Comfort and Well-Being
4. Post-operative pain control and/or management

Mandatory question that must be included in each survey (practices should also include an option for patient to indicate “Not Applicable”):

1. On a scale of 1 to 5, where 1 indicates the worst anesthesia experience and where 5 indicates the best anesthesia experience, how would you rate your overall anesthesia experience?

Numerator Note: Practices and individual eligible clinicians who have contracted with or receive patient experience and satisfaction with anesthesia services via the Consumer Assessment of Healthcare Providers and Systems Outpatient and Ambulatory Surgery Survey (OAS CAHPS®), CAHPS® Surgical Care Survey or other CAHPS survey fulfill the spirit of this measure and should report Performance Met for patients who received such surveys.

Numerator Note: Practices and eligible clinicians may wish to supplement these questions by taking into consideration the recommendations of the ASA Committee on Performance and Outcomes Measurement work product entitled “[Patient Satisfaction and Experience with Anesthesia](#).”

Numerator Note: Depending on local practice, practices and eligible clinicians may wish to supplement survey questions by taking into consideration the recommendations developed as part of the Perioperative Surgical Home (PSH) that are structured in five distinct components.

1. Pre-Operative Education and Preparation (Four Indicators)
 - a. Patient comfort with instructions provided about eating better
 - b. Patient comfort with instructions provided about exercise or physical therapy
 - c. Patient comfort with instructions provided about stopping smoking (if applicable)
 - d. Patient comfort with instructions provided about what to do after surgery
2. Check-In and Pre-Procedure Experience
3. Caregiver and Family Communication during Surgery
4. Care Team Response to Comfort and Well-Being

5. Post-Operative Pain Management

For more information on these resources, visit <https://www.asahq.org/psh>.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A12 Patient provided with a survey within 30 days of the procedure to assess their experience and satisfaction with anesthesia

OR

Denominator Exception

10A13 Documentation of patient reason(s), process reason(s) or medical reason(s) for not receiving survey (i.e. patients who are non-verbal, who are unable to be surveyed due to a medical or psychiatric reason, who are unable to be surveyed due to a language barrier, have not provided contact information or who decline to be surveyed)

OR

Performance Not Met:

10A14 Patient was not provided with a survey within 30 days of the procedure to assess their experience and satisfaction with anesthesia

Measure Type: Process

NQF Number: Not applicable

eCQM Number: Not applicable

Rationale

Despite the implementation of CAHPS and H-CAHPS, there is a persistent gap in the ability to adequately measure patient experience on the selection of performance measures for performance-based payment programs. To provide high quality, patient-centered care in the future, anesthesiologists and other qualified anesthesia providers should measure and respond to the patients' perception of the degree to which they felt they were treated as individuals and empowered by their anesthesiology practitioners to engage in decision-making for their care. The assessment of patient satisfaction with anesthesia care provides important feedback which enables providers to improve care delivery and quality. At present there is a vast array of tools available for practices and individuals to implement based upon local patient populations and for local quality improvement initiatives. Anesthesia departments and individual providers should also seek additional access to relevant CAHPS and other patient survey data collected by the facility or practice as a means of guiding quality improvement initiatives.

Data Source: Database, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

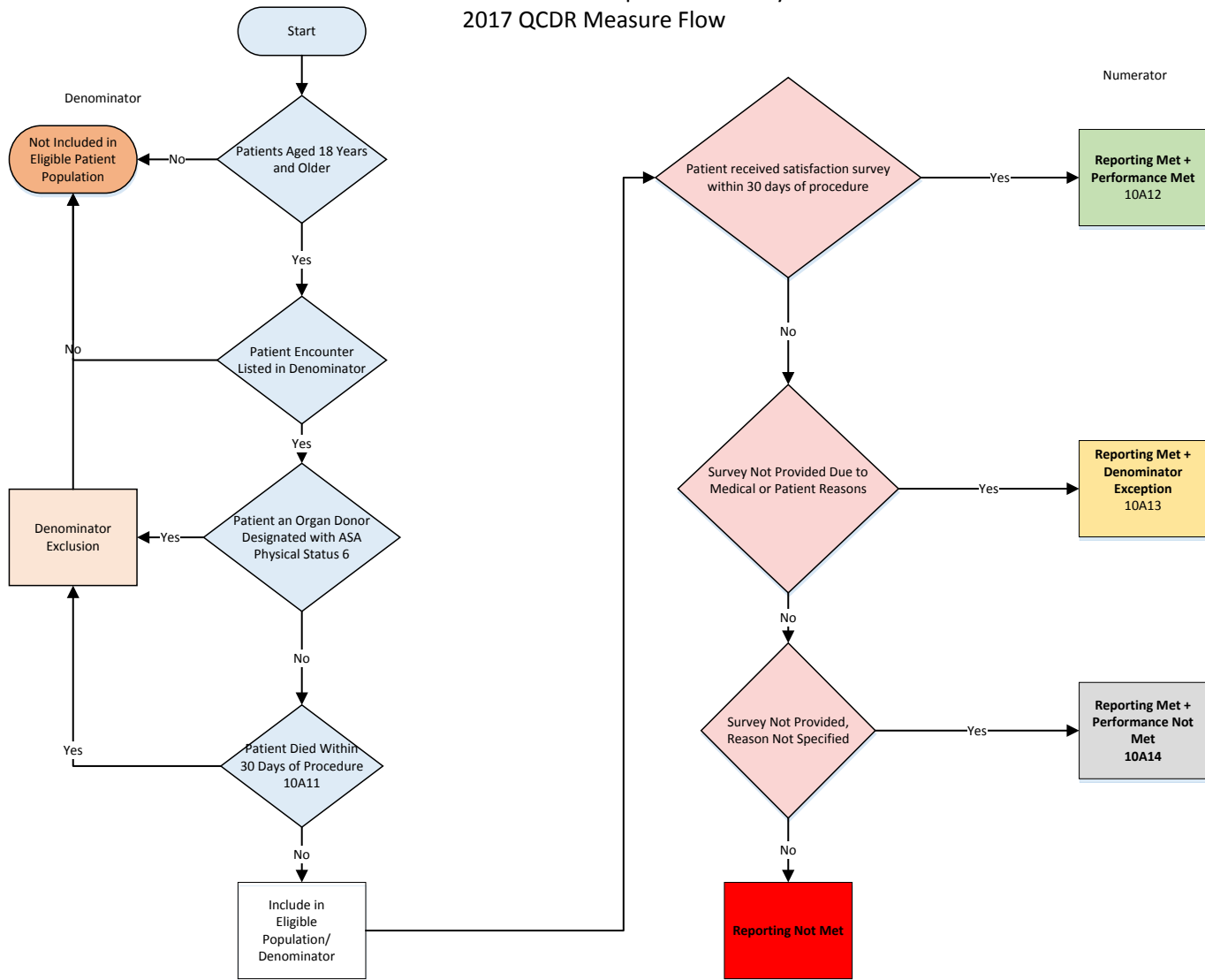
Inverse Measure: No

Proportion Measure Scoring: Yes

Continuous Measure Scoring: No

Risk Adjusted: No

Anesthesia: Patient Experience Survey 2017 QCDR Measure Flow



Measure Title

AQI49: Adherence to Blood Conservation Guidelines for Cardiac Operations using Cardiopulmonary Bypass (CPB) – Composite

Measure Description

Percentage of patients, aged 18 years and older, who undergo a cardiac operation using cardiopulmonary bypass for whom selected blood conservation strategies were used.

NQS Domain

Effective Clinical Care

High Priority Status

No

Instructions

This measure is to be reported each time a patient undergoes a cardiac operation using cardiopulmonary bypass during the reporting period. This measure has four sub-metrics which are used to calculate the total composite score. All sub-metrics are required to report to indicate performance met or performance not met.

Measure Reporting via the Qualified Clinical Data Registry

Patient demographics, CPT codes and Registry codes are used to identify patients who are included in the measure denominator. CPT Category codes and Registry codes are used to report the numerator.

Denominator

Patients, aged 18 years and older, who undergo a cardiac operation using cardiopulmonary bypass.

Denominator Note: Patients undergoing a re-operation are included in the denominator to the measure

Denominator Criteria (Eligible Cases):

Patients, aged 18 years and older

AND

Patient encounter during the reporting period (CPT): 00562, 00563, 00567, 00580

Denominator Exclusions

- Emergent cases

Numerator

Patients for whom selected blood conservation strategies were used.

Numerator Scoring:

Each blood conservation strategy of this measure accounts for 25% of the total composite score. Each of the four blood conservation strategies must be reported to be included in the performance measurement. The total composite score will be calculated by the data source and not the individual practitioner.

1. Use of Lysine analogues

Numerator Note: As indicated by Intraoperative Antifibrinolytic med: Aminocaproic Acid or Tranexamic Acid.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

OR
10A01 Patients for whom lysine analogues were used.

Performance Not Met:

10A02 Patients for whom lysine analogues were NOT used.

2. Use of mini-circuits or Retrograde Autologous Priming (RAP) or Ultrafiltration (Minimize hemodilution caused by cardiopulmonary bypass pump priming solution)

Numerator Note: Record the usage of retrograde autologous priming or a miniaturized circuit volume by the cardiopulmonary perfusion team prior to the onset of cardiopulmonary bypass.

Numerator Note: Capture the total volume of ultrafiltrate removed by the cardiopulmonary perfusion team during cardiopulmonary bypass and during modified ultra-hemofiltration post-CPB. Record the data in milliliters.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A03 Patients for whom mini-circuits or Retrograde Autologous Priming (RAP) or Ultrafiltration were used.

OR

Performance Not Met:

10A04 Patients for whom mini-circuits or Retrograde Autologous Priming (RAP) or Ultrafiltration were NOT used.

3. Use of red cell salvage using centrifugation

Numerator Note: Capture the volume of cell saver collected and given. Do not include autologous, allogeneic, pump-residual, or chest-tube recirculated blood.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A05 Patients for whom red cell salvage using centrifugation was used.

OR

Performance Not Met:

10A06 Patients for whom red cell salvage using centrifugation were NOT used.

4. Use of transfusion algorithm supplemented with point-of-care testing

Numerator Note: Transfusion algorithm includes SCA/STS guideline recommendations or an evidence-based algorithm formulated at the local level.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A07 Patients for whom transfusion algorithm supplemented with point-of-care testing was used.

OR

Performance Not Met:

10A08 Patients for whom transfusion algorithm supplemented with point-of-care testing was NOT used.

Composite Performance Score

Performance Score Note: This performance score is calculated by the data source and not the individual practitioner. Eligible clinicians reporting this measure must submit numerator quality codes for each of the four blood conservation strategies identified in this measure. The performance score is the cumulative sum of performance met for each blood conservation strategy listed in the numerator of this measure.

For example, for a single patient encounter, if the eligible clinician reports performance met coding for “Use of mini-circuits or RAP or Ultrafiltration”, “Use of red cell salvage using centrifugation”, and “Use of transfusion algorithm supplemented with point-of-care testing” and performance not met for “Use of lysine analogues”, the cumulative score would be calculated as 3 performance met divided by 4 possibilities of performance met that would equal 75%. This eligible clinician for this particular patient would be assessed as “Performance Not Met” because the eligible clinician had a cumulative score less than 100%.

Performance Met:

10A09

Patients for whom a cumulative score of 100% of blood conservation strategies was met

OR

Performance Not Met:

10A10

Patients for whom a cumulative score of **less than** 100% of blood conservation strategies was met.

Measure Type:	Composite
NQF Number:	Not applicable
eCQM:	Not applicable

Rationale

Efforts to reduce blood product use have the potential to avoid transfusion-related complications and reduce health care costs. Implementation of a blood use initiative significantly improves postoperative morbidity, mortality, and resource utilization. Limiting intraoperative and postoperative blood product transfusion decreases adverse postoperative events and reduces health care costs.ⁱ Low-risk patients have between an 8- and 10-fold excess risk of adverse outcomes when they receive a blood transfusion. We speculate that careful preoperative assessment of transfusion risk and intervention based on this assessment could minimize operative morbidity and mortality, especially because the patients at least risk are more likely to undergo elective operations and provide time for therapeutic interventions to improve transfusion risk profiles.ⁱⁱ

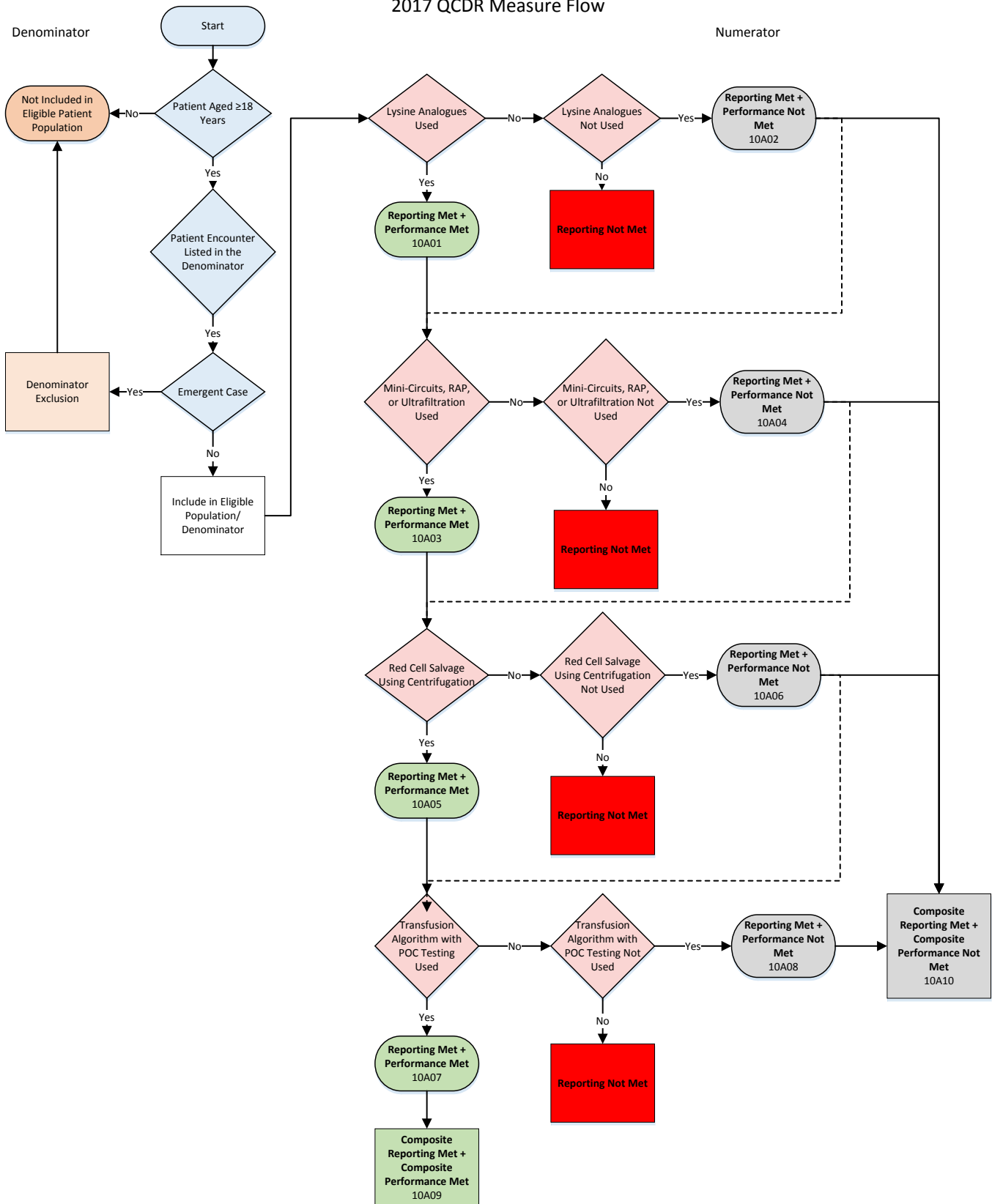
Data Source:	Claims/Paper Medical Record, Registry
Measure Steward:	American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)
Number of Multiple Performance Rates:	Not applicable
Inverse Measure:	No
Proportion Measure Scoring:	Yes
Continuous Measure Scoring:	No
Risk Adjustment:	No

References

ⁱ LaPar, D J, et al. Blood product conservation is associated with improved outcomes and reduced costs after cardiac surgery. *J Thorac Cardiovasc Surg.* 2013; 145(3):796-803; discussion 803-794.

ⁱⁱ Ferraris, V A, et al. Blood transfusion and adverse surgical outcomes: The good and the bad. *Surgery.* 2015; 158(3):608-617.

Adherence to Blood Conservation Guidelines for Cardiac Operations Using Cardiopulmonary Bypass (CBP)-Composite 2017 QCDR Measure Flow



Measure Title**AQI50: Application of Lung-Protective Ventilation during General Anesthesia****Measure Description**

Percentage of patients, aged 18 years and older, who undergo general anesthesia care that includes an endotracheal tube who had a median exhaled tidal volume less than or equal to 10 mL/kg of predicted-body-weight (PBW) during positive pressure ventilation (PPV).

NQS Domain

Effective Clinical Care

High Priority Status

No

Instructions

This measure is to be reported each time a patient receives general anesthesia for a procedure via endotracheal tube during the reporting period.

Measure Reporting via the Qualified Clinical Data Registry

Patient demographics, CPT codes and CPT Category codes are used to identify patients who are included in the measure denominator. Registry codes are used to report the numerator of the measure.

Denominator

Number of patients, aged 18 years and older, who undergo general anesthesia care that includes an endotracheal tube.

Denominator Criteria (Eligible Cases):

Patients, aged 18 years and older

AND

Patient received general anesthesia care that includes an endotracheal tube: **10A15**

AND**Patient encounter during the reporting period (CPT):**

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00561, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933,

01935, 01936, 01951, 01952, 01953, 01958, 01960, 01961, 01962, 01963, 01965, 01966, 01968, 01969, 01990, 01991, 01992

Denominator Exclusions

- Patients continuously receiving inhaled medications (e.g. inhaled epoprostenol or nitric oxide): **10A16**
- Patients with a diagnosis of pulmonary hypertension: **ICD-10-CM I27.0, I27.2**
- Patients who require hyperventilation for therapeutic reasons (e.g. elevated intracranial pressure, malignant hyperthermia, or thyroid storm): **10A17**

Numerator

Patients who had a median exhaled tidal volume less than or equal to 10 mL/kg of predicted-body-weight (PBW) during positive pressure ventilation (PPV).

Numerator Note: Positive pressure ventilation strategies include conservative tidal volume, lower peak airway pressures, positive end-expiratory pressure (PEEP) and lung-recruitment interventions to prevent atelectasis.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A18 Patient had a median exhaled tidal volume less than or equal to 10 mL/kg of predicted-body-weight (PBW) during positive pressure ventilation (PPV)

OR

Performance Not Met:

10A19 Patient did not have a median exhaled tidal volume less than or equal to 10 mL/kg of predicted-body-weight (PBW) during positive pressure ventilation (PPV)

Measure Type: Intermediate Outcome

NQF Number: Not applicable

eCQM: Not applicable

Rationale

Anesthesia providers prescribe and implement ventilator settings and monitor tidal volume for patients under general anesthesia. These decisions are aimed at preventing lung injury while maintaining adequate oxygenation and ventilation. Several studies have reported that patients who maintained tidal volumes less than or equal to 10 ml per kg of predicted body weight (PBW) experienced better outcomes than those ventilated with higher volumes. It is thought that higher tidal volumes expose the lungs to the potential for injury either due to over-expansion or pressure. AHRQ NQMC-8459 (Acute respiratory failure: percentage of patients with acute lung injury (ALI)/acute respiratory distress syndrome receiving lung-protective ventilation) recognizes that mechanical ventilation with tidal volumes (TV) of 6-8 ml/kg is associated with fewer pulmonary complications.

There is growing evidence that intraoperative lung-protective mechanical ventilation prevents postoperative pulmonary complications (PPCs). Such complications are associated with longer lengths of hospital stay, often requiring ICU admission.^{i, ii, iii, iv} While half of the risk factors for pulmonary complications are attributable to patient comorbidities, approximately 50% of PPCs are attributable to the surgical procedure and the anesthetic management itself.^v The number of PPCs is associated with postoperative length of stay and short term and long term mortality.^{vi}

Approximately 5% of patients undergoing general surgery will develop a PPC and one in five patients who develop a PPC will die within 30 days of surgery.^v The estimated costs of postoperative pulmonary complications has not been specifically estimated, but likely contributes to significant morbidity, suffering, and economic cost.

Wanderer^{vii}, et al demonstrated a current gap, noting of 295,540 cases analyzed, 43,934 (14.9%) had a median tidal volume of > 10 mL per kg of PBW. This measure is applicable to all adult patients because it is impossible to predict who may develop PPCs and become critically ill. Additionally, by improving ventilation management for all patients, anesthesia providers will improve the likelihood that critically ill patients are managed appropriately when they come to the operating room.

There are times when the established measure threshold may be exceeded appropriately for a brief period of time (<10 minutes) to verify placement of the endotracheal tube or to reduce atelectasis by recruiting alveoli. As a result, short periods of increased ventilation are excluded. Furthermore, it must be recognized that much of the clinical literature that supports the use of lower tidal volumes also incorporated measures to minimize atelectasis, such as the introduction of PEEP and recruitment maneuvers. Anesthesiologists and qualified anesthesia providers should be cautioned against adopting only reduced tidal volumes without also incorporating measures to minimize atelectasis.

The definition of ideal body weight (IBW) is provided by table and calculation. The method for calculating median TV during PPV will vary depending on the specific software employed for the electronic anesthesia record. An example algorithm is provided.

Data Source: Claims/Paper Medical Record, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

Inverse Measure: No

Proportion Measure Scoring: Yes

Continuous Measure Scoring: No

Risk Adjustment: No

References

ⁱ Fernandez-Perez, ER, et al. Intraoperative Ventilator Settings and Acute Lung Injury After Elective Surgery: A Nested Case Control Study. *Thorax* 2009; 64:121-127.

ⁱⁱ Hemmes SN, et al. Intraoperative ventilatory strategies to prevent postoperative pulmonary complications: a meta-analysis. *Curr Opin Anaesthesiol* 2013; 26:126–133

ⁱⁱⁱ Futier, E, et al. Protective lung ventilation in operating room: A systematic Review. *Minerva Anesthesiol* 2014;80:726–735.

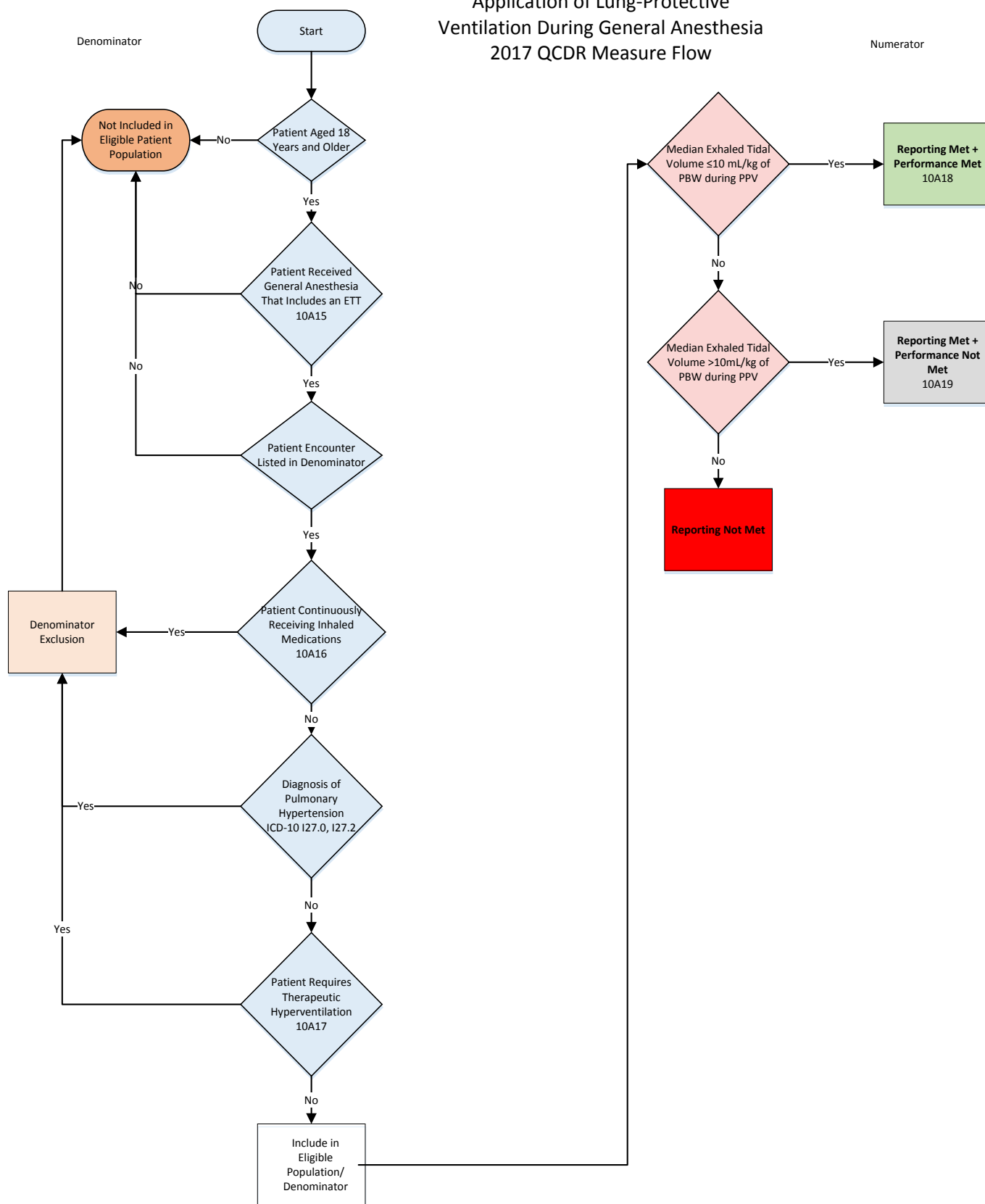
^{iv} Gajic, O, et al. Early Identification of Patients at Risk of Acute Lung Injury. *Am J Respir Crit Care Med* 2011; 183:462-470

^v Canet, J, et. al. Prediction of Postoperative Pulmonary Complications in a Population-based Surgical Cohort. *Anesthesiology* 2010;113(6):1338-50.

^{vi} Mazo, V, et al. Prospective External Validation of a Predictive Score for Postoperative Pulmonary Complications. *Anesthesiology* 2014; 121:219-31.

^{vii} Wanderer JP, et al. Temporal trends and current practice patterns for intraoperative ventilation at U.S. academic medical centers: a retrospective study. *BMC Anesthesiology* 2015; 15:40.

Application of Lung-Protective Ventilation During General Anesthesia 2017 QCDR Measure Flow



Measure Title

AQI51: Assessment of Patients for Obstructive Sleep Apnea

Measure Description

Percentage of patients, aged 18 years and older, who underwent an elective procedure under anesthesia who were screened preoperatively for Obstructive Sleep Apnea (OSA) using a standardized tool prior to the procedure.

NQS Domain

Patient Safety

High Priority Status

Yes

Instructions

This measure is to be reported each time a patient undergoes an elective procedure under anesthesia during the reporting period.

Measure Reporting via the Qualified Clinical Data Registry

Patient demographics and CPT codes are used to identify patients who are included in the measure denominator. G-codes and Registry Codes are used to capture the numerator.

Denominator

Patients, aged 18 years and older, who underwent an elective procedure* under anesthesia.

Definition: *Any procedure including surgical, therapeutic or diagnostic

Denominator Criteria (Eligible Cases):

Patients, aged 18 years and old

AND

Elective surgery: **G9643**

AND

Patient encounter during the reporting period (CPT):

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00561, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173, 01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933,

01935, 01936, 01951, 01952, 01953, 01958, 01960, 01961, 01962, 01963, 01965, 01966, 01967, 01968, 01969, 01991, 01992

Denominator Exclusions

- Patients with previous diagnosis for Obstructive Sleep Apnea (OSA): **G47.33**
- Patients receiving CPAP treatment: **Z99.89**
- Mechanically ventilated patients: **Z99.11**
- Intubated patients: **Z97.8**

Numerator

Patients who are screened preoperatively for Obstructive Sleep Apnea (OSA) using a standardized tool prior to the surgical procedure.

Numerator Note: High-risk is defined by screening tool utilized. Standardized tools for Obstructive Sleep Apnea include STOP-Bang Questionnaire, Berlin Questionnaire, P-SAP Score and the ASA OSA Patient Screening Tool Checklist. Although it is preferable to use one of the standardized tools listed above, at a minimum an assessment tool must assess the following components: snoring, daytime tiredness, breathing obstruction and hypertension.

Numerator Note: Obstructive Sleep Apnea assessment can be conducted by a physician anesthesiologist, other qualified anesthesia provider or proxy.

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A20 Patient was screened preoperatively for Obstructive Sleep Apnea (OSA) using a standardized tool prior to the procedure.

OR

Performance Not Met:

10A21 Patient was not screened preoperatively for Obstructive Sleep Apnea (OSA) using a standardized tool prior to the procedure

Measure Type: Process

NQF Number: Not applicable

eCQM: Not applicable

Rationale

Quoted Verbatim:

Undiagnosed OSA may pose a variety of problems for anesthesiologists and qualified anesthesia providers. A number of case reports have documented an increase in the incidence of postoperative complications and deaths among patients suspected of having OSA. Untreated OSA patients are known to have a higher incidence of difficult intubation, postoperative complications, increased intensive care unit admissions, and greater duration of hospital stay. Identifying patients with OSA is the first step in preventing postoperative complications due to OSA.ⁱ

Moderate-to-severe sleep apnea is independently associated with a large increased risk of all-cause mortality, incident stroke, and cancer incidence and mortality in this community-based sample.ⁱⁱ

Data Source:	Claims/Paper Medical Record, Registry
Measure Steward:	American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)
Number of Multiple Performance Rates:	Not applicable
Inverse Measure:	No
Proportion Measure Scoring:	Yes
Continuous Measure Scoring:	No
Risk Adjustment:	No

References

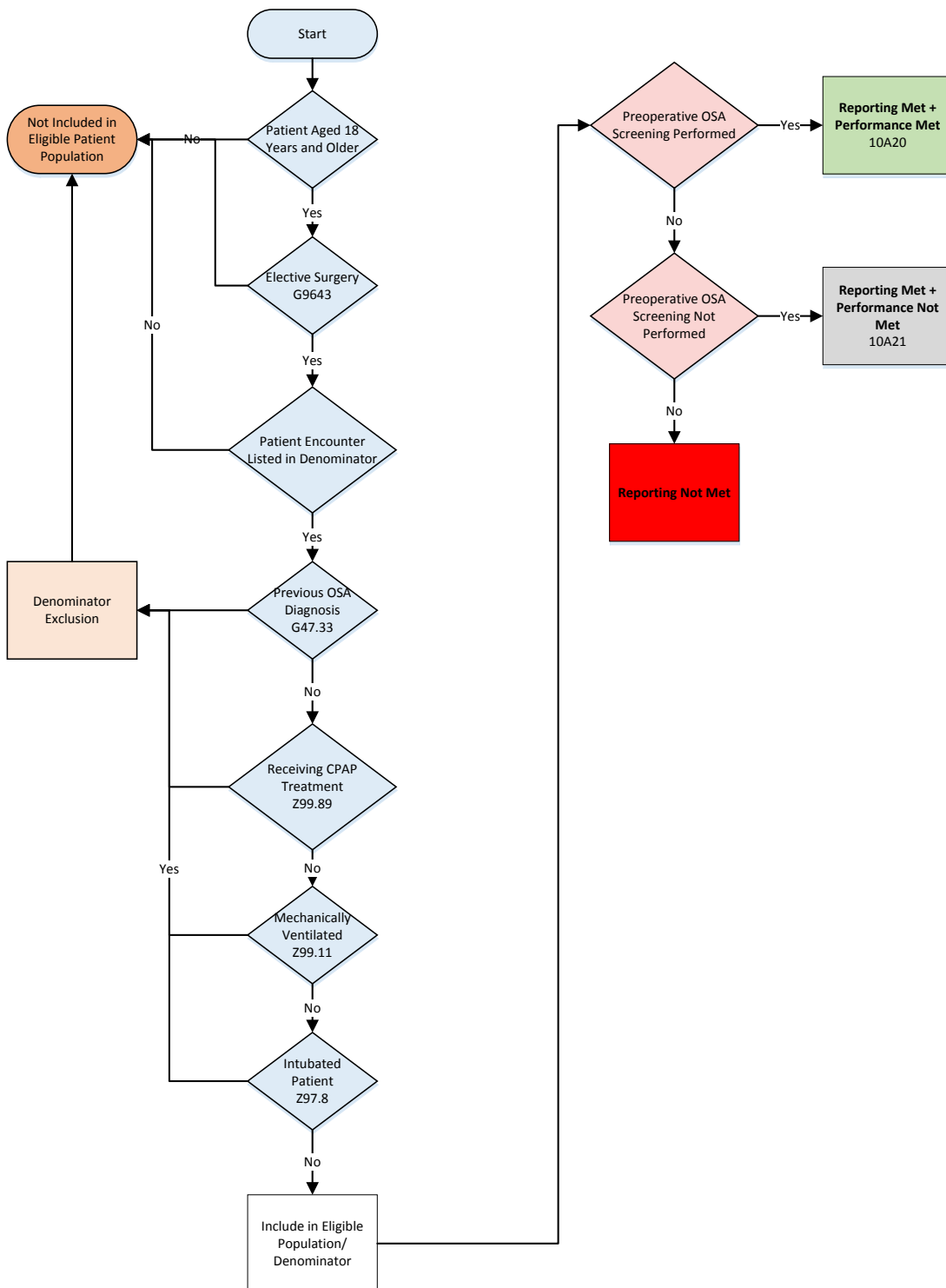
ⁱ Chung, F. et. al, 2016. “Society of Anesthesia and Sleep Medicine guidelines on preoperative screening and assessment of adult patients with obstructive sleep apnea.” *Anesth Analg*, 123 (2): 452-473.

ⁱⁱ Marshall, N.S., et. al., 2014. “Sleep apnea and 20-year follow-up for all-cause mortality, stroke, and cancer incidence and mortality in the Busselton Health Study cohort.” *J Clin Sleep Med*, 10 (4): 355-362.

Assessment of Patients for Obstructive Sleep Apnea 2017 QCDR Measure Flow

Denominator

Numerator



Measure Title

AQI52: Treatment of Hyperglycemia with Insulin

Measure Description

The percentage of patients, aged 18 years and older, who undergo elective inpatient surgery and who have a blood glucose level of > 200 mg/dL and who receive insulin prior to anesthesia end time.*

NQS Domain

Effective Clinical Care

High Priority Status

No

Instructions

This measure is to be reported each time a patient undergoes elective inpatient surgery during the reporting period.

Measure Reporting via the Qualified Clinical Data Registry

Patient demographics, place of service indicators, CPT codes, G-codes and Registry codes are used to identify patients who are included in the measure's denominator. Registry codes are used to report the numerator of the measure.

Denominator

Patients, aged 18 years and older, who undergo elective inpatient surgery under anesthesia and have a blood glucose level > 200 mg/dL prior to anesthesia end time*.

*Anesthesia End (Finish) Time is the time at which the anesthesiologist turns over care of the patient to a post anesthesia care team (either PACU or ICU). This time ends when the anesthesia team is no longer furnishing anesthesia services to the patient, that is when the patient may be placed safely under postoperative care and when the anesthesia team has completed transfer of patient care.¹

Denominator Criteria (Eligible Cases):

Patients aged \geq 18 years on date of encounter

AND

Elective surgery: **G9643**

AND

Place of Service Code: 21 (Inpatient)

AND

Patient experienced a blood glucose level > 200 mg/dL prior to anesthesia end time: **10A45**

AND

Patient encounter during the reporting period (CPT):

00100, 00102, 00103, 00104, 00120, 00124, 00126, 00140, 00142, 00144, 00145, 00147, 00148, 00160, 00162, 00164, 00170, 00172, 00174, 00176, 00190, 00192, 00210, 00211, 00212, 00214, 00215, 00216, 00218, 00220, 00222, 00300, 00320, 00322, 00326, 00350, 00352, 00400, 00402, 00404, 00406, 00410, 00450, 00454, 00470, 00472, 00474, 00500, 00520, 00522, 00524, 00528, 00529, 00530, 00532, 00534, 00537, 00539, 00540, 00541, 00542, 00546, 00548, 00550, 00560, 00561, 00562, 00563, 00566, 00567, 00580, 00600, 00604, 00620, 00625, 00626, 00630, 00632, 00635, 00640, 00670, 00700, 00702, 00730, 00740, 00750, 00752, 00754, 00756, 00770, 00790, 00792, 00794, 00796, 00797, 00800, 00802, 00810, 00820, 00830, 00832, 00834, 00836, 00840, 00842, 00844, 00846, 00848, 00851, 00860, 00862, 00864, 00865, 00866, 00868, 00870, 00872, 00873, 00880, 00882, 00902, 00904, 00906, 00908, 00910, 00912, 00914, 00916, 00918, 00920, 00921, 00922, 00924, 00926, 00928, 00930, 00932, 00934, 00936, 00938, 00940, 00942, 00944, 00948, 00950, 00952, 01112, 01120, 01130, 01140, 01150, 01160, 01170, 01173,

01180, 01190, 01200, 01202, 01210, 01212, 01214, 01215, 01220, 01230, 01232, 01234, 01250, 01260, 01270, 01272, 01274, 01320, 01340, 01360, 01380, 01382, 01390, 01392, 01400, 01402, 01404, 01420, 01430, 01432, 01440, 01442, 01444, 01462, 01464, 01470, 01472, 01474, 01480, 01482, 01484, 01486, 01490, 01500, 01502, 01520, 01522, 01610, 01620, 01622, 01630, 01634, 01636, 01638, 01650, 01652, 01654, 01656, 01670, 01680, 01682, 01710, 01712, 01714, 01716, 01730, 01732, 01740, 01742, 01744, 01756, 01758, 01760, 01770, 01772, 01780, 01782, 01810, 01820, 01829, 01830, 01832, 01840, 01842, 01844, 01850, 01852, 01860, 01916, 01920, 01922, 01924, 01925, 01926, 01930, 01931, 01932, 01933, 01935, 01936, 01951, 01952, 01953, 01991, 01992

Denominator Exclusions

- None

Numerator

Patients who are administered insulin during anesthesia or PACU care after having a blood glucose level > 200 mg/dL

Numerator Quality-Data Coding Options for Reporting Satisfactorily

Performance Met:

10A46

Patient received insulin prior to anesthesia end time.

OR

Denominator Exception:

10A47

Patient did not receive insulin because of previous history of adverse reaction or documented allergy to insulin.

OR

Performance Not Met:

10A48

Patient did not receive insulin prior to anesthesia end time.

Measure Type: Intermediate Outcome

NQF Number: Not applicable

eCQM: Not applicable

Rationale

Perioperative hyperglycemia is associated with significant morbidity. Target values for perioperative glucose management in practice guidelines and in outcome studies vary, but usual target blood glucose levels vary from 140 mg/dL to 200 mg/dL. Anesthesiologists and qualified anesthesia providers can foster high quality care and improve clinical outcomes by ensuring that hyperglycemia is treated appropriately. The Anesthesia Quality Institute Outcomes Glossary 2016 defines hyperglycemia as an abnormally high concentration of glucose (greater than 200 mg/dl or 11.1 mmol/l) in the circulating blood. As a minimal indicator of appropriate perioperative management of hyperglycemia during anesthesia care, this measure determines the proportion of patients in whom a blood glucose level of >200 mg/dL obtained during anesthesia care is treated with insulin. It is intended to apply to adult inpatients undergoing surgery.

One retrospective study of 995 patients who had undergone major general and vascular surgery investigated the association of perioperative acute hyperglycemia and risk of 30-day postoperative infection (POI) over an 18-month period. Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL).ⁱⁱ

In both mastectomy and major vascular surgery, glucose level > 150 mg/dL was associated with an increased risk of surgical site infection.^{iii,iv}

In one study of 55,408 patients with diabetes undergoing a variety of noncardiac operations, elevated 24-hour postoperative glucose concentrations were independently associated with postoperative infection: Adjusted incidence rate ratio for glucose 150-250 mg/dL = 1.22; for >250 mg/dL, adjusted incidence rate ratio = 1.43. ^v

The Endocrine Society states that postoperative blood glucose values greater than 200 mg/dL are associated with prolonged hospital length of stay and an increased risk of postoperative complications, including wound infections and cardiac arrhythmias. As a glycemic target, The Endocrine Society recommends random blood glucose level of less than 180 mg/dl for the majority of hospitalized patients with non-critical illness, and this threshold is also recommended for ambulatory surgical patients and most cardiac surgical patients. ^{vi}

Cardiac surgical patients with blood glucose > 200 mg/dL within 48 hours of surgery was associated with an increased incidence of surgical site infections. ^{vii}

Data Source: Claims/Paper Medical Record, Registry

Measure Steward: American Society of Anesthesiologists (ASA) / Anesthesia Quality Institute (AQI)

Number of Multiple Performance Rates: Not applicable

Inverse Measure: No

Proportion Measure Scoring: Yes

Continuous Measure Scoring: No

Risk Adjustment: No

References

ⁱ ASA Ad Hoc Committee on Data Definitions, 2017, <https://www.aqihq.org/qualitymeasurementtools.aspx>

ⁱⁱ Ramos, M, et. al. 2008. "Relationship of perioperative hyperglycemia and postoperative infections in patients who undergo general or vascular surgery." *Ann Surg* 2008;248: 585–591.

ⁱⁱⁱ Villar-Compte, D., et. al. 2008. "Hyperglycemia as a risk factor for surgical site infections in patients undergoing mastectomy." *AJIC*. 36:192-198.

^{iv} Vriesendorp, T. M., et. al. 2004. "Early post-operative glucose levels are an independent risk factor for infection after peripheral vascular surgery: A retrospective study." *Eur J Vasc Endovasc Surg*; 28:520-255

^v King, J.T., et al. 2011. "Glycemic control and infections in patients with diabetes undergoing noncardiac surgery." *Ann Surg*. 253(1):158-165

^{vi} Jacobi J, et al. 2012. "Guidelines for the use of an insulin infusion for the management of hyperglycemia in critically ill patients. *Crit Care Med*. 40(12):3251-3276

^{vii} Latham, R, et. al. 2001. "The associate of diabetes and glucose control with surgical-site infections among cardiothoracic surgery patients." *Inf Contr Hosp Epidemiol*. 22(10): 607-612

Treatment of Hyperglycemia with Insulin 2017 QCDR Measure Flow

