NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form
Collected For:
CMS Voluntary Only

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-Card-2

Performance Measure Name: Surgery Patients on Beta-Blocker Therapy Prior to Arrival Who Received a Beta-Blocker During the Perioperative Period

Description: Surgery patients on beta-blocker therapy prior to arrival who received a beta-blocker during the perioperative period. The perioperative period for the SCIP Cardiac measure is defined as the day prior to surgery through postoperative day two (POD 2) with day of surgery being day zero.

If the postoperative length of stay is ≥ 2 days, the measure evaluates the administration of more than one dose of a beta-blocker: the day prior to or the day of surgery **and** on postoperative day one (POD 1) or postoperative day two (POD 2) unless reasons for not administering the medication were documented. If the postoperative length of stay is < 2 days, the measure will evaluate the administration of the beta-blocker on the day prior to or the day of surgery only, unless reasons for not administering the medication were documented.

Rationale: Concerns regarding the discontinuation of beta-blocker therapy in the perioperative period have existed for several decades. Shammash and colleagues studied a total of 140 patients who received beta-blockers preoperatively. Mortality in the 8 patients who had beta-blockers discontinued postoperatively (50%) was significantly greater than in the 132 patients in whom beta-blockers were continued. Hoeks and colleagues studied 711 consecutive peripheral vascular surgery patients. After adjustment for potential confounders and the propensity of its use, continuous beta-blocker use remained significantly associated with a lower 1-year mortality than among nonusers. In contrast, beta-blocker withdrawal was associated with an increased risk of 1-year mortality compared with nonusers. The American College of Cardiology/American Heart Association site continuation of beta-blocker therapy in the perioperative period as a class I indication, and accumulating evidence suggests that titration to maintain tight heart rate control should be the goal.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Surgery patients on beta-blocker therapy prior to arrival who receive a beta-blocker during the perioperative period.

Included Populations: Not applicable

Excluded Populations: None

Data Elements:
Beta-Blocker Perioperative

Denominator Statement: All surgery patients on beta-blocker therapy prior to arrival.

Included Populations:
ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes).

Excluded Populations:
- Patients less than 18 years of age
- Patients who have a Length of Stay greater than 120 days
- Patients enrolled in clinical trials
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients who expired during the perioperative period
- Pregnant patients taking a beta-blocker prior to arrival
- Patients with a documented *Reason for Not Administering Beta-Blocker-Perioperative*
- Patients with Ventricular Assist Devices or Heart Transplantation (as defined in Appendix A, Table 5.26 for ICD-9-CM codes)

Data Elements:
- *Admission Date*
- *Anesthesia Start Date*
- *Anesthesia End Date*
- *Beta-Blocker Current Medication*
- *Beta-Blocker During Pregnancy*
- *Birthdate*
- *Clinical Trial*
- *Discharge Date*
- *ICD-9-CM Principal Procedure Code*
- *Perioperative Death*
- *Reason for Not Administering Beta-Blocker-Perioperative*
- *Sex*

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical record documents. Some hospitals may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunities for improvement at the point of care/service. However,

complete documentation includes the principal or other ICD-9-CM diagnosis and procedure codes, which require retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: This measure seeks to identify surgery patients who were on beta-blocker therapy prior to arrival that received a perioperative beta-blocker. Health care organizations can identify patients who were on beta-blocker therapy for an extended period of time and compare them to those who received beta-blockers perioperatively, or those who did not receive the medication due to other reasons, i.e., complications or early discharges. An additional step would be to correlate the post hospital stay period to the beta-blocker administration during the pre/perioperative period. This will allow health care organization to take appropriate steps to ensure that patients receive the necessary care to reduce the risk of cardiovascular complications in the postoperative period.

Sampling: Yes, please refer to the measure set specific sampling requirements and for additional information see the Population and Sampling Specifications Section.

Data Reported As: Aggregate rate generated from count data reported as a proportion.
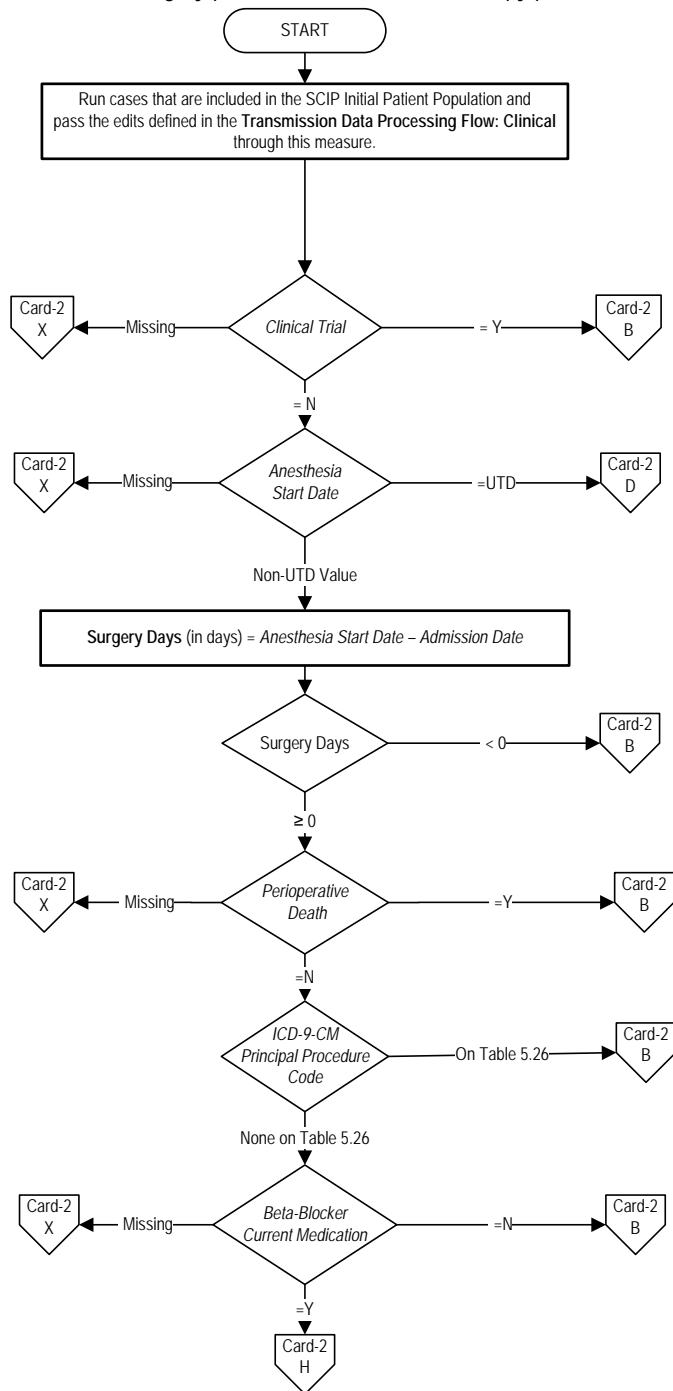
Selected References:
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SCIP-Card-2: Surgery Patients on Beta-Blocker Therapy Prior to Arrival Who Received a Beta-Blocker During the Perioperative Period

Numerator: Surgery patients on beta-blocker therapy prior to arrival who receive a beta-blocker during the perioperative period.

Denominator: All surgery patients on beta-blocker therapy prior to arrival.

START

Run cases that are included in the SCIP Initial Patient Population and pass the edits defined in the **Transmission Data Processing Flow: Clinical** through this measure.

Variable Key:
Surgery Days
Postoperative LOS

Clinical Trial
- Missing → Card-2 X
- = Y → Card-2 B
- = N ↓

Anesthesia Start Date
- Missing → Card-2 X
- =UTD → Card-2 D
- Non-UTD Value ↓

Surgery Days (in days) = *Anesthesia Start Date – Admission Date*

Surgery Days
- < 0 → Card-2 B
- ≥ 0 ↓

Perioperative Death
- Missing → Card-2 X
- =Y → Card-2 B
- =N ↓

ICD-9-CM Principal Procedure Code
- On Table 5.26 → Card-2 B
- None on Table 5.26 ↓

Beta-Blocker Current Medication
- Missing → Card-2 X
- =N → Card-2 B
- =Y ↓

Card-2 H

Flowchart nodes and connections:

- **Card-2 H** → **Sex**
- **Sex** —Missing→ **Card-2 X**
- **Sex** —=F→ **Beta-blocker During Pregency**
- **Sex** —= M,U→ (down to Anesthesia End Date)
- **Beta-blocker During Pregency** —Missing→ **Card-2 X**
- **Beta-blocker During Pregency** —=1,3→ **Card-2 B**
- **Beta-blocker During Pregency** —=2→ (to = M,U path)
- **Anesthesia End Date** —Missing→ **Card-2 X**
- **Anesthesia End Date** —=UTD→ **Card-2 D**
- **Anesthesia End Date** —Non-UTD Value→ **Postoperative LOS (in days) = Discharge Date – Anesthesia End Date**
- **Postoperative LOS**
  - —>=2 days→ **Beta-Blocker Perioperative** (left branch)
  - —<2 days→ **Beta-Blocker Perioperative** (right branch)

Left branch (>=2 days):
- **Beta-Blocker Perioperative** —Missing→ **Card-2 X**
- **Beta-Blocker Perioperative** —Any=1,2→ **Beta-Blocker Perioperative**
- **Beta-Blocker Perioperative** —None=1,2 or Only=5→ **Reason for Not Administering Beta-Blocker-Perioperative**
- Second **Beta-Blocker Perioperative** —Any=3,4→ **In Numerator Population (E)**
- Second **Beta-Blocker Perioperative** —None=3,4→ **Reason for Not Administering Beta-Blocker-Perioperative**
- **Reason for Not Administering Beta-Blocker-Perioperative** —Missing→ **Card-2 X**
- —Any=3, 4→ **In Numerator Population (E)**
- —None=3,4 or Only=5→ **Card-2 D**

- **Reason for Not Administering Beta-Blocker-Perioperative** (left) —None=1,2 or Only=5→ **Card-2 D**
- —Missing→ **Case Will Be Rejected (X)**
- —Any=1,2→ **Beta-Blocker Perioperative**
  - —Any=3,4→ **Card-2 E**
  - —Only=5→ **Reason for Not Administering Beta-Blocker-Perioperative**
    - —Any=3,4→ **Not In Measure Population (B)**
    - —None=3,4→ **Card-2 D**

Right branch (<2 days):
- **Beta-Blocker Perioperative** —Missing→ **Card-2 X**
- —Any=1,2→ **In Numerator Population (E)**
- —None=1,2 or Only=5→ **Reason for Not Administering Beta-Blocker-Perioperative**
  - —Missing→ **Card-2 X**
  - —Any=1,2→ **Card-2 B**
  - —None=1,2 or Only=5→ **In Measure Population (D)**

Terminal nodes:
- **Card-2 X**, **Card-2 X** → **Case Will Be Rejected (X)**
- **Card-2 B**, **Card-2 B** → **Not In Measure Population (B)**
- **Card-2 D**, **Card-2 D** → **In Measure Population (D)**
- **In Numerator Population (E)** → **STOP**
- **Case Will Be Rejected (X)** → **STOP**
- **Not In Measure Population (B)** → **STOP**
- **In Measure Population (D)** → **STOP**
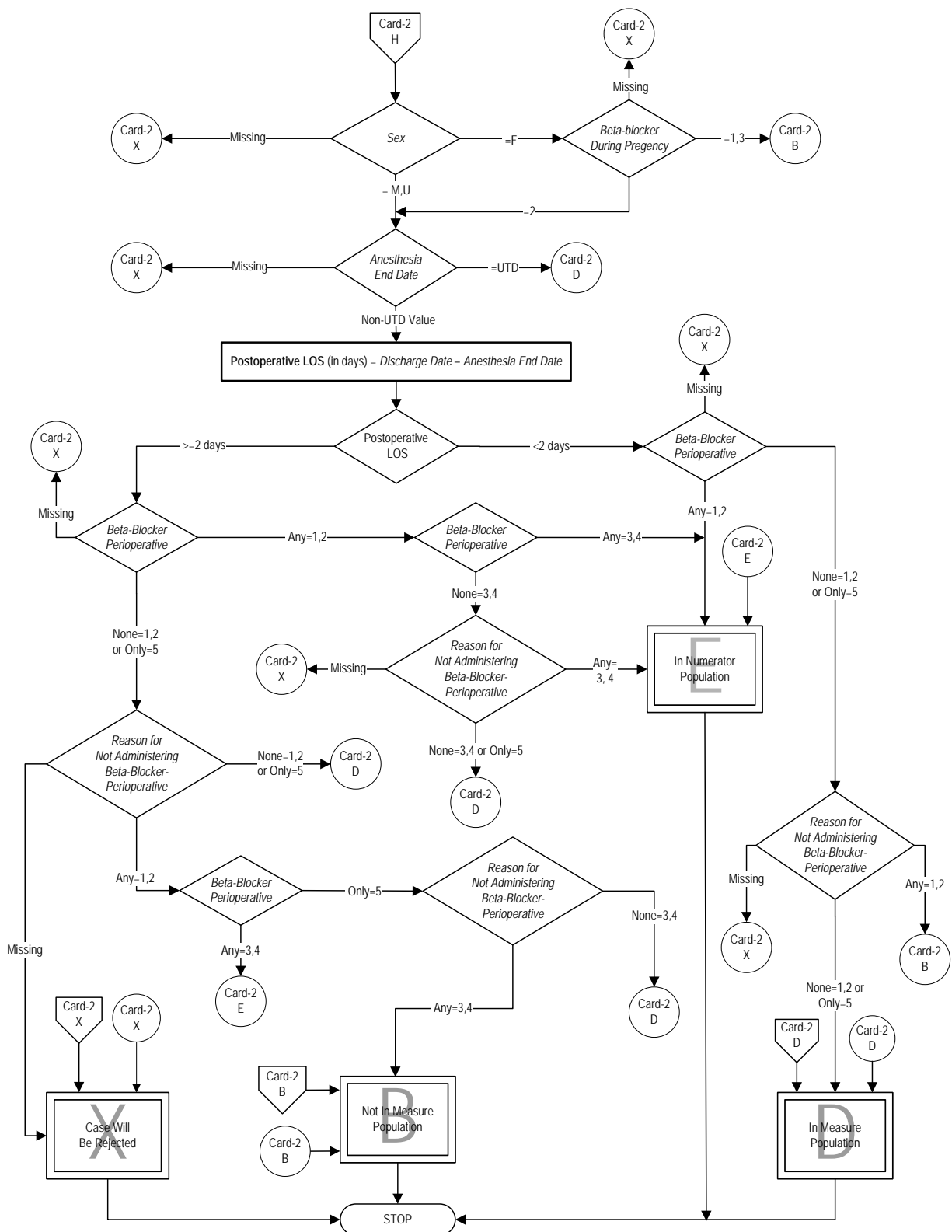
SCIP-Cardiac (Card)-2: Surgery Patients on Beta-Blocker Therapy Prior to Arrival Who Received a Beta-Blocker During the Perioperative Period

Numerator: Surgery patients on beta-blocker therapy prior to arrival who received a beta-blocker during the perioperative period.

Denominator: All surgery patients on beta-blocker therapy prior to arrival.

Variable Key: Surgery Days, Postoperative LOS

1.   Start processing. Run cases that are included in the Surgical Care Improvement Project (SCIP) Initial Patient Population and pass the edits defined in the Transmission Data Processing Flow: Clinical through this measure.

2.   Check Clinical Trial
    a.   If Clinical Trial is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    b.   If Clinical Trial equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
    c.   If Clinical Trial equals No, continue processing and proceed to Anesthesia Start Date.

3.   Check Anesthesia Start Date
    a.   If the Anesthesia Start Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    b.   If the Anesthesia Start Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
    c.   If Anesthesia Start Date equals a Non Unable To Determine Value, continue processing and proceed to the Surgery Days calculation.

4.   Calculate Surgery Days. Surgery Days, in days, is equal to the Anesthesia Start Date minus the Admission Date.

5.   Check Surgery Days
    a.   If the Surgery Days is less than zero, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
    b.   If the Surgery Days is greater than or equal to zero, continue processing and proceed to check Perioperative Death.

6.   Check Perioperative Death
    a.   If Perioperative Death is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

b. If Perioperative Death equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.

c. If Perioperative Death equals No, continue processing and proceed to ICD-9-CM Principal Procedure Code.

7. Check ICD-9-CM Principal Procedure Code
   a. If ICD-9-CM Principal Procedure Code is on Table 5.26 the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If ICD-9-CM Principal Procedure Code is not on Table 5.26 continue processing and check for Beta-Blocker Current Medication.

8. Check Beta-Blocker Current Medication
   a. If the Beta-Blocker Current Medication is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Beta-Blocker Current Medication equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If the Beta-Blocker Current Medication equals Yes, continue processing and proceed to Sex.

9. Check Sex
   a. If Sex is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Sex equals Female, continue processing and check Beta-Blocker During Pregnancy.
      i. If Beta-Blocker During Pregnancy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
      ii. If Beta-Blocker During Pregnancy equals 1 or 3, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
      iii. If Beta-Blocker During Pregnancy equals 2, continue processing and proceed to Anesthesia End Date.
   c. If Sex equals Male or Unknown, continue processing and proceed to Anesthesia End Date.

10. Check Anesthesia End Date
    a. If the Anesthesia End Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

      b.   If the Anesthesia End Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

      c.   If Anesthesia End Date equals a Non Unable To Determine Value, continue processing and proceed to the Postoperative Length Of Stay (LOS) calculation.

11.   Calculate Postoperative LOS. Postoperative LOS, in days, is equal to Discharge Date minus Anesthesia End Date.

12.   Check Postoperative LOS
      a.   If Postoperative LOS is less than 2 days, continue processing and proceed to check Beta-Blocker Perioperative.
      b.   If Postoperative LOS is equal to or greater than 2 days, continue processing and proceed to Step 15 and check Beta-Blocker Perioperative.

13.   Check Beta-Blocker Perioperative
      a.   If Beta-Blocker Perioperative is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
      b.   If any Beta-Blocker Perioperative equals 1 or 2, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      c.   If no Beta-Blocker Perioperative equals 1 or 2 or Beta-Blocker Perioperative only equals 5, continue processing and proceed to Reason for Not Administering Beta-Blocker Perioperative.

14.   Check Reason for Not Administering Beta-Blocker Perioperative
      a.   If Reason for Not Administering Beta-Blocker Perioperative is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
      b.   If any Reason for Not Administering Beta-Blocker Perioperative equals 1 or 2, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
      c.   If no Reason for Not Administering Beta-Blocker Perioperative equals 1 or 2 or Reason for Not Administering Beta-Blocker Perioperative only equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

15.   Check Beta-Blocker Perioperative
      a.   If Beta-Blocker Perioperative is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
      b.   If any Beta-Blocker Perioperative equals 1 or 2, continue processing and proceed to Recheck Beta-Blocker Perioperative.

       c.   If no Beta-Blocker Perioperative equals 1 or 2 or Beta-Blocker Perioperative only equals 5, continue processing and proceed to Step 18 and check Reason for Not Administering Beta-Blocker Perioperative.

16.   Recheck Beta-Blocker Perioperative
       a.   If any Beta-Blocker Perioperative equals 3 or 4, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
       b.   If no Beta-Blocker Perioperative equals 3 or 4, continue processing and proceed to check Reason for Not Administering Beta-Blocker Perioperative.

17.   Check Reason for Not Administering Beta-Blocker Perioperative
       a.   If Reason for Not Administering Beta-Blocker Perioperative is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
       b.   If any Reason for Not Administering Beta-Blocker Perioperative equals 3 or 4, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
       c.   If no Reason for Not Administering Beta-Blocker Perioperative equals 3 or 4 or Reason for Not Administering Beta-Blocker Perioperative only equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

18.   Check Reason for Not Administering Beta-Blocker Perioperative
       a.   If Reason for Not Administering Beta-Blocker Perioperative is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
       b.   If any Reason for Not Administering Beta-Blocker Perioperative equals 1 or 2, continue processing and proceed to Recheck Beta-Blocker Perioperative.
       c.   If no Reason for Not Administering Beta-Blocker Perioperative equals 1 or 2 or Reason for Not Administering Beta-Blocker Perioperative only equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

19.   Recheck Beta-Blocker Perioperative
       a.   If any Beta-Blocker Perioperative equals 3 or 4, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
       b.   If Beta-Blocker Perioperative only equals 5, continue processing and Recheck Reason for Not Administering Beta-Blocker Perioperative.

20.   Recheck Reason for Not Administering Beta-Blocker Perioperative

a.   If any Reason for Not Administering Beta-Blocker Perioperative equals 3 or 4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.

b.   If no Reason for Not Administering Beta-Blocker Perioperative equals 3 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.