Measure #44 (NQF 0236): Coronary Artery Bypass Graft (CABG): Preoperative Beta-Blocker in Patients with Isolated CABG Surgery – National Quality Strategy Domain: Effective Clinical Care

2017 OPTIONS FOR INDIVIDUAL MEASURES:
REGISTRY ONLY

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 reported each time an isolated CABG procedure is performed during the performance period. It is anticipated that 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 Reporting:
The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measure. The quality-data codes listed do not need to be submitted for registry-based submissions; however, these codes may be submitted for those registries that utilize claims data.

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 NOTE: In order to ensure the only surgeries allowed into the denominator for the measure are isolated CABG surgeries, the anesthesiologist CPT code (00562) (which is not specific to isolated CABG), would need to be in conjunction with the CPT indicated for the CABG surgery (33530) and one of the other CABG codes (33510, 33511, 33512, 33513, 33514, 33516, 33517, 33518, 33519, 33521, 33522, 33523, 33533, 33534, 33535, 33536).*
>
> 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, 33517, 33518, 33519, 33521, 33522, 33523, 33533, 33534, 33535, 33536
>
> <div align="center">OR</div>
>
> Patient procedure during the **performance period** (CPT): 33510, 33511, 33512, 33513, 33514, 33516, 33517, 33518, 33519, 33521, 33522, 33523, 33533, 33534, 33535, 33536
> AND
> Patient procedure during the **performance period** (CPT): 00562, 33530

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

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

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:

"Since its introduction in 1962, coronary artery bypass grafting (CABG) has continued to be the gold standard for revascularization of CAD, particularly in high-risk patients with multivessel disease. Evidence from multiple studies suggests that CABG prolongs survival especially in complex patients with diabetes, those aged 65 years or more, those with left main stem or triple-vessel disease, and those with impaired left ventricular function" (El Bardissi et al., 2012, p.273).

"The NHDS (NCHS) estimates that in 2010, in the United States, 219 000 patients underwent a total of 397,000 coronary artery bypass procedures (defined by procedure codes)" (Go et al., 2014, p.e275). "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).

"Coronary revascularization, comprising coronary artery bypass graft (CABG) surgery and percutaneous coronary intervention (PCI), is among the most common major medical procedures provided by the US health care system, with more than 1 million procedures performed annually. It is also among the most costly procedure. Medicare inpatient payments to hospitals for coronary revascularizations exceeded $6.7 billion in fiscal year 2006 and are larger than the reimbursement for any other medical or surgical procedure" (Epstein, 2011, p.1769).

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 and mortality and consequently, increased costs (Mariscalco, 2008, Crystal, 2004, Bramer, 2010). 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 BB 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). El Bardissi (2012) showed a 19.5% increase in preoperative use of beta-blockers from 2000-2009.

"Prophylaxis to prevent atrial fibrillation after cardiac surgery with any of the studied pharmacological or non-pharmacological interventions may be favored because of its reduction in the rate of atrial fibrillation, decrease in the length of stay and cost of hospital treatment and a possible decrease in the rate of stroke" (Arsenault et al., 2013, p.2). "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).

"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).

"AF complicates up to 40% of the 500,000 patients per year undergoing CABG and increase the cost of the procedure by 10,055 per case resulting in incremental cost of about & 2 billion annually. It also increases the length of stay to additional 4-5 days and identifies a subset of patients at increased risk of morbidity, strokes and in-hospital and long- term mortality" (Khan et al., 2013, p.63).

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

Class I

1) "Beta-blockers should be administered 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)
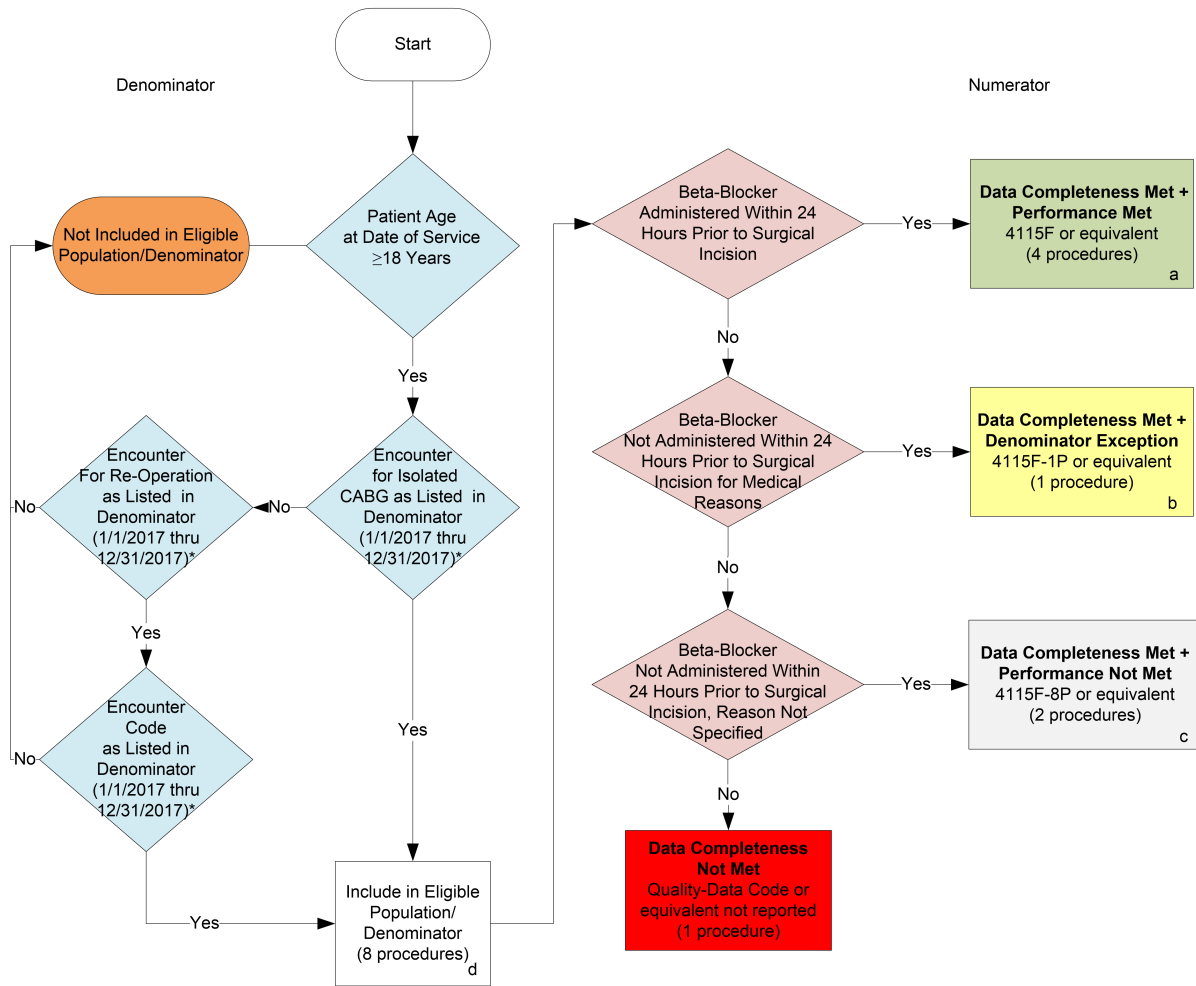
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2017 Registry Individual Measure Flow
#44 NQF #0236: Coronary Artery Bypass Graft (CABG):
Preoperative Beta-Blocker in Patients with Isolated CABG Surgery

Start

Denominator

Numerator

Not Included in Eligible Population/Denominator

Patient Age at Date of Service ≥18 Years

Beta-Blocker Administered Within 24 Hours Prior to Surgical Incision — Yes → **Data Completeness Met + Performance Met** 4115F or equivalent (4 procedures) a

No ↓ / Yes ↓

Encounter For Re-Operation as Listed in Denominator (1/1/2017 thru 12/31/2017)* — No

Encounter for Isolated CABG as Listed in Denominator (1/1/2017 thru 12/31/2017)* — No

Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision for Medical Reasons — Yes → **Data Completeness Met + Denominator Exception** 4115F-1P or equivalent (1 procedure) b

Yes ↓

No ↓

Encounter Code as Listed in Denominator (1/1/2017 thru 12/31/2017)* — No

Yes ↓

Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision, Reason Not Specified — Yes → **Data Completeness Met + Performance Not Met** 4115F-8P or equivalent (2 procedures) c

Include in Eligible Population/ Denominator (8 procedures) d — Yes

No ↓

Data Completeness Not Met Quality-Data Code or equivalent not reported (1 procedure)

SAMPLE CALCULATIONS:

Data Completeness=

Performance Met (a=4 procedures) + Denominator Exception (b=1 procedure) + Performance Not Met (c=2 procedures) = 7 procedures = **87.50%**
Eligible Population / Denominator (d=8 procedures) = 8 procedures

Performance Rate=

Performance Met (a=4 procedures) = 4 procedures = **66.67%**
Data Completeness Numerator (7 procedures) – Denominator Exception (b=1 procedure) = 6 procedures

*See the posted Measure Specification for specific coding and instructions to report this measure.
NOTE: Reporting Frequency - Procedure

#44 NQF #0236: Coronary Artery Bypass Graft (CABG): Preoperative Beta-Blocker in Patients with Isolated CABG Surgery

Please refer to the specific section of the Measure Specification to identify the denominator and numerator information for use in reporting this Individual Measure.

1. Start with Denominator

2. Check Patient Age:

    a. If Age greater than or equal to 18 years of age on Date of Service equals No during the measurement period, do not include in Eligible Patient Population. Stop Processing.

    b. If Age greater than or equal to 18 years of age on Date of Service equals Yes during the measurement period, proceed to check Encounter for New CABG as Listed in the Denominator.

3. Check Encounter for Isolated CABG as Listed in the Denominator:

    a. If Encounter for Isolated CABG as Listed in the Denominator equals No, proceed to check Encounter for Re-Operation as Listed in the Denominator.

    b. If Encounter for Isolated CABG as Listed in the Denominator CABG equals Yes, proceed to include in Eligible population.

4. Check Encounter for Re-Operation as Listed in the Denominator:

    a. If Encounter for Re-Operation as Listed in the Denominator equals No, do not include in Eligible Patient Population. Stop Processing.

    b. If Encounter for Re-Operation as Listed in the Denominator equals Yes, proceed to check Encounter Code as Listed in the Denominator.

5. Check Encounter Code as Listed in the Denominator:

    a. If Encounter Code as Listed in the Denominator equals No, do not include in Eligible Patient Population. Stop Processing.

    b. If Encounter Code as Listed in the Denominator equals Yes, proceed to include in Eligible population.

6. Denominator Population:

    a. Denominator population is all Eligible Patients in the denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 8 procedures in the sample calculation.

7. Start Numerator

8. 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.

    b. 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 4 procedures in Sample Calculation.

c. If Beta-Blocker Administered Within 24 Hours Prior to Surgical Incision equals No, proceed to check Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision for Medical Reasons.

9. Check Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision for Medical Reasons:

   a. If Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision for Medical Reasons equals Yes, include in Data Completeness Met and Denominator Exception.

   b. 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 1 procedure in the Sample Calculation.

   c. If Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision for Medical Reasons equals No, proceed to check Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision, Reason Not Specified.

10. Check Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision, Reason Not Specified:

    a. If Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision, Reason Not Specified equals Yes, include in the Data Completeness Met and Performance Not Met.

    b. 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 2 procedures in the Sample Calculation.

    c. If Beta-Blocker Not Administered Within 24 Hours Prior to Surgical Incision, Reason Not Specified equals No, proceed to Data Completeness Not Met.

11. Check Data Completeness Not Met:

    a. If Data Completeness Not Met equals No, Quality Data Code or equivalent not reported. 1 procedure has been subtracted from the data completeness numerator in the sample calculation.

SAMPLE CALCULATIONS:

Data Completeness=

$$\frac{\text{Performance Met (a=4 procedures) + Denominator Exception (b=1 procedure) + Performance Not Met (c=2 procedures)}}{\text{Eligible Population / Denominator (d=8 procedures)}} = \frac{7 \text{ procedures}}{8 \text{ procedures}} = 87.50\%$$

Performance Rate=

$$\frac{\text{Performance Met (a=4 procedures)}}{\text{Data Completeness Numerator (7 procedures) – Denominator Exception (b=1 procedure)}} = \frac{4 \text{ procedures}}{6 \text{ procedures}} = 66.67\%$$