

Quality ID #044 (NQF 0236): Coronary Artery Bypass Graft (CABG): Preoperative Beta-Blocker in Patients with Isolated CABG Surgery
– National Quality Strategy Domain: Effective Clinical Care
– Meaningful Measure Area: Medication Management

2021 COLLECTION TYPE:
MIPS CLINICAL QUALITY MEASURES (CQMS)

MEASURE TYPE:
Process

DESCRIPTION:
Percentage of isolated Coronary Artery Bypass Graft (CABG) surgeries for patients aged 18 years and older who received a beta-blocker within 24 hours prior to surgical incision.

INSTRUCTIONS:
This measure is to be submitted **each time** an isolated CABG procedure is performed during the performance period. It is anticipated that Merit-based Incentive Payment System (MIPS) eligible clinicians who provide services for isolated CABG will submit this measure. The timeframe for this measure includes the entire 24 hour period prior to the surgical incision time.

Measure Submission Type:
Measure data may be submitted by individual MIPS eligible clinicians, groups, or third-party intermediaries. The listed denominator criteria are used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions as allowed by the measure. The quality-data codes listed do not need to be submitted by MIPS eligible clinicians, groups, or third-party intermediaries that utilize this modality for submissions; however, these codes may be submitted for those third-party intermediaries that utilize Medicare Part B claims data. For more information regarding Application Programming Interface (API), please refer to the Quality Payment Program (QPP) website.

DENOMINATOR:
Isolated CABG surgeries for patients aged 18 years and older.

Definition:
Isolated CABG – Refers to CABG using arterial and/or venous grafts only

Denominator Criteria (Eligible Cases):
Patients aged ≥ 18 years on date of encounter

AND

Patient procedure during the performance period (CPT): 00566, 00567, 33510, 33511, 33512, 33513, 33514, 33516, 33533, 33534, 33535, 33536

OR

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

AND

Patient procedure during the performance period (CPT): 33530

NUMERATOR:

Patients who received a beta-blocker within 24 hours prior to surgical incision of isolated CABG surgeries

Definition:

Medical Reason – MIPS Eligible clinician must document specific reason(s) for not administering beta-blockers.

NUMERATOR NOTE: *Denominator Exception(s) are determined on the date of the denominator eligible encounter.*

Numerator Options:

Performance Met:	Beta blocker administered within 24 hours prior to surgical incision (4115F)
OR	
Denominator Exception:	Documentation of medical reason(s) for not administering beta blocker within 24 hours prior to surgical incision (e.g., not indicated, contraindicated, other medical reason) (4115F with 1P)
OR	
Performance Not Met:	Beta blocker not administered within 24 hours prior to surgical incision, reason not otherwise specified (4115F with 8P)

RATIONALE:

“Continued adherence to the current ACC/AHA guidelines regarding preoperative beta-blockade in CABG surgery, together with good medical judgement, is advisable. Important considerations include perioperative continuation of beta-blockade in patients receiving long term therapy and administration and titration of beta-blockers to optimal heart rate and blood pressure in beta-blocker naïve patients, initiated as long before surgery as possible (preferably weeks before in elective patients)” (JAMA Internal Medicine, August 2014, Volume 174, Number 8).

“Despite significant developments in PCI, CABG remains the most commonly used treatment option for patients with complex CAD and high-risk patients” (El Bardissi et al., 2012, p.274).

Postoperative atrial fibrillation (POAF) is a common complication following cardiac surgery, occurring in 25-40% of patients (Crystal, 2004, Burgess, 2006). POAF has been associated with increased rates of post-operative morbidity such as cerebrovascular accidents (CVA), infections (e.g. septicemia, pneumonia, and mediastinitis), renal failure and mortality and consequently, increased costs (Mariscalco, 2008, Crystal, 2004, Bramer, 2010).

“Postoperative AF after cardiac operations is associated with postoperative morbidities such as cerebrovascular accidents (CVA), infections (e.g., septicemia, pneumonia and mediastinitis), and renal failure. Previous studies have suggested that POAF after CABG is related to early and late mortality” (Bramer et al., 2010, p.443). “Development of AF immediately after coronary artery bypass surgery (CABG) results in a longer stay in the intensive care unit and in hospital, together with a significantly higher (two-to three-fold) risk of post-operative stroke” (Burgess et al., 2006, p.2846).

Prophylactic administration of beta-blockers has been shown to reduce the risk of POAF and mortality following isolated coronary artery bypass graft surgery (Connolly, 2003, Mariscalco, 2008, Ferguson, 2002). Khan’s meta-analysis of RCTs (2013) found that “Preoperative beta-blocker prophylaxis initiation resulted in 51% reduction in the incidence of AF as compared to controls, however these results were not statistically significant” (p.62-63). Thaper and Kulik’s systemic review (2018) found that “prophylactic beta-blocker therapy reduces the risk of new-onset atrial fibrillation in the postoperative period by 50%, justifying their administration to nearly all patients undergoing CABG.”

"According to our findings, perioperative application of beta-blockers still plays a pivotal role in cardiac surgery, as they can substantially reduce the high burden of supraventricular and ventricular arrhythmias in the aftermath of surgery. Their influence on mortality, AMI, stroke, congestive heart failure, hypotension and bradycardia in this setting remains unclear" (Blessberger et al., 2014, p.3). Recent studies (Kohsaka et al. 2016, Brinkman et al. 2014) researched the use of preoperative beta-blockers and concluded the use of beta-blockers did not improve outcomes.

The Brinkman study concluded "Preoperative beta-blocker use among patients undergoing nonemergent CABG surgery who have not had a recent myocardial infarction was not associated with improved perioperative outcomes" (p.1320). The Kohsaka research concluded "in a propensity-matched, balanced cohort of CABG patients, the use of betablockers was not associated with decreased mortality or in-hospital complications, regardless of the patient's preoperative risk profile. The present findings suggest that preoperative β -blocker use in patients undergoing CABG is not associated with improved short-term outcomes" (p.53).

A scientific statement by the AHA in 2015 continues to support the use of perioperative beta-blockers in patients undergoing CABG surgery. See Clinical Recommendation Statements for recommendation and grade.

CLINICAL RECOMMENDATION STATEMENTS:

Secondary Prevention After Coronary Artery Bypass Graft Surgery: A Scientific Statement From the American Heart Association (2015)

Beta-Blocker Therapy Recommendations

1. All CABG patients should be prescribed perioperative beta-blocker therapy to prevent postoperative AF, ideally starting before surgery, unless contraindicated (i.e., bradycardia, severe reactive airway disease) (*Class I; Level of Evidence A*).

Preoperative Beta-blockers (ACCF/AHA, 2011):

Class I

- 1) Beta-blockers should be administered as soon as possible, and for at least 24 hours before CABG to all patients without contraindications to reduce the incidence or clinical sequelae of postoperative AF. (Level of Evidence: B), (ACCF/AHA, 2011, p.e152)

Class IIa

- 1) "Preoperative use of beta-blockers in patients without contraindications, particularly in those with an LV ejection fraction (LVEF) greater than 30%, can be effective in reducing the risk of in-hospital mortality." (Level of Evidence: B), (ACCF/AHA, 2011, p.e152)
- 2) "Beta-blockers can be effective in reducing the incidence of perioperative myocardial ischemia." (Level of Evidence: B), (ACCF/AHA, 2011, p.e152)

Class IIb

- 1) "The effectiveness of preoperative beta-blockers in reducing in-hospital mortality rate in patients with LVEF less than 30% is uncertain." (Level of Evidence: B), (ACCF/AHA, 2011, p.e152)

Treatment of arrhythmias after revascularization (ESC/EACTS, 2014)

Class I

- 1) "Beta-blockers are recommended to decrease the incidence of atrial fibrillation after CABG in the absence of contraindications." (Level of Evidence: A), (ESC/EACTS, 2014, p.146)

COPYRIGHT:

This measure was developed by Quality Insights, Inc. as a special project under the Quality Insights' Medicare Quality Improvement Organization (QIO) contract (HHSM-500-2005-PA001C) with the Centers for Medicare & Medicaid Services (CMS). It is currently maintained by the Electronic Clinical Quality Measures (eCQM) Development and Maintenance for Eligible Clinicians contract (75FCMC18D0032/75FCMC19F0004) with CMS. This measure is in the public domain.

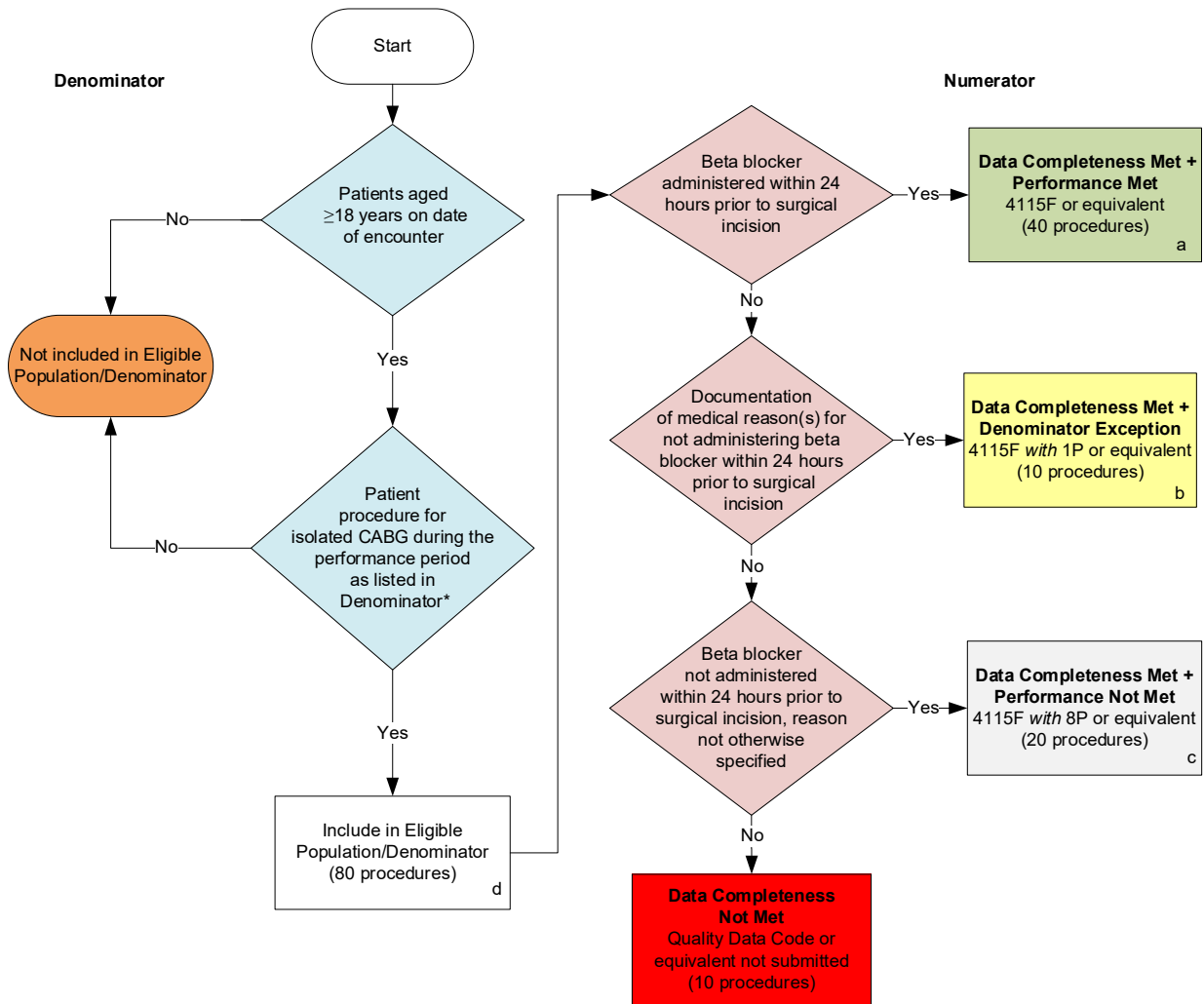
Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary code sets should obtain all necessary licenses from the owners of these code sets. Mathematica disclaims all liability for use or accuracy of any third-party codes contained in the specifications. CPT® contained in the Measure specifications is copyright 2004- 2020 American Medical Association. All Rights Reserved.

Performance measures are not clinical guidelines, do not establish a standard of medical care, and have not been tested for all potential applications.

THE MEASURES AND SPECIFICATIONS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND.

**2021 Clinical Quality Measure Flow for Quality ID #044 (NQF 0236):
Coronary Artery Bypass Graft (CABG): Preoperative Beta-Blocker in Patients with
Isolated CABG Surgery**

Disclaimer: Refer to the measure specification for specific coding and instructions to submit this measure.



SAMPLE CALCULATIONS

Data Completeness=

$$\frac{\text{Performance Met (a=40 procedures)} + \text{Denominator Exception (b=10 procedures)} + \text{Performance Not Met (c=20 procedures)}}{\text{Eligible Population / Denominator (d=80 procedures)}} = \frac{70 \text{ procedures}}{80 \text{ procedures}} = 87.50\%$$

Performance Rate=

$$\frac{\text{Performance Met (a=40 procedures)}}{\text{Data Completeness Numerator (70 procedures) - Denominator Exception (b=10 procedures)}} = \frac{40 \text{ procedures}}{60 \text{ procedures}} = 66.67\%$$

*See the posted measure specification for specific coding and instructions to submit this measure.
 NOTE: Submission Frequency - Procedure

CPT only copyright 2020 American Medical Association. All rights reserved.
 The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.

v5

**2021 Clinical Quality Measure Flow Narrative for Quality ID #044 (NQF 0236):
Coronary Artery Bypass Graft (CABG): Preoperative Beta-Blocker in Patients
with Isolated CABG Surgery**

Disclaimer: Refer to the measure specification for specific coding and instructions to submit this measure.

1. Start with Denominator
2. Check *Patients aged greater than or equal to 18 years on date of encounter*:
 - a. If *Patients aged greater than or equal to 18 years on date of encounter* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
 - b. If *Patients aged greater than or equal to 18 years on date of encounter* equals Yes, proceed to check *Patient procedure for isolated CABG during the performance period as listed in Denominator**.
3. Check *Patient procedure for isolated CABG during the performance period as listed in Denominator**:
 - a. If *Patient procedure for isolated CABG during the performance period as listed in Denominator** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
 - b. If *Patient procedure for isolated CABG during the performance period as listed in Denominator** equals Yes, include in *Eligible Population/Denominator*.
4. Denominator Population:
 - a. Denominator Population is all Eligible Procedures in the Denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 80 procedures in the Sample Calculation.
5. Start Numerator
6. Check *Beta blocker administered within 24 hours prior to surgical incision*:
 - a. If *Beta blocker administered within 24 hours prior to surgical incision* equals Yes, include in *Data Completeness Met and Performance Met*.
 - *Data Completeness Met and Performance Met* letter is represented as Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a equals 40 procedures in the Sample Calculation.
 - b. If *Beta blocker administered within 24 hours prior to surgical incision* equals No, proceed to check *Documentation of medical reason(s) for not administering beta blocker within 24 hours prior to surgical incision*.
7. Check *Documentation of medical reason(s) for not administering beta blocker within 24 hours prior to surgical incision*:
 - a. If *Documentation of medical reason(s) for not administering beta blocker within 24 hours prior to surgical incision* equals Yes, include in *Data Completeness Met and Denominator Exception*.
 - *Data Completeness Met and Denominator Exception* is represented as Data Completeness in the Sample Calculation listed at the end of this document. Letter b equals 10 procedures in the Sample Calculation.
 - b. If *Documentation of medical reason(s) for not administering beta blocker within 24 hours prior to surgical*

incision equals No, proceed to check Beta blocker not administered within 24 hours prior to surgical incision, reason not otherwise specified.

8. Check *Beta blocker not administered within 24 hours prior to surgical incision, reason not otherwise specified*:
 - a. If *Beta blocker not administered within 24 hours prior to surgical incision, reason not otherwise specified* equals Yes, include in *Data Completeness Met and Performance Not Met*.
 - *Data Completeness Met and Performance Not Met* letter is represented as Data Completeness in the Sample Calculation listed at the end of this document. Letter c equals 20 procedures in the Sample Calculation.
 - b. If *Beta blocker not administered within 24 hours prior to surgical incision, reason not otherwise specified* equals No, proceed to check *Data Completeness Not Met*.
9. Check *Data Completeness Not Met*:
 - a. If *Data Completeness Not Met*, Quality Data Code or equivalent not submitted. 10 procedures have been subtracted from the Data Completeness Numerator in the Sample Calculation.

Sample Calculations:

Data Completeness equals Performance Met (a equals 40 procedures) plus Denominator Exception (b equals 10 procedures) plus Performance Not Met (c equals 20 procedures) divided by Eligible Population/Denominator (d equals 80 procedures). All equals 70 procedures divided by 80 procedures. All equals 87.5 percent.

Performance Rate equals Performance Met (a equals 40 procedures) divided by Data Completeness Numerator (70 procedures) minus Denominator Exception (b equals 10 procedures). All equals 40 procedures divided by 60 procedures. All Equals 66.67 percent.

*See the posted measure specification for specific coding and instructions to submit this measure.

NOTE: Submission Frequency: Procedure

The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.