National Hospital Quality Measures

Measure Definitions

Excerpts from the Specifications Manual for National Hospital Quality Measures for Surgical Care Improvement Project Measure Set

Applicable to Cases Discharged January 1, 2012 through June 30, 2012

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<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Measure Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-1a</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Overall Rate</td>
</tr>
<tr>
<td>SCIP-Inf-1b</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - CABG</td>
</tr>
<tr>
<td>SCIP-Inf-1c</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Other Cardiac Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-1d</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Hip Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-1e</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Knee Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-1f</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Colon Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-1g</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Hysterectomy</td>
</tr>
<tr>
<td>SCIP-Inf-1h</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Vascular Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-2a</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Overall Rate</td>
</tr>
<tr>
<td>SCIP-Inf-2b</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - CABG</td>
</tr>
<tr>
<td>SCIP-Inf-2c</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Other Cardiac Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-2d</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Hip Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-2e</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Knee Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-2f</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Colon Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-2g</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Hysterectomy</td>
</tr>
<tr>
<td>SCIP-Inf-2h</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Vascular Surgery</td>
</tr>
<tr>
<td>Measure ID #</td>
<td>Measure Short Name</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SCIP-Inf-3a</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Overall Rate</td>
</tr>
<tr>
<td>SCIP-Inf-3b</td>
<td>Prophylactic Antibiotics Discontinued Within 48 Hours After Surgery End Time – CABG</td>
</tr>
<tr>
<td>SCIP-Inf-3c</td>
<td>Prophylactic Antibiotics Discontinued Within 48 Hours After Surgery End Time - Other Cardiac Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-3d</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Hip Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-3e</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Knee Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-3f</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Colon Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-3g</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time – Hysterectomy</td>
</tr>
<tr>
<td>SCIP-Inf-3h</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Vascular Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-4</td>
<td>Cardiac Surgery Patients With Controlled 6 A.M. Postoperative Blood Glucose</td>
</tr>
<tr>
<td>SCIP-Inf-6</td>
<td>Surgery Patients with Appropriate Hair Removal</td>
</tr>
<tr>
<td>SCIP-Inf-9</td>
<td>Urinary catheter removed on Postoperative Day 1 (POD 1) or Postoperative Day 2 (POD 2) with day of surgery being day zero</td>
</tr>
<tr>
<td>SCIP-Inf-10</td>
<td>Surgery Patients with Perioperative Temperature Management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measure ID #</th>
<th>Measure Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Card-2</td>
<td>Surgery Patients on Beta-Blocker Therapy Prior to Arrival Who Received a Beta-Blocker During the Perioperative Period</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measure ID #</th>
<th>Measure Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-VTE-1</td>
<td>Surgery Patients with Recommended Venous Thromboembolism Prophylaxis Ordered</td>
</tr>
<tr>
<td>SCIP-VTE-2</td>
<td>Surgery Patients Who Received Appropriate Venous Thromboembolism Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery</td>
</tr>
</tbody>
</table>
### SCIP DATA ELEMENT LIST

<table>
<thead>
<tr>
<th>General Data Element Name</th>
<th>Collected For:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Date</td>
<td>All Records</td>
</tr>
<tr>
<td>Birthdate</td>
<td>All Records</td>
</tr>
<tr>
<td>Discharge Date</td>
<td>All Records (Used in Algorithm for SCIP-Inf-4)</td>
</tr>
<tr>
<td>First Name</td>
<td>All Records</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>All Records</td>
</tr>
<tr>
<td>ICD-9-CM Other Diagnosis Codes</td>
<td>All Records</td>
</tr>
<tr>
<td>ICD-9-CM Other Procedure Codes</td>
<td>All Records</td>
</tr>
<tr>
<td>ICD-9-CM Other Procedure Dates</td>
<td>All Records</td>
</tr>
<tr>
<td>ICD-9-CM Principal Diagnosis Code</td>
<td>All Records</td>
</tr>
<tr>
<td>ICD-9-CM Principal Procedure Code</td>
<td>All Records (Used in Algorithm for SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3, SCIP-Inf-4, SCIP-Inf-6(^1,4), SCIP-Inf-9, SCIP-Inf-10, SCIP-Card-2, SCIP-VTE-1, SCIP-VTE-2)</td>
</tr>
<tr>
<td>ICD-9-CM Principal Procedure Date</td>
<td>All Records</td>
</tr>
<tr>
<td>Last Name</td>
<td>All Records</td>
</tr>
<tr>
<td>Patient HIC #</td>
<td>All Records Collected by CMS for patients with a standard HIC#</td>
</tr>
<tr>
<td>Patient Identifier</td>
<td>All Records</td>
</tr>
<tr>
<td>Payment Source</td>
<td>All Records</td>
</tr>
<tr>
<td>Physician 1</td>
<td>Optional for All Records(^2)</td>
</tr>
<tr>
<td>Physician 2</td>
<td>Optional for All Records(^2)</td>
</tr>
<tr>
<td>Postal Code</td>
<td>All Records</td>
</tr>
<tr>
<td>Race</td>
<td>All Records</td>
</tr>
<tr>
<td>Sample</td>
<td>Used in transmission of the Joint Commission’s aggregate data file and the Hospital Clinical Data file(^3)</td>
</tr>
<tr>
<td>Sex</td>
<td>All Records</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Algorithm Output Data Element Name</th>
<th>Collected For:</th>
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</thead>
<tbody>
<tr>
<td>Measure Category Assignment</td>
<td>Used in the calculation of the Joint Commission’s aggregate data and in the transmission of the Hospital Clinical Data file(^3,4)</td>
</tr>
<tr>
<td>SCIP Data Element Name</td>
<td>Collected For:</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Anesthesia End Date</td>
<td>SCIP-Inf-2, SCIP-Inf-3, SCIP-Inf-4, SCIP-Inf-9, SCIP-Inf-10, SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Anesthesia End Time</td>
<td>SCIP-Inf-2, SCIP-Inf-3, SCIP-Inf-10, SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Anesthesia Start Date</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3, SCIP-Inf-4, SCIP-Inf-6, SCIP-Inf-9, SCIP-Inf-10, SCIP-Card-2, SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Anesthesia Start Time</td>
<td>SCIP-Inf-10, SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Antibiotic Administration Date</td>
<td>SCIP-Inf-10, SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Antibiotic Administration Route</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td>Antibiotic Administration Time</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td>Antibiotic Allergy</td>
<td>SCIP-Inf-2</td>
</tr>
<tr>
<td>Antibiotic Name</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td>Antibiotic Received</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td>Beta-Blocker Current Medication</td>
<td>SCIP-Card-2</td>
</tr>
<tr>
<td>Beta-Blocker During Pregnancy</td>
<td>SCIP-Card-2</td>
</tr>
<tr>
<td>Beta-Blocker Perioperative</td>
<td>SCIP-Card-2</td>
</tr>
<tr>
<td>Catheter Removed</td>
<td>SCIP-Inf-9</td>
</tr>
<tr>
<td>Clinical Trial</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3, SCIP-Inf-4, SCIP-Inf-6, SCIP-Inf-9, SCIP-Inf-10, SCIP-Card-2, SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Glucose POD 1</td>
<td>SCIP-Inf-4</td>
</tr>
<tr>
<td>Glucose POD 2</td>
<td>SCIP-Inf-4</td>
</tr>
<tr>
<td>Infection Prior to Anesthesia</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3, SCIP-Inf-4</td>
</tr>
<tr>
<td>Intentional Hypothermia</td>
<td>SCIP-Inf-10</td>
</tr>
<tr>
<td>Oral Antibiotics</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td>Other Surgeries</td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td>Perioperative Death</td>
<td>SCIP-Inf-2, SCIP-Inf-3, SCIP-Inf-4, SCIP-Inf-9, SCIP-Card-2, SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Preadmission Oral Anticoagulation Therapy</td>
<td>SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>Preoperative Hair Removal</td>
<td>SCIP-Inf-6</td>
</tr>
<tr>
<td>Reason for Not Administering a Beta-Blocker- Perioperative</td>
<td>SCIP-Card-2</td>
</tr>
<tr>
<td>Reason for Not Administering VTE Prophylaxis</td>
<td>SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td>SCIP Data Element Name</td>
<td>Collected For:</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td><em>Reasons for Continuing Urinary Catheterization</em></td>
<td>SCIP-Inf-9</td>
</tr>
<tr>
<td><em>Reasons to Extend Antibiotics</em></td>
<td>SCIP-Inf-3</td>
</tr>
<tr>
<td><em>Surgical Incision Date</em></td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td><em>Surgical Incision Time</em></td>
<td>SCIP-Inf-1, SCIP-Inf-2, SCIP-Inf-3</td>
</tr>
<tr>
<td><em>Temperature</em></td>
<td>SCIP-Inf-10</td>
</tr>
<tr>
<td><em>Urinary Catheter</em></td>
<td>SCIP-Inf-9</td>
</tr>
<tr>
<td><em>Vancomycin</em></td>
<td>SCIP-Inf-2</td>
</tr>
<tr>
<td><em>VTE Prophylaxis</em></td>
<td>SCIP-VTE-1, SCIP-VTE-2</td>
</tr>
<tr>
<td><em>VTE Timely</em></td>
<td>SCIP-VTE-2</td>
</tr>
</tbody>
</table>

1. CMS Voluntary Only
2. CMS ONLY
3. Transmission Data Element
4. The Joint Commission ONLY
Surgical Care Improvement Project (SCIP) Initial Patient Population

The SCIP Topic Population (common to all SCIP measures) is defined as patients admitted to the hospital for inpatient acute care with an ICD-9-CM Principal Procedure Code for SCIP as defined in Appendix A, Table 5.10 and a Length of Stay (Discharge Date minus Admission Date) less than or equal to 120 days. There are eight distinct strata or sub-populations within the SCIP Topic Population, each identified by a specific group of procedure codes. The patients in each stratum are counted in the Initial Patient Population of multiple measures.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Initial Patient Population definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-1a, 2a, 3a (overall measures)</td>
<td>The count of all patients in strata 1, 2, 3, 4, 5, 6, and 7</td>
</tr>
<tr>
<td>SCIP-Inf-1b, 2b, 3b</td>
<td>The count of all patients in stratum 1</td>
</tr>
<tr>
<td>SCIP-Inf-1c, 2c, 3c</td>
<td>The count of all patients in stratum 2</td>
</tr>
<tr>
<td>SCIP-Inf-1d, 2d, 3d</td>
<td>The count of all patients in stratum 3</td>
</tr>
<tr>
<td>SCIP-Inf-1e, 2e, 3e</td>
<td>The count of all patients in stratum 4</td>
</tr>
<tr>
<td>SCIP-Inf-1f, 2f, 3f</td>
<td>The count of all patients in stratum 5</td>
</tr>
<tr>
<td>SCIP-Inf-1g, 2g, 3g</td>
<td>The count of all patients in stratum 6</td>
</tr>
<tr>
<td>SCIP-Inf-1h, 2h, 3h</td>
<td>The count of all patients in stratum 7</td>
</tr>
<tr>
<td>SCIP-Inf-4, 6, 9, and 10</td>
<td>The count of all patients in strata 1, 2, 3, 4, 5, 6, 7, and 8</td>
</tr>
<tr>
<td>SCIP-CARD-2</td>
<td>The count of all patients in strata 1, 2, 3, 4, 5, 6, 7, and 8</td>
</tr>
<tr>
<td>SCIP-VTE-1 and 2</td>
<td>The count of all patients in strata 1, 2, 3, 4, 5, 6, 7, and 8</td>
</tr>
</tbody>
</table>

Patients admitted to the hospital for inpatient acute care are included in one of the SCIP ICD Strata Populations and are eligible to be sampled if they have:

1 – CABG stratum – Patients with an ICD-9-CM Principal Procedure Code as defined in Appendix A, Table 5.01 and a Length of Stay (Discharge Date minus Admission Date) less than or equal to 120 days.

2 – Other Cardiac Surgery stratum – Patients with an ICD-9-CM Principal Procedure Code as defined in Appendix A, Table 5.02 and a Length of Stay (Discharge Date minus Admission Date) less than or equal to 120 days.

3 – Hip Arthroplasty stratum – Patients with an ICD-9-CM Principal Procedure Code as defined in Appendix A, Table 5.04 and a Length of Stay (Discharge Date minus Admission Date) less than or equal to 120 days.
4 – Knee Arthroplasty stratum – Patients with an *ICD-9-CM Principal Procedure Code* as defined in Appendix A, Table 5.05 and a Length of Stay (*Discharge Date minus Admission Date*) less than or equal to 120 days.

5 – Colon Surgery stratum – Patients with an *ICD-9-CM Principal Procedure Code* as defined in Appendix A, Table 5.03 and a Length of Stay (*Discharge Date minus Admission Date*) less than or equal to 120 days.

6 – Hysterectomy stratum – Patients with an *ICD-9-CM Principal Procedure Code* as defined in Appendix A, on either Table 5.06 (Abdominal) or Table 5.07 (Vaginal) and a Length of Stay (*Discharge Date minus Admission Date*) less than or equal to 120 days.

7 – Vascular Surgery stratum – Patients with an *ICD-9-CM Principal Procedure Code* as defined in Appendix A, Table 5.08 and a Length of Stay (*Discharge Date minus Admission Date*) less than or equal to 120 days.

8 – Other Major Surgery stratum – Patients with an *ICD-9-CM Principal Procedure Code* as defined in Appendix A, Table 5.25 (Other Major Surgery for Sampling) and a Length of Stay (*Discharge Date minus Admission Date*) less than or equal to 120 days.
SCIP Initial Patient Population Algorithm

Start SCIP Initial Patient Population logic sub-routine

Process all cases that have successfully reached the point in the Transmission Data Processing Flow: Clinical which calls this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Transmission Data Processing Flow: Clinical.

ICD-9-CM Principal Procedure Code

Not on Table 5.10

On Table 5.10

Length of Stay (in days) = Discharge Date minus Admission Date

Length of Stay > 120 days

Patient not in the SCIP Topic Population

Patient is not eligible to be sampled for any SCIP strata

Set Initial Patient Population Reject Case Flag = "Yes"

<= 120 days

Patient is in the SCIP Topic Population

Set Initial Patient Population Reject Case Flag = "No"

ICD-9-CM Principal Procedure Code

On Table 5.01

Patient is in the 1st SCIP stratum (CABG)

Patient is eligible to be sampled for the 1st SCIP stratum (CABG)

Not on Table 5.01

ICD-9-CM Principal Procedure Code

On Table 5.02

Patient is in the 2nd SCIP stratum (Other Cardiac Surgery)

Patient is eligible to be sampled for the 2nd SCIP stratum (Other Cardiac Surgery)

Not on Table 5.02

ICD-9-CM Principal Procedure Code

On Table 5.04

Patient is in the 3rd SCIP stratum (Hip Arthroplasty)

Patient is eligible to be sampled for the 3rd SCIP stratum (Hip Arthroplasty)

Not on Table 5.04

J

H

I
Surgical Care Improvement Project (SCIP) Initial Patient Population Algorithm

Variable Key: Initial Patient Population Reject Case Flag and Length of Stay

1. Start SCIP Initial Patient Population logic sub-routine. Process all cases that have successfully reached the point in the Transmission Data Processing Flow: Clinical which calls this Initial Patient Population Algorithm. Do not process cases that have been rejected before this point in the Transmission Data Processing Flow: Clinical.

2. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.10, the patient is not in the SCIP Topic Population and is not eligible to be sampled for the SCIP strata. Set the Initial Patient Population Reject Case Flag to equal Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.10, continue processing and proceed to the Length of Stay calculation.

3. Calculate the Length of Stay. Length of Stay, in days, is equal to the Discharge Date minus the Admission Date.

4. Check Length of Stay
   a. If the Length of Stay is greater than 120 days, the patient is not in the SCIP Topic Population and is not eligible to be sampled for any SCIP strata. Set the Initial Patient Population Reject Case Flag to equal Yes. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
   b. If the Length of Stay is less than or equal to 120 days, the patient is in the SCIP Topic Population. Continue processing.

5. Set the Initial Patient Population Reject Case Flag to equal No. Continue processing and proceed to the ICD-9-CM Principal Procedure Code to determine the SCIP strata.

6. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01, the patient is in the first SCIP or Coronary Artery Bypass Graft stratum and is eligible to be sampled for the first SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
b. If the ICD-9-CM Principal Procedure Code is on Table 5.02, the patient is in the second SCIP or Other Cardiac Surgery stratum and is eligible to be sampled for the second SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

c. If the ICD-9-CM Principal Procedure Code is on Table 5.04, the patient is in the third SCIP or Hip Arthroplasty stratum and is eligible to be sampled for the third SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

d. If the ICD-9-CM Principal Procedure Code is on Table 5.05, the patient is in the fourth SCIP or Knee Arthroplasty stratum and is eligible to be sampled for the fourth SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

e. If the ICD-9-CM Principal Procedure Code is on Table 5.03, the patient is in the fifth SCIP or Colon Surgery stratum and is eligible to be sampled for the fifth SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

f. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, the patient is in the sixth SCIP or Hysterectomy stratum and is eligible to be sampled for the sixth SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

g. If the ICD-9-CM Principal Procedure Code is on Table 5.08, the patient is in the seventh SCIP or Vascular Surgery stratum and is eligible to be sampled for the seventh SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.

h. If the ICD-9-CM Principal Procedure Code is on Table 5.25, the patient is in the eighth SCIP or Other Major Surgery stratum and is eligible to be sampled for the eighth SCIP stratum. Include the patient in the Initial Patient Population of the appropriate measures. Return to Transmission Data Processing Flow: Clinical in the Data Transmission section.
SCIP Sample Size Requirements

Hospitals that choose to sample have the option of sampling quarterly or sampling monthly. A hospital may choose to use a larger sample size than is required. Hospitals whose Initial Patient Population size is less than the minimum number of cases per quarter for a stratum cannot sample that stratum. Hospitals that have five or fewer SCIP discharges for the entire measure set (both Medicare and non-Medicare combined) in a quarter are not required to submit SCIP patient level data to the QIO Clinical Warehouse and Joint Commission’s Data Warehouse.

Regardless of the option used, hospital samples must be monitored to ensure that sampling procedures consistently produce statistically valid and useful data. Due to exclusions, hospitals selecting sample cases MUST submit AT LEAST the minimum required sample size.

The following sample size tables for each option automatically build in the number of cases needed to obtain the required sample sizes. For information concerning how to perform sampling, refer to the Population and Sampling Specifications section in this manual.

**Quarterly Sampling**
For hospitals selecting sample cases for SCIP, a modified sampling procedure is required. Hospitals selecting sample cases for this set must ensure that each individual stratum’s population and quarterly sample size meets the following conditions:

- **Select within each of the seven individual measure stratum (e.g., colorectal surgery, hip arthroplasty, etc.) and the 8th SCIP stratum (Table 5.25 in Appendix A).**

**Quarterly Sample Size**
Based on Initial Patient Population Size for the SCIP Measure Set

<table>
<thead>
<tr>
<th>Hospital’s Measure</th>
<th>Average Quarterly Stratum Initial Patient Population Size “N”</th>
<th>Minimum Required Stratum Sample Size “n”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥ 481</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>171-480</td>
<td>10% of Initial Patient Population size</td>
</tr>
<tr>
<td></td>
<td>17-170</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>&lt; 17</td>
<td>No sampling; 100% Initial Patient Population required</td>
</tr>
</tbody>
</table>
**Monthly Sampling**

For hospitals selecting sample cases for SCIP, a modified sampling procedure is required. Hospitals selecting sample cases for this set must ensure that each individual strata population and monthly sample size meets the following conditions:

- **Select within each of the seven individual measure stratum (e.g., colorectal surgery, hip arthroplasty, etc.) and the 8th SCIP stratum (Table 5.25 in Appendix A).**

**Monthly Sample Size**

**Based on Initial Patient Population Size for the SCIP Measure Set**

<table>
<thead>
<tr>
<th>Hospital’s Measure</th>
<th>Average Monthly Stratum Initial Patient Population Size “N”</th>
<th>Minimum Required Stratum Sample Size “n”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥ 151</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>61-150</td>
<td>10% of Initial Patient Population size</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>&lt;6</td>
<td>No sampling; 100% Initial Patient Population required</td>
</tr>
</tbody>
</table>

**Sample Size Examples**

**Note:** All sampled strata in SCIP should be used in the calculation of all SCIP Infection, Venous Thromboembolism (VTE), and Cardiac measures, including the several surgery-specific measures (e.g., SCIP-Inf-4, Cardiac Surgery Patients With Controlled 6 A.M. Postoperative Blood Glucose). All of the SCIP measures' specific exclusion criteria are used to filter out cases that do not belong in the measure denominator. Using SCIP-Inf-4 as an example, include cases covering all sampled strata, although the measure-specific exclusion criteria would only allow cases in the cardiac surgery stratum to be included in the denominator.

- **Quarterly sampling:**
  When applicable, larger hospitals must also abide by the required quarterly sample sizes for the seven individual measure stratum and the 8th SCIP stratum (Table 5.25 in Appendix A) a minimum of 17 required sample cases per strata when Initial Patient Population size is 17 or greater.

  - The SCIP Initial Patient Population sizes for a hospital are 5, 50, 16, 140, 35, 201, 3, and 481 patients respectively per stratum for the quarter. Since the total Initial Patient Population for SCIP is 931, the hospital must submit patient level data. The required quarterly sample sizes for each stratum would be 5, 17, 16, 17, 17, 21, 3, and 49.
The 1st, 3rd, and 7th strata are less than the minimum required quarterly sample size, so 100% of each of these strata are sampled.

The 2nd, 4th, and 5th strata each require 17 cases to be sampled.

The 6th stratum has 201 patients per quarter, which requires a 10% sample size, or 21 cases (ten percent of 201 equals 20.1 rounded to the next highest whole number equal 21).

The 8th stratum is more than the maximum required quarterly sample size, so this stratum requires 49 cases to be sampled.

The SCIP Initial Patient Population sizes for a hospital are 1, 1, 0, 0, 1, 0, 1, and 1 patients respectively per stratum for the quarter. Since the total Initial Patient Population for SCIP is 5, the hospital may choose to not submit patient level data. If the hospital chooses to submit patient level data, the required quarterly sample sizes for each stratum would be 1, 1, 0, 0, 1, 0, 1, and 1.

The 1st, 2nd, 5th, 7th and 8th strata are less than the minimum required quarterly sample size, so 100% of each of these strata are sampled.

There is no data to sample for the 3rd, 4th, and 6th strata.

Monthly sampling
When applicable, larger hospitals must also abide by the required monthly sample sizes for the seven individual measure stratum and the 8th SCIP strata (Table 5.25 in Appendix A) a minimum of 6 required sample cases per strata when Initial Patient Population size is 6 or greater.

The SCIP Initial Patient Population sizes for a hospital are 5, 50, 15, 141, 35, 201, 3, and 481 patients respectively in June. The required monthly sample sizes would be 5, 6, 6, 15, 6, 16, 3, and 16.

The 1st and 7th strata are less than the minimum required monthly sample size, so 100% of each of these strata are sampled.

The 2nd, 3rd, and 5th strata each require 6 cases to be sampled.

The 4th stratum has 141 patients per month, which requires a 10% sample size, or 15 cases (ten percent of 141 equals 14.1 rounded to the next highest whole number equals 15).

The 6th and 8th strata are each more than the maximum required monthly sample size, so each of these strata requires 16 cases to be sampled.
Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-Inf-1

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Performance Measure Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-1a</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Overall Rate</td>
</tr>
<tr>
<td>SCIP-Inf-1b</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - CABG</td>
</tr>
<tr>
<td>SCIP-Inf-1c</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Other Cardiac Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-1d</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Hip Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-1e</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Knee Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-1f</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Colon Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-1g</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Hysterectomy</td>
</tr>
<tr>
<td>SCIP-Inf-1h</td>
<td>Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision - Vascular Surgery</td>
</tr>
</tbody>
</table>

Performance Measure Name: Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision

Description: Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision. Patients who received vancomycin or a fluoroquinolone for prophylactic antibiotics should have the antibiotics initiated within two hours prior to surgical incision. Due to the longer infusion time required for vancomycin or a fluoroquinolone, it is acceptable to start these antibiotics within two hours prior to incision time.

Rationale: A goal of prophylaxis with antibiotics is to establish bactericidal tissue and serum levels at the time of skin incision. Studies performed in the 1960’s and 1970’s demonstrated that a common reason for failure of prophylaxis was delay of antibiotic administration until after the operation. In a study of 2,847 surgery patients at LDS Hospital in Salt Lake City, it was found that the lowest incidence of post-operative infection was associated with antibiotic administration during the one hour prior to incision time.
surgery. The risk of infection increased progressively with greater time intervals between administration and skin incision. This relationship was observed whether antibiotics preceded or followed skin incision (Classen 1993).

Opportunities to improve care have been demonstrated and timely administration has been recommended. For example, at LDS Hospital, administration of the first antibiotic dose “on call” to the operating room was frequently associated with timing errors. Altering the system there resulted in an increase in appropriate timing from 40% of cases in 1985 to 99% of cases in 1998.

**Type of Measure:** Process

**Improvement Noted As:** An increase in the rate.

**Numerator Statement:** Number of surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if receiving vancomycin, in Appendix C, Table 3.8, or a fluoroquinolone, in Appendix C, Table 3.10).

**Included Populations:** Not Applicable

**Excluded Populations:** None

**Data Elements:**
- Anesthesia Start Date
- Antibiotic Administration Date
- Antibiotic Administration Time
- Surgical Incision Date
- Surgical Incision Time

**Denominator Statement:** All selected surgical patients with no evidence of prior infection.

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

  **AND**

- An *ICD-9-CM Principal Procedure Code* of selected surgeries (as defined in Appendix A, Table 5.01-5.08 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 who had a hysterectomy and a caesarean section performed during this hospitalization
- Patients who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 for ICD-9-CM codes)
• Patients enrolled in clinical trials
• Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
• Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA) documented infection prior to surgical procedure of interest
• Patients who had other procedures requiring general or spinal anesthesia that occurred within 3 days (4 days for CABG or Other Cardiac Surgery) prior to or after the procedure of interest (during separate surgical episodes) during this hospital stay
• Patients who were receiving antibiotics more than 24 hours prior to surgery
• Patients who were receiving antibiotics within 24 hours prior to arrival (except colon surgery patients taking oral prophylactic antibiotics)

Data Elements:
• Anesthesia Start Date
• Admission Date
• Antibiotic Administration Route
• Antibiotic Name
• Antibiotic Received
• Birthdate
• Clinical Trial
• Discharge Date
• ICD-9-CM Principal Diagnosis Code
• ICD-9-CM Principal Procedure Code
• Infection Prior to Anesthesia
• Oral Antibiotics
• Other Surgeries

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

Data Accuracy: Abstracted antibiotics are those administered from the time of arrival through the first 48 hours (72 hours for CABG or Other Cardiac Surgery) after the Anesthesia End Time. Refer to Appendix C, Table 2.1 which contains a complete listing of antibiotics.

Measure Analysis Suggestions: Consideration may be given to relating this measure to SCIP-Inf-2 and to SCIP-Inf-3 in order to evaluate which aspects of antibiotic prophylaxis (i.e., timing, selection) would most benefit from an improvement effort. The process-owners for timing of administration of antibiotics, as assessed in this measure,
may include clinicians and support staff on the nursing unit as well as in the presurgical holding area, as well as in the operating room itself. Opportunities may exist in any of these arenas which, when addressed jointly, can generate true process improvement.

**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:** Overall aggregate rate for all surgeries and stratified rates by data element *ICD-9-CM Principal Procedure Code*, generated from count data reported as a proportion.

**Selected References:**

SCIP-Inf-1: Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision

Numerator: Number of surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if receiving vancomycin or fluoroquinolone).

Denominator: All selected surgical patients with no evidence of prior infection.

**No allowable value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.**

**Stratification Table:**

<table>
<thead>
<tr>
<th>Set</th>
<th>Stratified By</th>
<th>(Allowable Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf1a</td>
<td>Overall Rate</td>
<td><strong>(Allowable Value)</strong></td>
</tr>
<tr>
<td>SCIP-Inf1b</td>
<td>CABG</td>
<td>Table 5.01</td>
</tr>
<tr>
<td>SCIP-Inf1c</td>
<td>Other Cardiac Surgery</td>
<td>Table 5.02</td>
</tr>
<tr>
<td>SCIP-Inf1d</td>
<td>Hip Arthroplasty</td>
<td>Table 5.04</td>
</tr>
<tr>
<td>SCIP-Inf1e</td>
<td>Knee Arthroplasty</td>
<td>Table 5.05</td>
</tr>
<tr>
<td>SCIP-Inf1f</td>
<td>Colon Surgery</td>
<td>Table 5.03</td>
</tr>
<tr>
<td>SCIP-Inf1g</td>
<td>Hysterectomy</td>
<td>Table 5.06 Or 5.07</td>
</tr>
<tr>
<td>SCIP-Inf1h</td>
<td>Vascular Surgery</td>
<td>Table 5.08</td>
</tr>
</tbody>
</table>

* This refers to the data element 'ICD-9-CM Principal Procedure Code'. Each case will be stratified according to the principal procedure code, after the Category Assignments are completed and the overall rate is calculated. The allowable value includes all procedures on Tables 5.01 to 5.08.
Antibiotic Days I = Surgical Incision Date - Antibiotic Administration Date (in days)

Note: Proceed only with antibiotic doses that have an associated non-UTD date.

Antibiotic Name

Antibiotic Administration Route

- ≥1.0 for all antibiotic doses
- ≥1.2 for any antibiotic dose

Non-UTD date for at least one antibiotic dose

Note: Proceed only with antibiotic doses on Table 2.1 that are administered via routes '1' or '2'.

Antibiotic Administration Date

- =UTD for all antibiotic doses

Note: Proceed only with antibiotic doses that have an associated non-UTD date.

Antibiotic Days I = Surgical Incision Date - Antibiotic Administration Date (in days)

ICD-9-CM Principal Procedure Code

- Not on Table 5.03
- On Table 5.03

Oral Antibiotics

= N

Note: Proceed only with antibiotic doses that have an associated non-UTD date.

Antibiotic Administration Time

- =UTD for all antibiotic doses

Non-UTD time for at least one antibiotic dose

Note: Proceed only with antibiotic doses that have an associated non-UTD date.

Antibiotic Timing 1 = Surgical Incision Date and Surgical Incision Time - Antibiotic Administration Date and Antibiotic Administration Time (in minutes)
STOP here for CMS. CONTINUE to “K” for The Joint Commission.
Note: Initialize the Measure Category Assignment for each strata measure (b-h) = 'B'.

Do not change the Measure Category Assignment that was already calculated for the overall rate (SCIP-Inf-1a).

The rest of the algorithm will reset the appropriate Measure Category Assignment to be equal to the overall rate's (SCIP-Inf-1a) Measure Category Assignment.
For Stratified Measure SCIP-Inf-1e

Set the Measure Category Assignment for measure SCIP-Inf-1e = the Measure Category Assignment for measure SCIP-Inf-1a

On Table 5.05

For Stratified Measure SCIP-Inf-1f

Set the Measure Category Assignment for measure SCIP-Inf-1f = the Measure Category Assignment for measure SCIP-Inf-1a

On Table 5.03

For Stratified Measure SCIP-Inf-1g

Set the Measure Category Assignment for measure SCIP-Inf-1g = the Measure Category Assignment for measure SCIP-Inf-1a

On Table 5.06 or 5.07

For Stratified Measure SCIP-Inf-1h

Set the Measure Category Assignment for measure SCIP-Inf-1h = the Measure Category Assignment for measure SCIP-Inf-1a

On Table 5.08

Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)  SCIP-Inf-1-10
SCIP-Infection (Inf)-1: Prophylactic Antibiotics Received Within One Hour Prior to Surgical Incision

Numerator: Number of surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if receiving vancomycin or fluoroquinolone).

Denominator: All selected surgical patients with no evidence of prior infection.

Variable Key: Patient Age, Antibiotic Days I, Antibiotic Timing I, Surgery Days

Stratification Table
The Stratification Table includes the Set Number, Stratified By, and the Principal Procedure Code (Allowable Value). The Principal Procedure Code refers to the data element ICD-9-CM Principal Procedure Code. Each case will be stratified according to the principal procedure code, after the Category Assignments are completed and the overall rate is calculated.

<table>
<thead>
<tr>
<th>Set Number</th>
<th>Stratified By the Overall Rate</th>
<th>Principal Procedure Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-1a</td>
<td>Overall Rate</td>
<td>No allowable Value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.</td>
</tr>
<tr>
<td>SCIP-Inf-1b</td>
<td>Coronary Artery Bypass Graft (CABG)</td>
<td>Table 5.01</td>
</tr>
<tr>
<td>SCIP-Inf-1c</td>
<td>Other Cardiac Surgery</td>
<td>Table 5.02</td>
</tr>
<tr>
<td>SCIP-Inf-1d</td>
<td>Hip Arthroplasty</td>
<td>Table 5.04</td>
</tr>
<tr>
<td>SCIP-Inf-1e</td>
<td>Knee Arthroplasty</td>
<td>Table 5.05</td>
</tr>
<tr>
<td>SCIP-Inf-1f</td>
<td>Colon Surgery</td>
<td>Table 5.03</td>
</tr>
<tr>
<td>SCIP-Inf-1g</td>
<td>Hysterectomy</td>
<td>Table 5.06 or Table 5.07</td>
</tr>
<tr>
<td>SCIP-Inf-1h</td>
<td>Vascular Surgery</td>
<td>Table 5.08</td>
</tr>
</tbody>
</table>

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If the Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for Centers for Medicare and Medicaid
Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12) SCIP-Inf-1-12

Services (CMS). Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

b. If the Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code.

4. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.

5. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, continue processing and check ICD-9-CM Other Procedure Code.
      1. If any of the ICD-9-CM Other Procedure Codes are on Table 4.07, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
      2. If all of the ICD-9-CM Other Procedure Codes are missing or none are on Table 4.07, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.
   b. If the ICD-9-CM Principal Procedure Code is not on Table 5.06 or 5.07, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

6. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.09, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.09, continue processing and proceed to Clinical Trial.

7. 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 for CMS. Proceed
to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

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 for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

c. If Clinical Trial equals No, continue processing and proceed to Anesthesia Start Date.

8. 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 for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   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 for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If Anesthesia Start Date equals a Non Unable To Determine Value, continue processing and proceed to the Surgery Days calculation.

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

10. 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 for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the Surgery Days is greater than or equal to zero, continue processing and proceed to Infection Prior to Anesthesia.

11. Check Infection Prior to Anesthesia
    a. If Infection Prior to Anesthesia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If Infection Prior to Anesthesia equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the
12. Check Other Surgeries
   a. If Other Surgeries is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If Other Surgeries equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If Other Surgeries equals No, continue processing and proceed to Surgical Incision Date.

13. Check Surgical Incision Date
   a. If the Surgical Incision Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the Surgical Incision 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 for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If Surgical Incision Date equals a Non Unable To Determine Value, continue processing and proceed to Antibiotic Received.

14. Check Antibiotic Received
   a. If Antibiotic Received equals 1 or 2, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.
   b. If Antibiotic Received equals 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If Antibiotic Received equals 3, continue processing and proceed to step 19 and check Antibiotic Name. Do not check ICD-9-CM Principal Procedure Code, Oral Antibiotics or Antibiotic Received.

15. Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Received equals...
1 or 2

a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the measure population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to check Oral Antibiotics.

16. Check Oral Antibiotics

a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
c. If Oral Antibiotics equals Yes, continue processing and proceed to recheck Antibiotic Received.

17. Recheck Antibiotic Received

a. If Antibiotic Received equals 1, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
b. If Antibiotic Received equals 2, continue processing and proceed to Antibiotic Name.

18. Check Antibiotic Name

a. If the Antibiotic Grid is not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission. Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or Unable to Determine.
b. If the Antibiotic Name is on Table 2.1, continue processing and proceed to Antibiotic Administration Route.

19. Check Antibiotic Administration Route
a. If the Antibiotic Administration Route is equal to 3 or 10 for all antibiotic
doses, the case will proceed to a Measure Category Assignment of D and
will be in the Measure Population. Stop processing for CMS. Proceed to
step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a)
for The Joint Commission.
b. If the Antibiotic Administration Route is equal to 1 or 2 for any antibiotic
dose, continue processing and proceed to Antibiotic Administration Date.
Proceed only with antibiotic doses on Table 2.1 that are administered via
routes 1 or 2.

20. Check Antibiotic Administration Date
a. If the Antibiotic Administration Date is equal to Unable to Determine for all
antibiotic doses, the case will proceed to a Measure Category Assignment
of D and will be in the Measure Population. Stop processing for CMS.
Proceed to step 35 and check the Stratified Measures for Overall Rate
(SCIP-Inf-1a) for The Joint Commission.
b. If the Antibiotic Administration Date is equal to a Non Unable to Determine
date for at least one antibiotic dose, continue processing and proceed to
the Antibiotic Days I calculation. Note: Proceed only with antibiotic doses
that have an associated non Unable to Determine date.

21. Calculate Antibiotic Days I. Antibiotic Days I, in days, is equal to the Surgical
Incision Date minus the Antibiotic Administration Date.

22. Check Antibiotic Days I
a. If the Antibiotic Days I is greater than 1 for at least one antibiotic dose,
continue processing and recheck the ICD-9-CM Principal Procedure
Code.
b. If the Antibiotic Days I is less than or equal to 1 for all antibiotic doses,
continue processing. Proceed to step 26 and recheck Antibiotics Days I.
Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics.

23. Recheck ICD-9-CM Principal Procedure Code only if the Antibiotic Days I is
greater than 1 for at least one antibiotic dose.
 a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case
will proceed to a Measure Category Assignment of B and will not be in the
Measure Population. Stop processing for CMS. Proceed to step 35 and
check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint
Commission.
b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue
processing and check Oral Antibiotics.
24. Check Oral Antibiotics
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If Oral Antibiotics equals Yes, continue processing and proceed to step 27 and check Surgical Incision Time. Do not recheck Antibiotic Days I.

25. Recheck Antibiotic Days I
   a. If the Antibiotic Days I is less than zero for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the Antibiotic Days I is greater than or equal to zero for any antibiotic dose, continue processing and proceed to Surgical Incision Time.

26. Check Surgical Incision Time
   a. If the Surgical Incision Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the Surgical Incision Time is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If the Surgical Incision Time is equal to a Non Unable to Determine Value, continue processing and check Antibiotic Administration Time.

27. Check Antibiotic Administration Time
   a. If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and proceed to
the Antibiotic Timing I calculation. Note: Proceed only with antibiotic doses that have an associated non Unable to Determine time.

28. Calculate Antibiotic Timing I. Antibiotic Timing I, in minutes, is equal to the Surgical Incision Date and Surgical Incision Time minus the Antibiotic Administration Date and Antibiotic Administration Time.

29. Check Antibiotic Timing I
   a. If the Antibiotic Timing I is greater than 1440 minutes for any antibiotic dose, continue processing and recheck the ICD-9-CM Principal Procedure Code.
   b. If the Antibiotic Timing I is less than or equal to 1440 minutes for all antibiotic doses, continue processing. Proceed to step 33 and recheck Antibiotic Timing I. Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics.

30. Recheck ICD-9-CM Principal Procedure Code only if the Antibiotic Timing I is greater than 1440 minutes for any antibiotic dose.
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics.

31. Check Oral Antibiotics
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If Oral Antibiotics equals Yes, continue processing and proceed to recheck Antibiotic Timing I.

32. Recheck Antibiotic Timing I
   a. If the Antibiotic Timing I is greater than or equal to zero minutes and less than or equal to 60 minutes for at least one antibiotic dose, the case will proceed to a Measure Category Assignment of E and will be in the
Numerator Population. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

b. If the Antibiotic Timing I is less than zero minutes or greater than 60 minutes for all antibiotic doses, continue processing and recheck Antibiotic Name.

33. Recheck Antibiotic Name
   a. If the Antibiotic Name is on Table 3.8 or Table 3.10 for at least one dose, continue processing and recheck Antibiotic Timing I.
   b. If the Antibiotic Name is not on Table 3.8 or Table 3.10 for any dose, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Do not recheck Antibiotic Timing I. Stop processing for CMS. Proceed to step 35 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

34. Recheck Antibiotic Timing I
   a. If the Antibiotic Timing I is greater than 60 minutes and less than or equal to 120 minutes for at least one antibiotic dose on Table 3.8 or Table 3.10, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the Antibiotic Timing I is less than zero minutes or greater than 120 minutes for all antibiotic doses on Table 3.8 or Table 3.10, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

35. For The Joint Commission Only, continue processing for the Stratified Measures.
   Note: Initialize the Measure Category Assignment for each strata measure (b-h) to equal B, not in the Measure Population. Do not change the Measure Category Assignment that was already calculated for the overall rate (SCIP-Inf-1a). The rest of the algorithm will reset the appropriate Measure Category Assignment to be equal to the overall rate's (SCIP-Inf-1a) Measure Category Assignment.

36. Check Overall Rate Category Assignment
   a. If the Overall Rate Category Assignment is equal to B or X, set the Measure Category Assignment for the strata measures (SCIP-Inf-1b through SCIP-Inf-1h) to equal B, not in the Measure Population. Stop processing.
b. If the Overall Rate Category Assignment is equal to D or E, continue processing and check the ICD-9-CM Principal Procedure Code.

37. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01, for Stratified Measure SCIP-Inf-1b, set the Measure Category Assignment for measure SCIP-Inf-1b to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

38. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.02, for Stratified Measure SCIP-Inf-1c, set the Measure Category Assignment for measure SCIP-Inf-1c to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

   a. If the ICD-9-CM Principal Procedure Code is on Table 5.04, for Stratified Measure SCIP-Inf-1d, set the Measure Category Assignment for measure SCIP-Inf-1d to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

40. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.05, for Stratified Measure SCIP-Inf-1e, set the Measure Category Assignment for measure SCIP-Inf-1e to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

41. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.03, for Stratified Measure SCIP-Inf-1f, set the Measure Category Assignment for measure
42. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, for Stratified Measure SCIP-Inf-1g, set the Measure Category Assignment for measure SCIP-Inf-1g to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.08, for Stratified Measure SCIP-Inf-1h, set the Measure Category Assignment for measure SCIP-Inf-1h to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.
Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID #: SCIP-Inf-2

<table>
<thead>
<tr>
<th>Set Measure ID#</th>
<th>Performance Measure Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-2a</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Overall Rate</td>
</tr>
<tr>
<td>SCIP-Inf-2b</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - CABG</td>
</tr>
<tr>
<td>SCIP-Inf-2c</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Other Cardiac Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-2d</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Hip Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-2e</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Knee Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-2f</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Colon Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-2g</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Hysterectomy</td>
</tr>
<tr>
<td>SCIP-Inf-2h</td>
<td>Prophylactic Antibiotic Selection for Surgical Patients - Vascular Surgery</td>
</tr>
</tbody>
</table>

Performance Measure Name: Prophylactic Antibiotic Selection for Surgical Patients

Description: Surgical patients who received prophylactic antibiotics consistent with current guidelines (specific to each type of surgical procedure).

Rationale: A goal of prophylaxis with antibiotics is to use an agent that is safe, cost-effective, and has a spectrum of action that covers most of the probable intraoperative contaminants for the operation. First or second-generation cephalosporins satisfy these criteria for most operations, although anaerobic coverage is needed for colon surgery. Vancomycin is not recommended for routine use because of the potential for development of antibiotic resistance, but is acceptable if a patient is allergic to beta-lactams, as are fluoroquinolones and clindamycin in selected situations.

Type of Measure: Process

Improvement Noted As: An increase in the rate.

Numerator Statement: Number of surgical patients who received prophylactic antibiotics recommended for their specific surgical procedure.

Included populations: Not Applicable

Excluded Populations: None
Data Elements:
- Antibiotic Administration Route
- Antibiotic Allergy
- Antibiotic Name
- Oral Antibiotics
- Vancomycin

The antibiotic regimens described in the table which follows later in this section reflect the combined, published recommendations of the American Society of Health-System Pharmacists, the Medical Letter, the Infectious Diseases Society of America, the Sanford Guide to Antimicrobial Therapy 2009, and the Surgical Infection Society.

Denominator Statement: All selected surgical patients with no evidence of prior infection.

Included Populations:
- An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes).
  - AND
- An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.01-5.08 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 who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 for ICD-9-CM codes)
- Patients enrolled in clinical trials
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA) documented infection prior to surgical procedure of interest
- Patients who expired perioperatively
- Patients who had other procedures requiring general or spinal anesthesia that occurred within 3 days (4 days for CABG or Other Cardiac Surgery) prior to or after the procedure of interest (during separate surgical episodes) during this hospital stay
- Patients who were receiving antibiotics more than 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics)
- Patients who were receiving antibiotics within 24 hours prior to arrival (except colon surgery patients taking oral prophylactic antibiotics)
- Patients who did not receive any antibiotics before or during surgery, or within 24 hours after Anesthesia End Time (i.e., patient did not receive prophylactic antibiotics)
- Patients who did not receive any antibiotics during this hospitalization
Data Elements:

- Anesthesia End Date
- Anesthesia End Time
- Anesthesia Start Date
- Admission Date
- Antibiotic Administration Date
- Antibiotic Administration Time
- Antibiotic Received
- Birthdate
- Clinical Trial
- Discharge Date
- ICD-9-CM Principal Diagnosis Code
- ICD-9-CM Principal Procedure Code
- Infection Prior to Anesthesia
- Other Surgeries
- Perioperative Death
- Surgical Incision Date
- Surgical Incision Time

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

Data Accuracy: Abstracted antibiotics are those administered from the time of arrival through the first 48 hours (72 hours for CABG or Other Cardiac Surgery) after the Anesthesia End Time. Refer to Appendix C, Table 2.1, which contains a complete listing of antibiotics.

Measure Analysis Suggestions: Consideration may be given to relating this measure to SCIP-Inf-1 and SCIP-Inf-3 in order to evaluate which aspects of antibiotic prophylaxis would most benefit from an improvement effort. The process owners for selection of appropriate antibiotics could include physicians/APNs/PAs and hospital committees (e.g., QA, Infection Control, Pharmacy and Therapeutics, Surgical Section Subcommittees, etc.) any of which may choose to address this physician/APN/PA practice issue as part of a larger surgical infection prevention initiative.

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: Overall aggregate rate for all surgeries and stratified rates by data element ICD-9-CM Principal Procedure Code, generated from count data reported as a proportion.

Selected References:

- Bratzler DW, Houck PM, for the Surgical Infection Prevention Guidelines Writers Group. Antimicrobial prophylaxis for surgery: An advisory statement from the
## Prophylactic Antibiotic Regimen Selection for Surgery

<table>
<thead>
<tr>
<th>Surgical Procedure</th>
<th>Approved Antibiotics</th>
</tr>
</thead>
</table>
| CABG, Other Cardiac or Vascular | Cefazolin, Cefuroxime, Table 3.1 or Vancomycin<sup>1</sup> Table 3.8  
If β-lactam allergy: Vancomycin<sup>2</sup> Table 3.8 or Clindamycin<sup>2</sup> Table 3.9 |
| Hip/Knee Arthroplasty | Cefazolin or Cefuroxime Table 3.2  
or Vancomycin<sup>1</sup> Table 3.8  
If β-lactam allergy: Vancomycin<sup>2</sup> Table 3.8 or Clindamycin<sup>2</sup> Table 3.9 |
| Colon | Cefotetan, Cefoxitin, Ampicillin/Sulbactam Table 3.5, or Ertapenem<sup>3</sup> Table 3.6b  
OR  
Cefazolin or Cefuroxime Table 3.2 + Metronidazole Table 3.6a  
If β-lactam allergy: Clindamycin Table 3.9 + Aminoglycoside Table 2.11  
or Clindamycin Table 3.9 + Quinolone Table 3.12, or Clindamycin Table 3.9 + Aztreonam Table 2.7  
OR  
Metronidazole Table 3.6a with Aminoglycoside Table 2.11, or Metronidazole Table 3.6a + Quinolone Table 3.12 |
| Hysterectomy | Cefotetan, Cefazolin, Cefoxitin, Cefuroxime, or Ampicillin/Sulbactam Table 3.7  
If β-lactam allergy: Clindamycin Table 3.9 + Aminoglycoside Table 2.11  
or Clindamycin Table 3.9 + Quinolone Table 3.12 or Clindamycin Table 3.9 + Aztreonam Table 2.7  
OR  
Metronidazole Table 3.6a + Aminoglycoside Table 2.11  
or Metronidazole Table 3.6a + Quinolone Table 3.12 |
| Principal Procedure Code of Hysterectomy with an Other Procedure Code of Colon Surgery found in Appendix A, Table 5.03 | Cefotetan, Cefazolin, Cefoxitin, Cefuroxime, or Ampicillin/Sulbactam Table 3.7  
OR  
Ertapenem<sup>3</sup> Table 3.6b  
If β-lactam allergy: Clindamycin Table 3.9 + Aminoglycoside Table 2.11  
OR  
Clindamycin Table 3.9 + Quinolone Table 3.12 or Clindamycin Table 3.9 + Aztreonam Table 2.7  
OR |
**Surgical Procedure** | **Approved Antibiotics**
--- | ---
| Metronidazole Table 3.6a + Aminoglycoside Table 2.11 OR Metronidazole Table 3.6a + Quinolone Table 3.12 |

**Special Considerations:**

1. Vancomycin is acceptable with a physician/APN/PA/pharmacist documented justification for its use (see data element *Vancomycin*).
2. For cardiac, orthopedic, and vascular surgery, if the patient is allergic to beta-lactam antibiotics, Vancomycin or Clindamycin are acceptable substitutes.
3. A single dose of Ertapenem is recommended for colon procedures.
SCIP-Inf-2: Prophylactic Antibiotic Selection for Surgical Patients

Numerator: Number of surgical patients who received prophylactic antibiotics recommended for their specific surgical procedure.

Denominator: All selected surgical patients with no evidence of prior infection.

Variable Key:
- Patient Age
- Antibiotic Days I
- Antibiotic Timing I
- Antibiotic Days II
- Antibiotic Timing II
- Surgery Days

Stratification Table:

<table>
<thead>
<tr>
<th>Set</th>
<th>Stratified By *Principal Procedure Code</th>
<th>(Allowable Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf2a</td>
<td>Overall Rate</td>
<td>**</td>
</tr>
<tr>
<td>SCIP-Inf2b</td>
<td>CABG</td>
<td>Table 5.01</td>
</tr>
<tr>
<td>SCIP-Inf2c</td>
<td>Other Cardiac Surgery</td>
<td>Table 5.02</td>
</tr>
<tr>
<td>SCIP-Inf2d</td>
<td>Hip Arthroplasty</td>
<td>Table 5.04</td>
</tr>
<tr>
<td>SCIP-Inf2e</td>
<td>Knee Arthroplasty</td>
<td>Table 5.05</td>
</tr>
<tr>
<td>SCIP-Inf2f</td>
<td>Colon Surgery</td>
<td>Table 5.03</td>
</tr>
<tr>
<td>SCIP-Inf2g</td>
<td>Hysterectomy</td>
<td>Table 5.06 Or 5.07</td>
</tr>
<tr>
<td>SCIP-Inf2h</td>
<td>Vascular Surgery</td>
<td>Table 5.08</td>
</tr>
</tbody>
</table>

* This refers to the data element 'ICD-9-CM Principal Procedure Code'. Each case will be stratified according to the principal procedure code, after the Category Assignments are completed and the overall rate is calculated.

** No allowable value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.

Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)
Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)
Antibiotic Days I = Surgical Incision Date - Antibiotic Administration Date (in days)

- Antibiotic Days I = 1 for any antibiotic dose
- Antibiotic Days I ≤ 0 for all antibiotic doses
- Antibiotic Days I > 1 for at least one antibiotic dose

Antibiotic Administration Date = UTD for all antibiotic doses

Note: Proceed only with antibiotic doses on Table 2.1 that are administered via routes '1' or '2'.

Antibiotic Administration Route = 3,10 for all antibiotic doses

Non-UTD time for ALL antibiotic doses

Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or 'UTD'.

Antibiotic Grid Not Populated

Non-UTD date for all antibiotic doses

Antibiotic Administration Date = UTD for all antibiotic doses

Calculate Antibiotic Timing I = Surgical Incision Date and Surgical Incision Time - Antibiotic Administration Date and Antibiotic Administration Time (in minutes).

- Antibiotic Timing I ≤ 1440 minutes for all antibiotic doses with non-UTD date and time.
- Antibiotic Timing I > 1440 minutes for any antibiotic dose.

Antibiotic Timing I = UTD for ANY antibiotic dose with 'Antibiotic Days I = 1'

Note: Proceed only with antibiotic doses that have a non-UTD date.

On Table 5.03 = N

Oral Antibiotics = N

≤ 1 for all antibiotic doses

≥ 0 for ALL antibiotic doses with 'Antibiotic Days I = 1'

Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I ≤ 0.

Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I ≤ 0.
**Antibiotic Days II** = \( \frac{\text{Antibiotic Administration Date} - \text{Anesthesia End Date}}{24 \times 60} \) (in days)

- Greater than 0 for at least one dose of any antibiotic
- Less than or equal to 0 for all doses of all Antibiotics

- Initialize Abxday flag = 'No' for each antibiotic doses.
- Set Abxday flag = 'Yes' for each antibiotic dose where Antibiotic Days II \( \leq 0 \).

**Antibiotic Timing II** = \( \frac{\text{Antibiotic Administration Date and Antibiotic Administration Time} - \text{Anesthesia End Date and Anesthesia End Time}}{24 \times 60} \) (in minutes).

- Greater than 1440 minutes for all doses of all Antibiotics with non-UTD date and time.
- Less than or equal to 1440 minutes for at least one dose of ANY Antibiotic. Proceed with antibiotic doses that have Antibiotic Timing II calculated, or Abxday flag = Yes.

For each case, proceed ONLY with those antibiotic doses that satisfy at least one of the following conditions:

- Antibiotic Timing II \( \leq 1440 \)
- Abxday flag = Y
Note: For each case include only those antibiotics with routes IV for further processing.

= 1 for all doses of all Antibiotics
= 2 for any dose of any Antibiotic
On Tables 5.01, 5.02, 5.04, 5.05, 5.08

Antibiotic Name

None on Table 3.8 and None on Table 3.9

At least one on Table 3.8 or 3.9

Antibiotic Name

At least one on Tables 2.11 or 3.12 or 2.7

None on Tables 2.11 or 3.12 or 2.7

None on Table 3.8

At least one on Table 3.9

Any = 1, 2, 3, 4, 5, 6, 7, 8, 10, 11

Any = 1, 2, 3, 4, 5, 6, 7, 8, 10, 11 and none = 9

STOP here for CMS. CONTINUE to "N" for The Joint Commission.
For all Stratified Measures (b-h):

Not In Measure Population

Overall Rate Category Assignment

= B or X

= D or E

ICD-9-CM Principal Procedure Code

On Table 5.01

On Table 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08

Set the Measure Category Assignment for the strata measures (SCIP-Inf-2b through SCIP-Inf-2h) = 'B'

For Stratified Measure SCIP-Inf-2b

Set the Measure Category Assignment for measure SCIP-Inf-2b = the Measure Category Assignment for measure SCIP-Inf-2a

For Stratified Measure SCIP-Inf-2c

Set the Measure Category Assignment for SCIP-Inf-2c = the Measure Category Assignment for measure SCIP-Inf-2a

For Stratified Measure SCIP-Inf-2d

Set the Measure Category Assignment for measure SCIP-Inf-2d = the Measure Category Assignment for measure SCIP-Inf-2a

Note: Initialize the Measure Category Assignment for each strata measure (b-h) = 'B'.

Do not change the Measure Category Assignment that was already calculated for the overall rate (SCIP-Inf-2a).

The rest of the algorithm will reset the appropriate Measure Category Assignment to be equal to the overall rate's (SCIP-Inf-2a) Measure Category Assignment.

Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)  SCIP-Inf-2-14
Set the Measure Category Assignment for measure SCIP-Inf-2e = the Measure Category Assignment for measure SCIP-Inf-2a

On Table 5.05

For Stratified Measure SCIP-Inf-2e

Set the Measure Category Assignment for measure SCIP-Inf-2f = the Measure Category Assignment for measure SCIP-Inf-2a

On Table 5.03

For Stratified Measure SCIP-Inf-2f

Set the Measure Category Assignment for measure SCIP-Inf-2g = the Measure Category Assignment for measure SCIP-Inf-2a

On Table 5.06 or 5.07

For Stratified Measure SCIP-Inf-2g

Set the Measure Category Assignment for measure SCIP-Inf-2h = the Measure Category Assignment for measure SCIP-Inf-2a

On Table 5.08

For Stratified Measure SCIP-Inf-2h

STOP

Set the Measure Category Assignment for measure SCIP-Inf-2i = the Measure Category Assignment for measure SCIP-Inf-2a

On Table 5.03 or 5.06 or 5.07 or 5.08

For Stratified Measure SCIP-Inf-2i
SCIP-Infection (Inf)-2: Prophylactic Antibiotics Selection for Surgical Patients

Numerator: Number of surgical patients who received prophylactic antibiotics recommended for their specific surgical procedure.

Denominator: All selected surgical patients with no evidence of prior infection.


Stratification Table
The Stratification Table includes the Set Number, Stratified By, and the Principal Procedure Code (Allowable Value). The Principal Procedure Code refers to the data element ICD-9-CM Principal Procedure Code. Each case will be stratified according to the principal procedure code, after the Category Assignments are completed and the overall rate is calculated.

<table>
<thead>
<tr>
<th>Set Number</th>
<th>Stratified By the Overall Rate</th>
<th>Principal Procedure Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-2a</td>
<td>Overall Rate</td>
<td>No allowable value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.</td>
</tr>
<tr>
<td>SCIP-Inf-2b</td>
<td>Coronary Artery Bypass Graft (CABG)</td>
<td>Table 5.01</td>
</tr>
<tr>
<td>SCIP-Inf-2c</td>
<td>Other Cardiac Surgery</td>
<td>Table 5.02</td>
</tr>
<tr>
<td>SCIP-Inf-2d</td>
<td>Hip Arthroplasty</td>
<td>Table 5.04</td>
</tr>
<tr>
<td>SCIP-Inf-2e</td>
<td>Knee Arthroplasty</td>
<td>Table 5.05</td>
</tr>
<tr>
<td>SCIP-Inf-2f</td>
<td>Colon Surgery</td>
<td>Table 5.03</td>
</tr>
<tr>
<td>SCIP-Inf-2g</td>
<td>Hysterectomy</td>
<td>Table 5.06 or Table 5.07</td>
</tr>
<tr>
<td>SCIP-Inf-2h</td>
<td>Vascular Surgery</td>
<td>Table 5.08</td>
</tr>
</tbody>
</table>

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for Centers for Medicare and Medicaid Services (CMS). Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code.
4. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and proceed to recheck ICD-9-CM Principal Diagnosis Code.

5. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.09, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.09, continue processing and proceed to Clinical Trial.

6. 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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If Clinical Trial equals No, continue processing and proceed to Anesthesia Start Date.

7. 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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
c. If Anesthesia Start Date equals a Non Unable To Determine Value, continue processing and proceed to the Surgery Days calculation.

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

9. 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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Surgery Days is greater than or equal to zero, continue processing and proceed to Infection Prior to Anesthesia.

10. Check Infection Prior to Anesthesia
    a. If Infection Prior to Anesthesia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    b. If Infection Prior to Anesthesia equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    c. If Infection Prior to Anesthesia equals No, continue processing and proceed to Other Surgeries.

11. Check Other Surgeries
    a. If Other Surgeries is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    b. If Other Surgeries equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    c. If Other Surgeries equals No, continue processing and proceed to Perioperative Death.

12. 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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

c. If Perioperative Death equals No, continue processing and proceed to Surgical Incision Date.

13. Check Surgical Incision Date
   a. If the Surgical Incision Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Surgical Incision 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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If Surgical Incision Date equals a Non Unable To Determine Value, continue processing and proceed to Antibiotic Received.

14. Check Antibiotic Received
   a. If Antibiotic Received equals 1 or 2, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.
   b. If Antibiotic Received equals 4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If Antibiotic Received equals 3, continue processing and proceed to step 18 and check Antibiotic Name. Do not check ICD-9-CM Principal Procedure Code, Oral Antibiotics or Antibiotic Received.

15. Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Received equals 1 or 2
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to check Oral Antibiotics.
16. Check Oral Antibiotics
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If Oral Antibiotics equals Yes, continue processing and proceed to recheck Antibiotic Received.

17. Recheck Antibiotic Received
   a. If Antibiotic Received equals 1, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If Antibiotic Received equals 2, continue processing and proceed to Antibiotic Name.

18. Check Antibiotic Name
   a. If the Antibiotic Grid is not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission. Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or Unable to Determine.
   b. If the Antibiotic Name is on Table 2.1, continue processing and proceed to Antibiotic Administration Route.

19. Check Antibiotic Administration Route
   a. If the Antibiotic Administration Route is equal to 3 or 10 for all antibiotic doses, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Antibiotic Administration Route is equal to 1 or 2 for any antibiotic dose, continue processing and proceed to Antibiotic Administration Date. Proceed only with antibiotic doses on Table 2.1 that are administered via routes 1 or 2.
20. Check Antibiotic Administration Date
   a. If the Antibiotic Administration Date is equal to Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Antibiotic Administration Date is equal to a Non Unable to Determine date for at least one antibiotic dose, continue processing and proceed to the Antibiotic Days I calculation. Note: Proceed only with antibiotic doses that have an associated Non Unable to Determine date.

21. Calculate Antibiotic Days I. Antibiotic Days I, in days, is equal to the Surgical Incision Date minus the Antibiotic Administration Date.

22. Check Antibiotic Days I
   a. If the Antibiotic Days I is greater than 1 for at least one antibiotic dose, continue processing and recheck the ICD-9-CM Principal Procedure Code. Do not recheck step 25 Antibiotic Days I, step 26 Surgical Incision Time, step 27 Antibiotic Administration Time, or step 29 Antibiotic Timing I.
   b. If the Antibiotic Days I is less than or equal to 1 for all antibiotic doses, continue processing. Proceed to step 25 and recheck Antibiotics Days I. Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics.

23. Recheck ICD-9-CM Principal Procedure Code only if the Antibiotics Days was greater than 1 for at least one antibiotic dose
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics.

24. Check Oral Antibiotics
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

25. Recheck Antibiotic Days I only if Antibiotic Days I is less than or equal to 1 for all antibiotic doses
   a. If the Antibiotic Days I is less than or equal to zero for all antibiotic doses, continue processing. Proceed to step 33 and check Anesthesia End Date. Do not check step 26 Surgical Incision Time, step 27 Antibiotic Administration Time, or step 29 Antibiotic Timing I.
   b. If the Antibiotic Days I is equal to 1 for ANY antibiotic dose, continue processing and proceed to Surgical Incision Time.

26. Check Surgical Incision Time
   a. If the Surgical Incision Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Surgical Incision Time is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If the Surgical Incision Time is equal to a Non Unable to Determine Value, continue processing and check Antibiotic Administration Time.

27. Check Antibiotic Administration Time
   a. If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and recheck Antibiotic Administration Time.

28. Recheck Antibiotic Administration Time
   a. If the Antibiotic Administration Time equals Unable to Determine for ANY antibiotic dose with Antibiotic Days equal to 1, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
b. If the Antibiotic Administration Time equals a Non Unable to Determine time for all antibiotic doses with Antibiotic Days equal to 1, continue processing and proceed to the Antibiotic Timing I calculation.

29. Calculate Antibiotic Timing I. Antibiotic Timing I, in minutes, is equal to the Surgical Incision Date and Surgical Incision Time minus the Antibiotic Administration Date and Antibiotic Administration Time. Calculate Antibiotic Timing I for all antibiotic doses with Non Unable to Determine date and time. Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I less than or equal to zero.

30. Check Antibiotic Timing I
   a. If the Antibiotic Timing I is greater than 1440 minutes for any antibiotic dose, continue processing and recheck the ICD-9-CM Principal Procedure Code. Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I less than or equal to zero.
   b. If the Antibiotic Timing I is less than or equal to 1440 minutes for all antibiotic doses with non Unable to Determine date and time, continue processing and proceed to step 33 and check Anesthesia End Date. Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I less than or equal to zero. Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics.

31. Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Timing I is greater than 1440 for any antibiotic dose
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics.

32. Check Oral Antibiotics
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
c. If Oral Antibiotics equals Yes, continue processing and proceed to Anesthesia End Date.

33. 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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   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 for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If the Anesthesia End Date equals a Non Unable to Determine Value, continue processing and proceed to the Antibiotic Days II calculation.

34. Calculate Antibiotic Days II. Antibiotic Days II, in days, is equal to the Antibiotic Administration Date minus the Anesthesia End Date.

35. Check Antibiotic Days II
   a. If the Antibiotic Days II is less than or equal to zero for all doses of all antibiotics, continue processing. Proceed to step 41 and recheck Antibiotic Administration Route. Do not check step 37 Anesthesia End Time, step 38 Antibiotic Administration Time, or step 39 Antibiotic Timing II.
   b. If the Antibiotic Days II is greater than zero for at least one dose of any antibiotic, continue processing and proceed to Initialize the Abxday flag.

36. Initialize Abxday flag. Initialize Abxday flag to equal 'No' for each antibiotic dose. Set Abxday flag to equal 'Yes' for each antibiotic dose where Antibiotic Days II is less than or equal to zero.

37. Check Anesthesia End Time
   a. If the Anesthesia End Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Anesthesia End Time is equal to Unable to Determine, continue processing and proceed to check the Abxday flag.
      1. If the Abxday flag equals No for All doses, the case will proceed to a Measure Category Assignment of D of will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
2. If the Abxday flag equals Yes for ANY dose, continue processing and proceed to step 41. Proceed only with doses where the Abxflag is equal to Yes.

c. If the Anesthesia End Time is equal to a Non Unable to Determine Value, continue processing and recheck Antibiotic Administration Time.

38. Recheck Antibiotic Administration Time
   a. If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, continue processing and proceed to check the Abxday flag.
      1. If the Abxday flag equals No for All doses, the case will proceed to a Measure Category Assignment of D of will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and recheck the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
      2. If the Abxday flag equals Yes for ANY dose, continue processing and proceed to step 41 and recheck the Antibiotic Administration Route. Proceed only with doses where the Abxflag is equal to Yes. Do not check Antibiotic Timing II.
   b. If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and proceed to the Antibiotic Timing II calculation. Proceed with both UTD and Non-UTD time.

39. Calculate Antibiotic Timing II. Antibiotic Timing II, in minutes, is equal to the Antibiotic Administration Date and Antibiotic Administration Time minus Anesthesia End Date and Anesthesia End Time. Calculate Antibiotic Timing II for all antibiotic doses with Non Unable to Determine date and time. Proceed with antibiotic doses that have Antibiotic Timing II calculated, or Abxday flag equal to Yes.

40. Check Antibiotic Timing II
   a. If the Antibiotic Timing II is greater than 1440 minutes for all doses of all Antibiotics with a Non Unable to Determine date and time, continue processing and proceed to check the Abxday Flag. Proceed with antibiotic doses that have Antibiotic Timing II calculated, or Abxday flag equal to Yes.
      1. If the Abxday flag equals No for All doses, the case will proceed to a Measure Category Assignment of B of will not be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
2. If the Abxday flag equals Yes for ANY dose, continue processing and recheck the Antibiotic Administration Route. Proceed only with doses where the Abxflag is equal to Yes.

b. If the Antibiotic Timing II is less than or equal to 1440 minutes for at least one dose of ANY antibiotic, continue processing and proceed to Antibiotic Administration Route. Proceed with antibiotic doses that have Antibiotic Timing II calculated, or Abxday flag equal to Yes.

41. Recheck Antibiotic Administration Route. For each case, proceed ONLY with those antibiotic doses that satisfy at least one of the following conditions: Antibiotic Timing II is less than or equal to 1440 or Abxday flag is equal to Yes.

a. If the Antibiotic Administration Route equals 1 for all doses of all Antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

b. If the Antibiotic Administration Route equals 2 for any dose of any antibiotic, continue processing and proceed to recheck the ICD-9-CM Principal Procedure Code. Note: For each case include only those antibiotics with route IV for further processing.

42. Recheck ICD-9-CM Principal Procedure Code

a. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to step 46 and recheck Antibiotic Name. Do not recheck to determine if ICD-9-CM Principal Procedure Code is on Tables 5.01, 5.02, 5.04, 5.05, 5.06, 5.07, or 5.08 or if Antibiotic Name is on Table 3.2.

b. If the ICD-9-CM Principal Procedure Code is on Tables 5.01, 5.02, 5.04, 5.05, 5.06, 5.07, or 5.08, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.

43. Recheck ICD-9-CM Principal Procedure Code

a. If the ICD-9-CM Principal Procedure Code is on Tables 5.01, 5.02, 5.04, 5.05, or 5.08, continue processing and proceed to step 44 to recheck ICD-9-CM Principal Procedure Code.

b. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, continue processing and proceed to recheck Antibiotic Name.

1. If the Antibiotic Name is on Table 3.7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
2. If the Antibiotic Name is not on Table 3.7, continue processing and recheck if Antibiotic Name is on Table 3.6b.

3. If Antibiotic Name is on Table 3.6b continue processing and proceed to check if ICD-9-CM Other Procedure Code is on Table 5.03.

4. If Other Procedure Code is on Table 5.03, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

5. If Other Procedure Code is not on Table 5.03 or if the Antibiotic Name is not on Table 3.6b, continue processing and proceed to step 49 to recheck ICD-9-CM Principal Procedure Code.

44. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01, 5.02, or 5.08, continue processing and proceed to recheck Antibiotic Name.
      1. If the Antibiotic Name is on Table 3.1, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
      2. If the Antibiotic Name is not on Table 3.1, continue processing and proceed to step 49 and recheck ICD-9-CM Principal Procedure Code. Do not recheck to determine if ICD-9-CM Principal Procedure Code is on Tables 5.04 or 5.05 or if Antibiotic Name is on Table 3.2.
   b. If the ICD-9-CM Principal Procedure Code is on Tables 5.04 or 5.05, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.

45. Recheck Antibiotic Name
   a. If the Antibiotic Name is on Table 3.2, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Antibiotic Name is not on Table 3.2, continue processing and proceed to step 49 and recheck Antibiotic Name.

46. Recheck Antibiotic Name
   a. If the Antibiotic Name is on Table 3.6b, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
b. If the Antibiotic Name is not on Table 3.6b, continue processing and proceed to recheck Antibiotic Name.

47. Recheck Antibiotic Name
   a. If the Antibiotic Name is on Table 3.5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If the Antibiotic Name is not on Table 3.5, continue processing and proceed to recheck Antibiotic Name.

48. Recheck Antibiotic Name
   a. If the Antibiotic Name is on Table 3.2, continue processing and recheck Antibiotic Name.
      1. If the Antibiotic Name is on Table 3.6a, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
      2. If the Antibiotic name is not on Table 3.6a, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.
   b. If the Antibiotic Name is not on Table 3.2, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.

49. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01, 5.02, 5.04, 5.05, or 5.08, continue processing and proceed to recheck Antibiotic Name.
   b. If the ICD-9-CM Principal Procedure Code is on Tables 5.03, 5.06 or 5.07, continue processing and proceed to step 54 and check Antibiotic Allergy, Do not check step 50 and 52 to see if Antibiotic Name is on Tables 3.8 or 3.9, step 51 Antibiotic Allergy or step 53 Vancomycin.

50. Recheck Antibiotic Name only if the ICD-9-CM Principal Procedure Code is on Table 5.01, 5.02, 5.04, 5.05, or 5.08
   a. If none of the Antibiotic Names are on Table 3.8 and 3.9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If at least one of the Antibiotic Names are on Table 3.8 or 3.9, continue processing and proceed to Antibiotic Allergy.
51. Check Antibiotic Allergy only if at least one of the Antibiotic Names are on Table 3.8 or 3.9
   a. If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If Antibiotic Allergy equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If Antibiotic Allergy equals No, continue processing and proceed to recheck Antibiotic Name.

52. Recheck Antibiotic Name
   a. If none of the Antibiotic Names are on Table 3.8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If at least one of the Antibiotic Names are on Table 3.8, continue processing and proceed to check Vancomycin.

53. Check Vancomycin
   a. If Vancomycin is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   b. If any Vancomycin value equals 9 and none of the values equal 1, 2, 3, 4, 5, 6, 7, 8, 10, or 11, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
   c. If any Vancomycin value equals 1, 2, 3, 4, 5, 6, 7, 8, 10, or 11 and none of the values equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

54. Check Antibiotic Allergy only if the ICD-9-CM Principal Procedure Code is on Table 5.03, 5.06, or 5.07
   a. If Antibiotic Allergy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS.
Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

b. If Antibiotic Allergy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

c. If Antibiotic Allergy equals Yes, continue processing and proceed to recheck Antibiotic Name.

55. Recheck Antibiotic Name

a. If at least one of the Antibiotic Names is on Table 3.9, continue processing and recheck Antibiotic Name.

1. If at least one of the Antibiotic Names is on Tables 2.11 or 3.12 or 2.7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 57 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

2. If none of the Antibiotic Names are on Tables 2.11 or 3.12 or 2.7, continue processing and recheck Antibiotic Name.

b. If none of the Antibiotic Names are on Table 3.9, continue processing and recheck Antibiotic Name.

56. Recheck Antibiotic Name

a. If at least one of the Antibiotic Names is on Table 3.6a, continue processing and recheck Antibiotic Name.

1. If at least one of the Antibiotic Names is on Tables 2.11 or 3.12, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

2. If none of the Antibiotic Names are on Tables 2.11 or 3.12, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

b. If none of the Antibiotic Names are on Table 3.6a, the case will proceed to a Measure Category Assignment of D and will be in the measure population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.

57. For The Joint Commission Only, continue processing for the Stratified Measures. Note: Initialize the Measure Category Assignment for each strata measure (b-h) to equal B, not in the Measure Population. Do not change the Measure Category
Assignment that was already calculated for the overall rate (SCIP-Inf-2a). The rest of the algorithm will reset the appropriate Measure Category Assignment to be equal to the overall rate’s (SCIP-Inf-2a) Measure Category Assignment.

58. Check Overall Rate Category Assignment
   a. If the Overall Rate Category Assignment is equal to B or X, set the Measure Category Assignment for the strata measures (SCIP-Inf-2b through SCIP-Inf-2h) to equal B, not in the Measure Population. Stop processing.
   b. If the Overall Rate Category Assignment is equal to D or E, continue processing and check the ICD-9-CM Principal Procedure Code.

59. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01, for Stratified Measure SCIP-Inf-2b, set the Measure Category Assignment for measure SCIP-Inf-2b to equal the Measure Category Assignment for measure SCIP-Inf-2a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

60. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.02, for Stratified Measure SCIP-Inf-2c, set the Measure Category Assignment for measure SCIP-Inf-2c to equal the Measure Category Assignment for measure SCIP-Inf-2a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

61. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.04, for Stratified Measure SCIP-Inf-2d, set the Measure Category Assignment for measure SCIP-Inf-2d to equal the Measure Category Assignment for measure SCIP-Inf-2a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

   a. If the ICD-9-CM Principal Procedure Code is on Table 5.05, for Stratified Measure SCIP-Inf-2e, set the Measure Category Assignment for measure SCIP-Inf-2e to equal the Measure Category Assignment for measure SCIP-Inf-2a. Stop processing.
b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

63. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.03, for Stratified Measure SCIP-Inf-2f, set the Measure Category Assignment for measure SCIP-Inf-2f to equal the Measure Category Assignment for measure SCIP-Inf-2a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

64. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, for Stratified Measure SCIP-Inf-2g, set the Measure Category Assignment for measure SCIP-Inf-2g to equal the Measure Category Assignment for measure SCIP-Inf-2a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.08, for Stratified Measure SCIP-Inf-2h, set the Measure Category Assignment for measure SCIP-Inf-2h to equal the Measure Category Assignment for measure SCIP-Inf-2a. Stop processing.
Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID #: SCIP-Inf-3

<table>
<thead>
<tr>
<th>Set Measure ID #</th>
<th>Performance Measure Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-3a</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Overall Rate</td>
</tr>
<tr>
<td>SCIP-Inf-3b</td>
<td>Prophylactic Antibiotics Discontinued Within 48 Hours After Surgery End Time - CABG</td>
</tr>
<tr>
<td>SCIP-Inf-3c</td>
<td>Prophylactic Antibiotics Discontinued Within 48 Hours After Surgery End Time - Other Cardiac Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-3d</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Hip Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-3e</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Knee Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf-3f</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Colon Surgery</td>
</tr>
<tr>
<td>SCIP-Inf-3g</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Hysterectomy</td>
</tr>
<tr>
<td>SCIP-Inf-3h</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Vascular Surgery</td>
</tr>
</tbody>
</table>

Performance Measure Name: Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time

Description: Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time. The Society of Thoracic Surgeons (STS) Practice Guideline for Antibiotic Prophylaxis in Cardiac Surgery (2006) indicates that there is no reason to extend antibiotics beyond 48 hours for cardiac surgery and very explicitly states that antibiotics should not be extended beyond 48 hours even with tubes and drains in place for cardiac surgery.

Rationale: A goal of prophylaxis with antibiotics is to provide benefit to the patient with as little risk as possible. It is important to maintain therapeutic serum and tissue levels throughout the operation. Intraoperative re-dosing may be needed for long operations. However, administration of antibiotics for more than a few hours after the incision is closed offers no additional benefit to the surgical patient. Prolonged administration does
increase the risk of Clostridium difficile infection and the development of antimicrobial resistant pathogens.

**Type of Measure:** Process

**Improvement Noted As:** An increase in the rate.

**Numerator Statement:** Number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after *Anesthesia End Time* (48 hours for CABG or Other Cardiac Surgery).

- **Included Populations:** Not Applicable
- **Excluded Populations:** None

**Data Elements:**
- Anesthesia End Date
- Anesthesia End Time
- Antibiotic Administration Date
- Antibiotic Administration Time

**Denominator Statement:** All selected surgical patients with no evidence of prior infection.

- **Included Populations:**
  - An *ICD-9-CM Principal Procedure Code* of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes)
  - An *ICD-9-CM Principal Procedure Code* of selected surgeries (as defined in Appendix A, Table 5.01-5.08 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 who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 for ICD-9-CM codes)
  - Patients enrolled in clinical trials
  - Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
  - Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA) documented infection prior to surgical procedure of interest
  - Patients who expired perioperatively
  - Patients who had other procedures requiring general or spinal anesthesia that occurred within three days (four days for CABG or Other Cardiac Surgery)
Surgery) prior to or after the procedure of interest (during separate surgical episodes) during this hospital stay

- Patients who were receiving antibiotics more than 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics)
- Patients who were receiving antibiotics within 24 hours prior to arrival (except colon surgery patients taking oral prophylactic antibiotics)
- Patients who did not receive any antibiotics during this hospitalization.
- Patients who received urinary antiseptics only (as defined in Appendix C, Table 3.11)
- Patients with Reasons to Extend Antibiotics.

**Data Elements:**

- Admission Date
- Anesthesia Start Date
- Antibiotic Administration Route
- Antibiotic Name
- Antibiotic Received
- Birthdate
- Clinical Trial
- Discharge Date
- ICD-9-CM Principal Diagnosis Code
- ICD-9-CM Principal Procedure Code
- Infection Prior to Anesthesia
- Oral Antibiotics
- Other Surgeries
- Perioperative Death
- Reasons to Extend Antibiotics
- Surgical Incision Date
- Surgical Incision Time

**Risk Adjustment:** No

**Data Collection Approach:** Retrospective data sources for required data elements include administrative data and medical records.

**Data Accuracy:** Abstracted antibiotics are those administered from the time of arrival through the first 48 hours (72 hours for CABG or Other Cardiac Surgery) after the Anesthesia End Time. Refer to Appendix C, Table 2.1, which contains a complete listing of antibiotics.

**Measure Analysis Suggestions:** Consideration may be given to relating this measure to SCIP-Inf-1 and SCIP-Inf-2 in order to evaluate to which aspects of antibiotic prophylaxis would most benefit from an improvement effort. The process-owners of the timing of discontinuation of antibiotics subsequent to surgery include physicians/APNs/PAs, the post-surgical recovery team, as well as the postoperative
nursing unit. By including the appropriate groups involved in the postoperative care process, one can more clearly ascertain where in the process the team may need to focus for improvement.

**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:** Overall aggregate rate for all surgeries and stratified rates by data element *ICD-9-CM Principal Procedure Code*, generated from count data reported as a proportion.

**Selected References:**
**SCIP-Inf-3: Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time**

**Numerator:** Number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after *Anesthesia End Time* (48 hours for CABG or Other Cardiac Surgery).

**Denominator:** All selected surgical patients with no evidence of prior infection.

---

**Variable Key:**
- Patient Age
- Antibiotic Days I
- Antibiotic Days II
- Antibiotic Timing I
- Antibiotic Timing II
- Surgery Days
- Exclusion Flag

---

**Stratification Table:**

<table>
<thead>
<tr>
<th>Set</th>
<th>Stratified By *Principal Procedure Code</th>
<th>(Allowable Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf3a</td>
<td>Overall Rate</td>
<td>**</td>
</tr>
<tr>
<td>SCIP-Inf3b</td>
<td>CABG</td>
<td>Table 5.01</td>
</tr>
<tr>
<td>SCIP-Inf3c</td>
<td>Other Cardiac Surgery</td>
<td>Table 5.02</td>
</tr>
<tr>
<td>SCIP-Inf3d</td>
<td>Hip Arthroplasty</td>
<td>Table 5.04</td>
</tr>
<tr>
<td>SCIP-Inf3e</td>
<td>Knee Arthroplasty</td>
<td>Table 5.05</td>
</tr>
<tr>
<td>SCIP-Inf3f</td>
<td>Colon Surgery</td>
<td>Table 5.03</td>
</tr>
<tr>
<td>SCIP-Inf3g</td>
<td>Hysterectomy</td>
<td>Table 5.06 or 5.07</td>
</tr>
<tr>
<td>SCIP-Inf3h</td>
<td>Vascular Surgery</td>
<td>Table 5.08</td>
</tr>
</tbody>
</table>

* This refers to the data element 'ICD-9-CM Principal Procedure Code'. Each case will be stratified according to the principal procedure code, after the Category Assignments are completed and the overall rate is calculated.

**No allowable value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.**

---

**Flowchart Description:**

- **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.

- **Patient Age (in years): Admission Date ~ Birthdate**
  - Use the month and day portion of admission date and birthdate to yield the most accurate age.

  - **Patient Age**
    - < 18 years
    - >= 18 years
      - **ICD-9-CM Principal Procedure Code**
        - On Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08
          - Inf-3
        - Not on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08
          - Inf-3

  - **ICD-9-CM Principal Diagnosis Code**
    - On Table 5.09
      - Inf-3
    - Not on Table 5.09
      - Inf-3

  - **Clinical Trial**
    - = Y
      - Inf-3
    - = N
      - Inf-3

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Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)  SCIP-Inf -3-5
Antibiotic Days I = Surgical Incision Date - Antibiotic Administration Date (in days)

- If Antibiotic Days I > 1 for at least one antibiotic dose, proceed.
- If Antibiotic Days I ≤ 1 for all antibiotic doses, proceed.
- If Antibiotic Days I = 1 for any antibiotic dose, proceed.

Surgical Incision Time
- If Non-UTD, Antibiotic Days I = 0.
- If UTD, Antibiotic Days I = 1.

Antibiotic Administration Time
- If Non-UTD, Antibiotic Days I = 0.
- If UTD, Antibiotic Days I = 1.

Antibiotic Timing I = Surgical Incision Date and Surgical Incision Time - Antibiotic Administration Date and Antibiotic Administration Time (in minutes).

- If Antibiotic Timing I > 1440 minutes for any antibiotic dose, proceed.
- If Antibiotic Timing I ≤ 1440 minutes for all antibiotic doses with non-UTD date and time, proceed.

ICD-9-CM Principal Procedure Code
- If Not on Table 5.03, Antibiotic Days I = 0.
- If On Table 5.03, Antibiotic Days I = 1.

Oral Antibiotics
- If Oral Antibiotics = N, Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I ≤ 0.
- If Oral Antibiotics = Y, Antibiotic Days I = 0.

Antibiotic Name
- If Antibiotic Name on Table 2.1, Proceed.
- If Antibiotic Name non-UTD or not on Table, Exclude antibiotic doses on Table 3.11.

Note: Proceed only with antibiotic doses that have an associated non-UTD date.

Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or 'UTD'.
Anesthesia End Date

Non-UTD Value

Antibiotic Days II = Antibiotic Administration Date - Anesthesia End Date (in days)

Set Exclusion Flag (for all cases) = 'No'

If all the antibiotic doses of a case satisfy one of the two following conditions, set Exclusion Flag (for this case) = 'Yes'. These conditions are:
1) Antibiotic Days II is greater than 3 days regardless of table on which procedure code is on;
OR
2) Antibiotic Days II is greater than 2 days AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07 or 5.08

Exclusion Flag = Yes

No

Remove any dose that satisfies one of the two following conditions. These conditions are:
3) Antibiotic Days II is greater than 3 days regardless of procedure on which procedure code is on;
OR
4) Antibiotic Days II is greater than 2 days AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07 or 5.08

Antibiotic Days II ≤ 0 for all antibiotic doses

> 0 for at least one antibiotic dose

ICD-9-CM Principal Procedure Code

On Table 5.01 or 5.02

Antibiotic Days II < 2 days for all antibiotic doses

≥ 2 days for at least one antibiotic dose

On Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08

Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)  SCIP-Inf -3-8
Non-UTD time for at least one antibiotic dose

Remove from consideration any antibiotic doses for which Antibiotic Administration Time = UTD

Antibiotic Timing II = Antibiotic Administration Date and Antibiotic Administration Time - Anesthesia End Date and Anesthesia End Time (in minutes)

Set Exclusion Flag (for all cases) = 'No'

If all the antibiotic doses of a case satisfy one of the two following conditions, set Exclusion Flag (for this case) = 'Yes'. These conditions are: 1) Antibiotic Timing II is greater than 4320 minutes; OR 2) Antibiotic Timing II is greater than 2880 minutes AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07 or 5.08.

Remove any dose that satisfies one of the two following conditions. These conditions are: 1) Antibiotic Timing II is greater than 4320 minutes; OR 2) Antibiotic Timing II is greater than 2880 minutes AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07 or 5.08.

Reasons To Extend Antibiotics = 4
Any = 1, 2, 3
And None = 4

Case Will Be Rejected

Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)
Not in Measure Population

For all Stratified Measures (b-h)

Overall Rate Category Assignment

= B or X

= D or E

ICD-9-CM Principal Procedure Code

On Table 5.01

On Table 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08

Set the Measure Category Assignment for the strata measures (SCIP-Inf-3b through SCIP-Inf-3h) = 'B'

Note: Initialize the Measure Category Assignment for each strata measure (b-h) = 'B'.

Do not change the Measure Category Assignment that was already calculated for the overall rate (SCIP-Inf-3a).

The rest of the algorithm will reset the appropriate Measure Category Assignment to be equal to the overall rate's (SCIP-Inf-3a) Measure Category Assignment.

Set the Measure Category Assignment for measure SCIP-Inf-3b = the Measure Category Assignment for measure SCIP-Inf-3a

Set the Measure Category Assignment for SCIP-Inf-3c = the Measure Category Assignment for measure SCIP-Inf-3a

Set the Measure Category Assignment for SCIP-Inf-3d = the Measure Category Assignment for measure SCIP-Inf-3a

For Stratified Measure SCIP-Inf-3b

For Stratified Measure SCIP-Inf-3c

For Stratified Measure SCIP-Inf-3d
Set the Measure Category Assignment for measure SCIP-Inf-3e = the Measure Category Assignment for measure SCIP-Inf-3a

Set the Measure Category Assignment for measure SCIP-Inf-3f = the Measure Category Assignment for measure SCIP-Inf-3a

Set the Measure Category Assignment for measure SCIP-Inf-3g = the Measure Category Assignment for measure SCIP-Inf-3a

Set the Measure Category Assignment for measure SCIP-Inf-3h = the Measure Category Assignment for measure SCIP-Inf-3a
SCIP-Infection (Inf)-3: Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time

**Numerator:** Number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time (48 hours for Coronary Artery Bypass Graft [CABG] or Other Cardiac Surgery).

**Denominator:** All selected surgical patients with no evidence of prior infection.


**Stratification Table**

The Stratification Table includes the Set Number, Stratified By, and the Principal Procedure Code (Allowable Value). The Principal Procedure Code refers to the data element ICD-9-CM Principal Procedure Code. Each case will be stratified according to the principal procedure code, after the Category Assignments are completed and the overall rate is calculated.

<table>
<thead>
<tr>
<th>Set Number</th>
<th>Stratified By the Overall Rate</th>
<th>Principal Procedure Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf-3a</td>
<td>Overall Rate</td>
<td>No allowable Value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.</td>
</tr>
<tr>
<td>SCIP-Inf-3b</td>
<td>Coronary Artery Bypass Graft (CABG)</td>
<td>Table 5.01</td>
</tr>
<tr>
<td>SCIP-Inf-3c</td>
<td>Other Cardiac Surgery</td>
<td>Table 5.02</td>
</tr>
<tr>
<td>SCIP-Inf-3d</td>
<td>Hip Arthroplasty</td>
<td>Table 5.04</td>
</tr>
<tr>
<td>SCIP-Inf-3e</td>
<td>Knee Arthroplasty</td>
<td>Table 5.05</td>
</tr>
<tr>
<td>SCIP-Inf-3f</td>
<td>Colon Surgery</td>
<td>Table 5.03</td>
</tr>
<tr>
<td>SCIP-Inf-3g</td>
<td>Hysterectomy</td>
<td>Table 5.06 or Table 5.07</td>
</tr>
<tr>
<td>SCIP-Inf-3h</td>
<td>Vascular Surgery</td>
<td>Table 5.08</td>
</tr>
</tbody>
</table>

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for Centers for Medicare and Medicaid Services (CMS). Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)
b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code.

4. Check ICD-9-CM Principal Procedure Code
   
a. If the ICD-9-CM Principal Procedure Code is not on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

  b. If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and proceed to recheck ICD-9-CM Principal Diagnosis Code.

5. Check ICD-9-CM Principal Diagnosis Code
   
a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.09, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

  b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.09, continue processing and proceed to Clinical Trial.

6. 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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

  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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

  c. If Clinical Trial equals No, continue processing and proceed to Anesthesia Start Date.

7. 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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

  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 for CMS. Proceed to step 46 and
check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

c. If Anesthesia Start Date equals a Non Unable To Determine Value, continue processing and proceed to the Surgery Days calculation.

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

9. 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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Surgery Days is greater than or equal to zero, continue processing and proceed to Infection Prior to Anesthesia.

10. Check Infection Prior to Anesthesia
    a. If Infection Prior to Anesthesia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
    b. If Infection Prior to Anesthesia equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
    c. If Infection Prior to Anesthesia equals No, continue processing and proceed to Perioperative Death.

11. 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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
    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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
    c. If Perioperative Death equals No, continue processing and proceed to Surgical Incision Date.

12. Check Surgical Incision Date
    a. If the Surgical Incision Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS.
Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

b. If the Surgical Incision 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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

c. If Surgical Incision Date equals a Non Unable To Determine Value, continue processing and proceed to Other Surgeries.

13. Check Other Surgeries

a. If Other Surgeries is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

b. If Other Surgeries equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

c. If Other Surgeries equals No, continue processing and proceed to Antibiotic Received.

14. Check Antibiotic Received

a. If Antibiotic Received equals 1 or 2, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.

b. If Antibiotic Received equals 4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

c. If Antibiotic Received equals 3, continue processing and proceed to step 19 and check Antibiotic Name. Do not check step 16 ICD-9-CM Principal Procedure Code, step 17 Oral Antibiotics or step 18 Antibiotic Received.

15. Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Received equals 1 or 2

a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the measure population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to check Oral Antibiotics.
16. Check Oral Antibiotics  
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.  
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.  
   c. If Oral Antibiotics equals Yes, continue processing and proceed to recheck Antibiotic Received.

17. Recheck Antibiotic Received  
   a. If Antibiotic Received equals 1, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.  
   b. If Antibiotic Received equals 2, continue processing and proceed to Antibiotic Name.

18. Check Antibiotic Name  
   a. If the Antibiotic Grid is not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or Unable to Determine.  
   b. If the Antibiotic Name is on Table 2.1, continue processing and recheck Antibiotic Name.

19. Recheck Antibiotic Name  
   a. If all of the Antibiotic Names are on Table 3.11, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.  
   b. If at least one of the Antibiotic Names is NOT on Table 3.11, continue processing and proceed to Antibiotic Administration Route. Exclude antibiotic doses on Table 3.11 from further processing.

20. Check Antibiotic Administration Route  
   a. If the Antibiotic Administration Route is equal to 3 or 10 for all antibiotic doses, the case will proceed to a Measure Category Assignment of B and

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will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

b. If the Antibiotic Administration Route is equal to 1 or 2 for any antibiotic dose, continue processing and proceed to Antibiotic Administration Date. Proceed only with antibiotic doses on Table 2.1 that are administered via routes 1 or 2.

21. Check Antibiotic Administration Date
   a. If the Antibiotic Administration Date is equal to Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Antibiotic Administration Date is equal to a Non Unable to Determine date for at least one antibiotic dose, continue processing and proceed to the Antibiotic Days I calculation. Note: Proceed only with antibiotic doses that have an associated Non Unable to Determine date.

22. Calculate Antibiotic Days I. Antibiotic Days I, in days, is equal to the Surgical Incision Date minus the Antibiotic Administration Date.

23. Check Antibiotic Days I
   a. If the Antibiotic Days I is greater than 1 for at least one antibiotic dose, continue processing and recheck the ICD-9-CM Principal Procedure Code. Do not recheck step 27 Antibiotic Days I, step 28 Surgical Incision Time, steps 29 and 30 Antibiotic Administration Time, or step 31 Antibiotic Timing I.
   b. If the Antibiotic Days I is less than or equal to 1 for all antibiotic doses, continue processing. Proceed to step 27 and recheck Antibiotics Days I. Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics.

24. Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Days I is greater than 1 for at least one antibiotic dose
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics.
25. Check Oral Antibiotics
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   c. If Oral Antibiotics equals Yes, continue processing and proceed to step 35 and check Anesthesia End Date. Do not recheck step 27 Antibiotic Days I, step 28 Surgical Incision Time, steps 29 and 30 Antibiotic Administration Time, or step 31 Antibiotic Timing I.

26. Recheck Antibiotic Days I only if Antibiotic Days I was less than or equal to 1 for all antibiotic doses
   a. If the Antibiotic Days I is less than or equal to zero for ALL antibiotic doses, continue processing. Proceed to step 35 and check Anesthesia End Date. Do not check step 28 Surgical Incision Time, step 29 and 30 Antibiotic Administration Time, or step 31 Antibiotic Timing I.
   b. If the Antibiotic Days I is equal to 1 for ANY antibiotic dose, continue processing and proceed to Surgical Incision Time.

27. Check Surgical Incision Time
   a. If the Surgical Incision Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Surgical Incision Time is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   c. If the Surgical Incision Time is equal to a Non Unable to Determine Value, continue processing and check Antibiotic Administration Time.

28. Check Antibiotic Administration Time
   a. If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
b. If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and recheck Antibiotic Administration Time.

29. Recheck Antibiotic Administration Time
   a. If the Antibiotic Administration Time equals Unable to Determine for ANY antibiotic dose with Antibiotic Days I equal to 1, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Antibiotic Administration Time equals a Non Unable to Determine time for ALL antibiotic doses with Antibiotic Days I equal to 1, continue processing and proceed to the Antibiotic Timing I calculation.

30. Calculate Antibiotic Timing I. Antibiotic Timing I, in minutes, is equal to the Surgical Incision Date and Surgical Incision Time minus the Antibiotic Administration Date and Administration Time. Calculate Antibiotic Timing I for all antibiotic doses with non Unable to Determine date and time. Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I less than or equal to zero.

31. Check Antibiotic Timing I
   a. If the Antibiotic Timing I is greater than 1440 minutes for any antibiotic dose, continue processing and recheck the ICD-9-CM Principal Procedure Code. Proceed with antibiotic does that have Antibiotic Timing I calculated, or Antibiotic Days I less than or equal to zero.
   b. If the Antibiotic Timing I is less than or equal to 1440 minutes for all antibiotic doses with non Unable to Determine date and time, continue processing. Proceed to step 35 and check Anesthesia End Date. Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics.

32. Recheck ICD-9-CM Principal Procedure Code only if the Antibiotic Timing I is greater than 1440 minutes for any antibiotic dose
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics.
33. Check Oral Antibiotics
   a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   c. If Oral Antibiotics equals Yes, continue processing and proceed to Anesthesia End Date.

34. 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 for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Anesthesia End Date is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   c. If the Anesthesia End Date is equal to a Non Unable to Determine value, continue processing and proceed to the Antibiotic Days II calculation.

35. Calculate Antibiotic Days II. Antibiotic Days II, in days, is equal to the Antibiotic Administration Date minus the Anesthesia End Date.

36. Set Exclusion Flag, for all cases, to equal No. If all of the antibiotic doses of a case satisfy one of the two following conditions, set Exclusion Flag (for this case) to equal ‘Yes’. These conditions are:
   a. Antibiotic Days II is greater than 3 days regardless of table on which procedure code is on; OR
   b. Antibiotic Days II is greater than 2 days AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07, or 5.08.

37. Check Exclusion Flag
   a. If the Exclusion Flag is equal to Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Exclusion Flag is equal to No, continue processing and proceed to check Antibiotic Days II. Remove any dose that satisfies one of the two following conditions. These conditions are:
1. Antibiotic Days II is greater than 3 days regardless of procedure on which procedure code is on; OR
2. Antibiotic Days II is greater than 2 days AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07 or 5.08.

38. Check Antibiotic Days II
   a. If the Antibiotic Days II is less than or equal to zero for all antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Antibiotic Days II is greater than zero for at least one antibiotic dose, continue processing and recheck ICD-9-CM Principal Procedure Code.

   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02, continue processing and recheck Antibiotic Days II.
      1. If the Antibiotic Days II is less than 2 days for antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
      2. If the Antibiotic Days II is greater than or equal to 2 days for at least one antibiotic dose, continue processing and proceed to Anesthesia End Time.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and proceed to Anesthesia End Time.

40. Check Anesthesia End Time
   a. If the Anesthesia End Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Anesthesia End Time is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   c. If the Anesthesia End Time is equal to a Non Unable to Determine Value, continue processing and recheck Antibiotic Administration Time.
41. Recheck Antibiotic Administration Time
   a. If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and proceed to the Antibiotic Timing II calculation. Remove from consideration any antibiotic doses for which Antibiotic Administration Time equals Unable to Determine.

42. Calculate Antibiotic Timing II. Antibiotic Timing II, in minutes, is equal to the Antibiotic Administration Date and Antibiotic Administration Time minus Anesthesia End Date and Anesthesia End Time.

43. Set Exclusion Flag. Set Exclusion Flag, for all cases, to equal 'No'. If all of the antibiotic doses of a case satisfy one of the two following conditions, set Exclusion Flag (for this case) to equal 'Yes'. These conditions are:
   a. Antibiotic Timing is greater than 4320 minutes; OR
   b. Antibiotic Timing II is greater than 2880 minutes AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07, or 5.08.

44. Check Exclusion Flag
   a. If the Exclusion Flag equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 46 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If the Exclusion Flag equals No, continue processing and recheck ICD-9-CM Principal Procedure Code and Antibiotic Timing II. Remove any dose that satisfies one of the two following conditions. These conditions are:
      1. Antibiotic Timing II is greater than 4320 minutes; OR
      2. Antibiotic Timing II is greater than 2880 minutes AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07, or 5.08.

45. Recheck ICD-9-CM Principal Procedure Code and Antibiotic Timing II
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 and Antibiotic Timing II is less than or equal to 2880 minutes for all antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
b. If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 and Antibiotic Timing II is greater than 2880 minutes for at least one antibiotic dose, continue processing and proceed to check Reasons To Extend Antibiotics.

1. If Reasons To Extend Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

2. If Reasons To Extend Antibiotics equals 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

3. If any Reasons To Extend Antibiotics equals 1, 2, 3 and None equals 4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

c. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08 and Antibiotic Timing II is less than or equal to 1440 minutes for all antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

d. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08 and Antibiotic Timing II is greater than 1440 minutes for at least one antibiotic dose, continue processing and proceed to check Reasons To Extend Antibiotics.

1. If Reasons To Extend Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

2. If Reasons To Extend Antibiotics equals 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

3. If any Reasons To Extend Antibiotics equals 1, 2, 3 and None equals 4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

46. For The Joint Commission Only, continue processing for the Stratified Measures.

Note: Initialize the Measure Category Assignment for each strata measure (b-h)
to equal B, not in the Measure Population. Do not change the Measure Category Assignment that was already calculated for the overall rate (SCIP-Inf-3a). The rest of the algorithm will reset the appropriate Measure Category Assignment to be equal to the overall rate’s (SCIP-Inf-3a) Measure Category Assignment.

47. Check Overall Rate Category Assignment
   a. If the Overall Rate Category Assignment is equal to B or X, set the Measure Category Assignment for the strata measures (SCIP-Inf-3b through SCIP-Inf-3h) to equal B, not in the Measure Population. Stop processing.
   b. If the Overall Rate Category Assignment is equal to D or E, continue processing and check the ICD-9-CM Principal Procedure Code.

48. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.01, for Stratified Measure SCIP-Inf-3b, set the Measure Category Assignment for measure SCIP-Inf-3b to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

49. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.02, for Stratified Measure SCIP-Inf-3c, set the Measure Category Assignment for measure SCIP-Inf-3c to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

50. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.04, for Stratified Measure SCIP-Inf-3d, set the Measure Category Assignment for measure SCIP-Inf-3d to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.
51. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.05, for Stratified Measure SCIP-Inf-3e, set the Measure Category Assignment for measure SCIP-Inf-3e to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

52. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.03, for Stratified Measure SCIP-Inf-3f, set the Measure Category Assignment for measure SCIP-Inf-3f to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

53. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, for Stratified Measure SCIP-Inf-3g, set the Measure Category Assignment for measure SCIP-Inf-3g to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.08, for Stratified Measure SCIP-Inf-3h, set the Measure Category Assignment for measure SCIP-Inf-3h to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.
Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID #: SCIP-Inf-4

Performance Measure Name: Cardiac Surgery Patients With Controlled 6 A.M. Postoperative Blood Glucose

Description: Cardiac surgery patients with controlled 6 A.M. blood glucose (less than or equal to 200 mg/dL) on postoperative day one (POD 1) and postoperative day two (POD 2) with Anesthesia End Date being postoperative day zero (POD 0).

Rationale: Hyperglycemia has been associated with increased in-hospital morbidity and mortality for multiple medical and surgical conditions. In a study by Zerr, et al (1997), the risk of infection was significantly higher for patients undergoing coronary artery bypass graft (CABG) if blood glucose levels were elevated. Furthermore, Zerr, et al (2001), demonstrated that the incidence of deep wound infections in diabetic patients undergoing cardiac surgery was reduced by controlling mean blood glucose levels below 200mg/dL in the immediate postoperative period. Latham, et al (2001), found that hyperglycemia in the immediate postoperative phase increases the risk of infection in both diabetic and nondiabetic patients and the higher the level of hyperglycemia, the higher the potential for infection in both patient populations. A study conducted in Leuven, Belgium (Van den Berghe, 2001), demonstrated that intensive insulin therapy not only reduced overall in-hospital mortality but also decreased blood stream infections, acute renal failure, red cell transfusions, ventilator support, and intensive care. Hyperglycemia is a risk factor that, once identified, could minimize adverse outcomes for cardiac surgical patients.

Type of Measure: Process

Improvement Noted As: An increase in the percentage.

Numerator Statement: Surgery patients with controlled 6 A.M. blood glucose (less than or equal to 200 mg/dL) on POD 1 and POD 2.

Included populations: Not applicable

Excluded Populations: None
Data Elements:
- Glucose POD 1
- Glucose POD 2

Denominator Statement: Cardiac surgery patients with no evidence of prior infection.

Included Populations:
- An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes)
  AND
- An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.11 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 who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 for ICD-9-CM codes)
- Burn and transplant patients (as defined in Appendix A, Tables 5.14 and 5.15 for ICD-9-CM codes)
- Patients enrolled in clinical trials
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA) documented infection prior to surgical procedure of interest
- Patients who expired perioperatively
- Patients whose post-operative length of stay is less than or equal to 2 days

Data Elements:
- Anesthesia End Date
- Anesthesia Start Date
- Admission Date
- Birthdate
- Clinical Trial
- Discharge Date
- ICD-9-CM Principal Diagnosis Code
- ICD-9-CM Principal Procedure Code
- Infection Prior to Anesthesia
- Perioperative Death

Risk Adjustment: No
Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

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: It is important that blood glucose levels be maintained and documented throughout the entire postoperative period. In the course of quality improvement efforts, hospitals may find it useful to drill down to the responses for the data elements Glucose POD1 and Glucose POD2. Further insight may be gained by examining the consistency and values of blood glucose diagnostics and documentation within the organization.

Sampling: Yes, please refer to the measure set 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:


SCIP-Inf-4: Cardiac Surgery Patients With Controlled 6 A.M. Postoperative Blood Glucose

Numerator: Surgery patients with controlled 6 A.M. blood glucose (≤200mg/dL) on POD1 and POD2.
Denominator: Cardiac surgery patients with no evidence of prior Infection.

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Variable Key:
- Patient Age
- Days I
- Surgery Days

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.

Patient Age (in years) = Admission Date – Birthdate

Use the month and day portion of admission date and birthdate to yield the most accurate age.

- Patient Age < 18 Years
  - Inf-4 B
- Patient Age ≥ 18 years
  - ICD-9-CM Principal Procedure Code
    - On Table 5.11
      - Inf-4 B
    - Not on Table 5.11
      - Inf-4 B
  - ICD-9-CM Principal Diagnosis Code
    - On Tables 5.09, 5.14, 5.15
      - Inf-4 B
    - None on Tables 5.09, 5.14, 5.15
      - Inf-4 B
  - Clinical Trial = Y
    - Inf-4 B
  - Clinical Trial = N
    - Inf-4 B
  - Clinical Trial = Missing
    - Inf-4 X

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**SCIP-Inf-4-6**

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**Inf-4**

**Anesthesia Start Date**

- Non-UTD Value

**Inf-4**

**Infection Prior to Anesthesia**

- **= Y**

**Inf-4**

**Perioperative Death**

- Missing

**Inf-4**

**Anesthesia End Date**

- Non-UTD Value

**Inf-4**

**Days I = Discharge Date - Anesthesia End Date (in days)**

**Inf-4**

**Glucose POD1**

- **≤ 200**

**Inf-4**

**Glucose POD2**

- **≤ 200**

**Inf-4**

**Infection Prior to Anesthesia**

- **= N**

**Inf-4**

**Anesthesia Start Date**

- **= UTD**

**Inf-4**

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

**Inf-4**

**Surgery Days**

- **≥ 0**

**Inf-4**

**Surgery Days**

- **< 0**

**Inf-4**

**Perioperative Death**

- Missing

**Inf-4**

**Days I**

- **≤ 2 days**

**Inf-4**

**Glucose POD1**

- **> 200 or UTD**

**Inf-4**

**Glucose POD2**

- **≤ 200**

**Inf-4**

**Infection Prior to Anesthesia**

- **= N**

**Inf-4**

**Days**

- **> 2 days**

**Inf-4**

**Glucose POD1**

- Missing

**Inf-4**

**Glucose POD2**

- Missing

**Inf-4**

**Stop**

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**Case Will Be Rejected**

**In Numerator Population**

**Inf-4**

**In Denominator Population**

**Inf-4**

**Inf-4**
SCIP-Infection (Inf)-4: Cardiac Surgery Patients With Controlled 6 A.M. Postoperative Blood Glucose

Numerator: Surgery patients with controlled 6 A.M. blood glucose (less than or equal to 200 milligrams per deciliter [mg/dL]) on Postoperative Day (POD) 1 and POD 2.

Denominator: Cardiac surgery patients with no evidence of prior infection.

Variable Key: Patient Age, Days I, Surgery Days

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code.

4. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.11, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.11, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

5. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.09, 5.14, or 5.15, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.09, 5.14, or 5.15, continue processing and proceed to Clinical Trial.

6. 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.

7. 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.

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

9. 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 Infection Prior to Anesthesia.

10. Check Infection Prior to Anesthesia
a. If Infection Prior to Anesthesia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
b. If Infection Prior to Anesthesia 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 Infection Prior to Anesthesia equals No, continue processing and proceed to Perioperative Death.

11. 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 Anesthesia End Date.
12. 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 the Anesthesia End Date equals a Non Unable to Determine value, continue processing and proceed to the Days I calculation.

13. Calculate Days I. Days I, in days, is equal to the Discharge Date minus the Anesthesia End Date.

14. Check Days I
   a. If Days I is less than or equal to 2 days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Days I is greater than 2 days, continue processing and proceed to Glucose POD 1.

15. Check POD 1
   a. If Glucose POD 1 is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Glucose POD 1 is greater than 200 or 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 Glucose POD 1 is less than or equal to 200, continue processing and proceed to Glucose POD 2.

16. Check POD 2
   a. If Glucose POD 2 is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Glucose POD 2 is greater than 200 or 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 Glucose POD 2 is less than or equal to 200, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
Measure Information Form
Collected For: The Joint Commission Only
CMS Voluntary Only

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-Inf-6

Performance Measure Name: Surgery Patients with Appropriate Hair Removal

Description: Surgery patients with appropriate surgical site hair removal. No hair removal, hair removal with clippers or depilatory is considered appropriate. Shaving is considered inappropriate.

Rationale: Studies show that shaving causes multiple skin abrasions that later may become infected. In a randomized study of 1,980 adult patients undergoing cardiopulmonary bypass surgeries, Ko, et al (1992), reported a significantly higher rate of infection among patients who were shaved with a razor than those who had hair removal by electric clippers before skin incision. In another randomized trial of 200 patients undergoing elective inguinal herniorrhapxy, Balthazar, et al (1982), concluded that hair removal with electric clippers immediately prior to the procedures “did not increase the risk of postoperative wound infection” (p. 799). In a systematic literature review by Kjonniksen, et al (2002), there was no strong evidence to contraindicate preoperative hair removal; however, there was strong evidence against hair removal with a razor. This review recommended depilatory or electric clippers immediately prior to surgery when hair removal was required. Alexander, et al (1983), reported that clippers, used on the morning of surgery, resulted in reduced surgical site infections and healthcare expenditures.

Type of Measure: Process

Improvement Noted As: An increase in the rate.

Numerator Statement: Surgery patients with surgical site hair removal with clippers or depilatory or with no surgical site hair removal.

Included Populations: Not applicable

Excluded Populations: None

Data Elements:
Preoperative Hair Removal
Denominator Statement: All selected surgery patients.

Included Populations:
An 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 performed their own hair removal

Data Elements:
- Admission Date
- Anesthesia Start Date
- Birthdate
- Clinical Trial
- Discharge Date
- ICD-9-CM Principal Procedure Code

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

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: Surgical site hair removal should be performed within the hospital. In the course of quality improvement efforts, hospitals may find it useful to drill down to the responses for the data element Preoperative Hair Removal. It may be instructive to tally frequency with which each allowable value occurs. Possible quality improvement initiatives may include: instructing patients against performing their own hair removal, and instructing staff as to the appropriate methods and timing of hair removal.

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:


**SCIP-Inf-6:** Surgery Patients with Appropriate Hair Removal

**Numerator:**
Surgery patients with surgical site hair removal with clippers or depilatory or with no surgical site hair removal.

**Denominator:**
All selected surgery patients.

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**Variable Key:**
- Patient Age
- Surgery Days
- Preoperative Hair Removal
- Anesthesia Start Date
- Infection
- Inf-6
- UTD
- Non-UTD Value
- Case Will Be Rejected

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**Note:** No allowable value can occur more than once. Allowable values of '1' or '7' cannot be combined with each other or with any of the other allowable values.
SCIP-Infection (Inf)-6: Surgery Patients with Appropriate Hair Removal

Numerator: Surgery patients with surgical site hair removal with clippers or depilatory or with no surgical site hair removal.

Denominator: All selected surgery patients.

Variable Key: Patient Age, Surgery Days

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to Clinical Trial.

4. 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.

5. 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.

6. Calculate Surgery Days. Surgery Days, in days, is equal to the Anesthesia Start Date minus the Admission Date.
7. 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 Preoperative Hair Removal.

8. Check Preoperative Hair Removal – Note: No allowable value can occur more than once. Allowable values of ‘1’ or ‘7’ cannot be combined with each other or with any of the other allowable values.  
   a. If Preoperative Hair Removal is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.  
   b. If Any Preoperative Hair Removal equals 6, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.  
   c. If Any Preoperative Hair Removal equals 1, 2, 3, 4, 5, 7, or 8 and None equals 6, continue processing and recheck Preoperative Hair Removal.

9. Recheck Preoperative Hair Removal  
   a. If Any Preoperative Hair Removal equals 2, 5, or 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.  
   b. If Any Preoperative Hair Removal equals 1, 3, 4, or 8 and None equals 2, 5, or 7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population.
Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-Inf-9

Performance Measure Name: Urinary catheter removed on Postoperative Day 1 (POD 1) or Postoperative Day 2 (POD 2) with day of surgery being day zero

Description: Surgical patients with urinary catheter removed on Postoperative Day 1 or Postoperative Day 2 with day of surgery being day zero.

Rationale: It is well-established that the risk of catheter-associated urinary tract infection (UTI) increases with increasing duration of indwelling urinary catheterization. In 2000, Saint reported the results of a pooled analysis of 10 prospective trials dating from 1983 to 1995 which estimated that bacteriuria will develop in 26% of patients after 2 to 10 days of catheterization (95% CI 23-25%). Additional pooled analyses demonstrated that 24% (95% CI 16% to 32%) of those patients will develop symptomatic UTI and bacteremia will develop in 3.6%. Among surgical patients, two studies of postoperative patients discharged to subacute care with urinary catheters were more likely to be readmitted to the hospital with a UTI compared with those who had catheters removed prior to hospital discharge (Wald, 2005 and Wald, 2008). Among selected major surgical patients in the Surgical Infection Project (SIP) cohort, Wald demonstrated (in press) that 85% had perioperative indwelling catheters placed and half of those patients had catheters for greater than 2 days postoperatively. These patients were twice as likely to develop UTIs prior to hospital discharge. On multivariate analysis, those who had indwelling bladder catheters for more than 2 days postoperatively were 21% more likely to develop UTI, significantly less likely to be discharged to home, and had a significant increase in mortality at 30 days. Additional analyses suggest that there is sizeable variation in the duration of postoperative catheterization among hospitals and that hospital factors may account for this variation. In 2006, Stephan reported the results of a multifaceted intervention study in orthopedic surgery patients in which protocols limiting the use and duration of postoperative catheterization played a large role. They reported a resultant 60% reduction in UTI incidence-density.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Number of surgical patients whose urinary catheter is removed on POD 1 or POD 2 with day of surgery being day zero.
Included Populations: Not Applicable

Excluded Populations: None

Data Elements:
- Catheter Removed

Denominator Statement: All selected surgical patients with a catheter in place postoperatively.

Included Populations:
An 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 who had a urological, gynecological or perineal procedure performed (refer to Appendix A, Table 5.16 for ICD-9-CM codes)
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients who expired perioperatively
- Patients whose length of stay was less than two days postoperatively
- Patients who did not have a catheter in place postoperatively
- Patients who had physician/APN/PA documentation of a reason for not removing the urinary catheter postoperatively
- Patients who had a urinary diversion or a urethral catheter or were being intermittently catheterized prior to hospital arrival

Data Elements:
- Admission Date
- Anesthesia End Date
- Anesthesia Start Date
- Birthdate
- Clinical Trial
- Discharge Date
- ICD-9-CM Principal Diagnosis Code
- ICD-9-CM Principal Procedure Code
- ICD-9-CM Other Procedure Code
- Perioperative Death
- Reasons for Continuing Urinary Catheterization
- Urinary Catheter
Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

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: The process-owners for timing of catheter removal, as assessed in this measure, may include clinicians and support staff on the nursing unit. Opportunities may exist in several arenas which, when addressed jointly, can generate true process improvement.

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: Overall aggregate rate for all surgeries and stratified rates by data element ICD-9-CM Principal Procedure Code, generated from count data reported as a proportion.

Selected References:
SCIP-Inf-9: Urinary catheter removed on Postoperative Day 1 (POD 1) or Postoperative Day 2 (POD 2) with day of surgery being day zero.

**Numerator:** Number of surgical patients whose urinary catheter is removed on POD 1 or POD 2 with day of surgery being day zero.

**Denominator:** All selected surgical patients with a catheter in place postoperatively.
Inf-9 H

Anesthesia Start Date

= UTD

Inf-9 D

Non-UTD Value

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

Surgery Days

< 0

Inf-9 B

≥ 0

Penoperative Death

= Y

Inf-9 B

= N

Anesthesia End Date

= UTD

Inf-9 D

Non-UTD Value

Days I = Discharge Date – Anesthesia End Date (in days)

Days I

< 2 days

Inf-9 B

≥ 2 days

Inf-9 I
SCIP-Infection (Inf)-9: Urinary catheter removed on Postoperative Day 1 (POD 1) or Postoperative Day 2 (POD 2) with day of surgery being day zero.

Numerator: Number of surgical patients whose urinary catheter is removed on POD 1 or POD 2 with day of surgery being day zero.

Denominator: All selected surgical patients with a catheter in place postoperatively.

Variable Key: Patient Age, Surgery Days, Days I

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code.

4. Check ICD-9-CM Principal or Other Procedure Code
   a. If the ICD-9-CM Principal or Other Procedure Code is on Table 5.16, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal or Other Procedure Code is not on Table 5.16, continue processing and proceed to Clinical Trial.

5. 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.
6. 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.

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

8. 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 Perioperative Death.

9. 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 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 the Anesthesia End Date equals a Non Unable to Determine value, continue processing and proceed to the Days I calculation.

11. Calculate Days I. Days I, in days, is equal to the Discharge Date minus the Anesthesia End Date.
12. Check Days I
   a. If Days I is less than 2 days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Days I is greater than or equal to 2 days, continue processing and proceed to Urinary Catheter.

13. Check Urinary Catheter
   a. If Urinary Catheter is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Urinary Catheter 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 Urinary Catheter equals Yes, continue processing and proceed to Catheter Removed.

14. Check Catheter Removed
   a. If Catheter Removed is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Catheter Removed equals 1, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
   c. If Catheter Removed equals 2 or 3, continue processing and check Reasons for Continuing Urinary Catheterization.

15. Check Reasons for Continuing Urinary Catheterization
   a. If Reasons for Continuing Urinary Catheterization is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Reasons for Continuing Urinary Catheterization any equals 1 or 2 and none equals 3 the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Reasons for Continuing Urinary Catheterization equals 3, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-Inf-10

Performance Measure Name: Surgery Patients with Perioperative Temperature Management

Description: Surgery patients for whom either active warming was used intraoperatively for the purpose of maintaining normothermia or who had at least one body temperature equal to or greater than 96.8° Fahrenheit/36° Celsius recorded within the 30 minutes immediately prior to or the fifteen minutes immediately after Anesthesia End Time.

Rationale: Core temperatures outside the normal range pose a risk in all patients undergoing surgery. According to the Clinical Guidelines for the Prevention of Unplanned Perioperative Hypothermia by the American Society of PeriAnesthesia Nurses (ASPAN, 2009), published research has correlated impaired wound healing, adverse cardiac events, altered drug metabolism, and coagulopathies with unplanned perioperative hypothermia. A study by Kurtz, et al (1996), found that incidence of culture-positive surgical site infections among those with mild perioperative hypothermia was three times higher than the normothermic perioperative patients. In this study, mild perioperative hypothermia was associated with delayed wound closure and prolonged hospitalization. In a meta-analysis of outcomes and costs, Mahoney and Odom (1999), demonstrated that hypothermia is associated with a significant increase in adverse outcomes, including an increased incidence of infections. The authors also concluded that hypothermia is associated with an increased chance of blood products administration, myocardial infarction, and mechanical ventilation. These adverse outcomes resulted in prolonged hospital stays and increased healthcare expenditures.

Type of Measure: Process

Improvement Noted As: An increase in the rate.

Numerator Statement: Surgery patients for whom either active warming was used intraoperatively for the purpose of maintaining normothermia or who had at least one body temperature equal to or greater than 96.8° Fahrenheit/36° Celsius recorded within the 30 minutes immediately prior to or the fifteen minutes immediately after Anesthesia End Time.

Included Populations: Not applicable
Excluded Populations: None

Data Elements:
Temperature

Denominator Statement: All patients, regardless of age, undergoing surgical procedures under general or neuraxial anesthesia of greater than or equal to 60 minutes duration.

Included Populations:
An 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 who have a Length of Stay greater than 120 days
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients whose length of anesthesia was less than 60 minutes
- Patients who did not have general or neuraxial anesthesia
- Patients with physician/APN/PA documentation of Intentional Hypothermia for the procedure performed

Data Elements:
- Admission Date
- Anesthesia Type
- Anesthesia End Date
- Anesthesia Start Date
- Anesthesia End Time
- Anesthesia Start Time
- Discharge Date
- ICD-9-CM Principal Procedure Code
- Intentional Hypothermia

Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical records.

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: In analyzing any unexpected measure rates for SCIP-Inf-10, hospitals may find it useful to examine the consistency with which temperatures are documented after surgery. Inconsistent documentation will reduce the hospital's score.
**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:**
**SCIP-Inf-10: Surgery Patients with Perioperative Temperature Management**

**Numerator:** Surgery patients for whom either active warming was used intraoperatively for the purpose of maintaining normothermia or who had at least one body temperature equal to or greater than 96.8°F/36°C recorded within the 30 minutes immediately prior to or the fifteen minutes immediately after Anesthesia End Time.

**Denominator:** All patients, regardless of age, undergoing surgical procedures under general or neuraxial anesthesia of greater than or equal to 60 minutes duration.
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**SCIP-Inf-10-5**

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**Intentional Hypothermia**

- **Inf-10 H**
- **Inf-10 X** Missing
- **Inf-10 D**

**Anesthesia Time**

- **Inf-9 X**
- **Inf-10 X**
- **Inf-10 D**

**Temperature**

- **Inf-9 X**
- **Inf-10 D**

**Anesthesia Time**

- **Inf-10 H**
- **Inf-10 X** Missing
- **Inf-10 D**

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**Anesthesia Time**

= Anesthesia End Date and Anesthesia End Time – Anesthesia Start Date and Anesthesia Start Time (in minutes)

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**STOP**

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**Case Will Be Rejected**

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**In Measure Population**

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**Not In Measure Population**

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**In Numerator Population**

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**Non-UTD Value**
SCIP-Infection (Inf)-10: Surgery Patients with Perioperative Temperature Management

Numerator: Surgery patients for whom either active warming was used intraoperatively for the purpose of maintaining normothermia or who had at least one body temperature equal to or greater than 96.8 degrees Fahrenheit (F)/36 degrees Celsius (C) recorded within the 30 minutes immediately prior to or the fifteen minutes immediately after Anesthesia End Time.

Denominator: All patients, regardless of age, undergoing surgical procedures under general or neuraxial anesthesia of greater than or equal to 60 minutes duration.

Variable Key: Surgery Days, Anesthesia Time

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 Anesthesia Type
   a. If Anesthesia Type is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Anesthesia Type equals 4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Anesthesia Type equals 1, 2, or 3, 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 the Anesthesia Start Date equals a Non Unable to Determine value, continue processing and proceed to 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 Anesthesia End Date.

6. **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 the Anesthesia End Date equals a Non Unable to Determine value, continue processing and proceed to Anesthesia Start Time.

7. **Check Anesthesia Start Time**  
   a. If the Anesthesia Start Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.  
   b. If the Anesthesia Start Time 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 the Anesthesia Start Time equals a Non Unable to Determine value, continue processing and proceed to Anesthesia End Time.

8. **Check Anesthesia End Time**  
   a. If the Anesthesia End Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.  
   b. If the Anesthesia End Time 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 the Anesthesia End Time equals a Non Unable to Determine value, continue processing and proceed to the Anesthesia Time calculation.

9. **Calculate Anesthesia Time.**  
   Anesthesia Time, in minutes, is equal to the Anesthesia End Date and Anesthesia End Time minus the Anesthesia Start Date and Anesthesia Start Time.

10. **Check Anesthesia Time**  
    a. If Anesthesia Time is less than 60 minutes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
b. If Anesthesia Time is greater than or equal to 60 minutes, continue processing and proceed to Intentional Hypothermia.

11. Check Intentional Hypothermia
   a. If Intentional Hypothermia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Intentional Hypothermia 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 Intentional Hypothermia equals No, continue processing and check Temperature.

12. Check Temperature
   a. If Temperature is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Temperature equals 3 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If Temperature equals 1 or 2, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
Measure Information Form

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 records.
**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:**


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.

Variable Key:
- Patient Age
- Surgery Days
- Postoperative LOS
- Non-UTD Value
- Missing
- Anesthesia Start Date
- Surgery Days (in days) = Anesthesia Start Date – Admission Date
- Surgery Days ≥ 0
- Perioperative Death
- ICD-9-CM Principal Procedure Code
- On Table 5.26
- None on Table 5.26
- Beta-Blocker Current Medication
- Missing
- Y

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.

Patient Age (in years) = Admission Date – Birthdate
Use the month and day portion of admission date and birthdate to yield the most accurate age:

- Patient Age < 18 years
- Patient Age ≥ 18 years

Clinical Trial

- Card-2 X Missing
- Card-2 B ≥ Y

Anesthesia Start Date

- Card-2 X Missing
- Card-2 D ≥ UTD

Non-UTD Value

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

- Surgery Days < 0
- Surgery Days ≥ 0

Perioperative Death

- Card-2 X Missing
- Card-2 B ≥ Y

ICD-9-CM Principal Procedure Code

- Card-2 B On Table 5.26
- Card-2 B None on Table 5.26

Beta-Blocker Current Medication

- Card-2 X Missing
- Card-2 B ≥ Y
Postoperative LOS (in days) = Discharge Date – Anesthesia End Date

Beta-Blocker Perioperative

Reason for Not Administering Beta-Blocker Perioperative

In Measure Population

In Numerator Population

Case Will Be Rejected

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: Patient Age, 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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to Clinical Trial.

4. 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.

5. 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.
6. Calculate Surgery Days. Surgery Days, in days, is equal to the Anesthesia Start Date minus the Admission Date.

7. 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 Check Perioperative Death.

8. 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.

9. 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.

10. 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.

11. 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.
1. If Beta-Blocker During Pregnancy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

2. 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.

3. 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.

12. 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.

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

14. 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 17 and check Beta-Blocker Perioperative.

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, 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 any Beta-Blocker Perioperative equals 5, continue processing and proceed to Reason for Not Administering Beta-Blocker Perioperative.

16. 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 any Reason for Not Administering Beta-Blocker Perioperative equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

17. 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 any Beta-Blocker Perioperative equals 3 or 4, continue processing and proceed to Step 20 and check Reason for Not Administering Beta-Blocker Perioperative.

18. 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.

19. 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 any Reason for Not Administering Beta-Blocker Perioperative equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

20. 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 any Reason for Not Administering Beta-Blocker Perioperative equals 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

21. 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 any Beta-Blocker Perioperative equals 5, continue processing and Recheck Reason for Not Administering Beta-Blocker Perioperative.

22. 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.
NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-VTE-1

Performance Measure Name: Surgery Patients with Recommended Venous Thromboembolism Prophylaxis Ordered

Description: Surgery patients with recommended Venous Thromboembolism (VTE) prophylaxis ordered anytime from hospital arrival to 24 hours after Anesthesia End Time.

Rationale: There are over 30 million surgeries performed in the United States each year. Despite the evidence that VTE is one of the most common postoperative complications and prophylaxis is the most effective strategy to reduce morbidity and mortality, it is often underused. The frequency of Venous Thromboembolism (VTE), that includes deep vein thrombosis and pulmonary embolism, is related to the type and duration of surgery, patient risk factors, duration and extent of postoperative immobilization, and use or nonuse of prophylaxis. According to Heit et al, 2000, surgery was associated with over a twenty-fold increase in the odds of being diagnosed with VTE. Studies have shown that appropriately used thromboprophylaxis has a positive risk/benefit ratio and is cost effective. Prophylaxis recommendations for this measure are based on selected surgical procedures from the 2008 American College of Chest Physicians guidelines.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Surgery patients with recommended Venous Thromboembolism (VTE) prophylaxis ordered anytime from hospital arrival to 24 hours after Anesthesia End Time.

Included Populations: Not applicable

Excluded Populations: None

Data Elements:
- Anesthesia Type
- VTE Prophylaxis
**Denominator Statement:** All selected surgery patients.

**Included Populations:**
- *ICD-9-CM Principal Procedure Code* of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes).
  **AND**
- *ICD-9-CM Principal Procedure Code* of selected surgeries (as defined in Appendix A, Table 5.17-5.24 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
- Burn patients (as defined in Appendix A, Table 5.14 for ICD-9-CM codes)
- Patients enrolled in clinical trials
- Patients who are on **oral anticoagulation therapy** prior to admission
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients whose total surgery time is less than or equal to 60 minutes
- Patients who expire perioperatively
- Patients who stay less than two nights
- Patients with reasons for not administering both mechanical and pharmacological prophylaxis

**Data Elements:**
- *Admission Date*
- *Anesthesia End Date*
- *Anesthesia End Time*
- *Anesthesia Start Date*
- *Anesthesia Start Time*
- *Birthdate*
- *Clinical Trial*
- *Discharge Date*
- *ICD-9-CM Principal Diagnosis Code*
- *ICD-9-CM Principal Procedure Code*
- *Perioperative Death*
  - **Preadmission Oral Anticoagulation Therapy**
  - *Reason for Not Administering VTE Prophylaxis*

**Risk Adjustment:** No

**Data Collection Approach:** Retrospective data sources for required data elements include administrative data and medical records.

**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: Measure rates for SCIP-VTE-1 should be analyzed in order to identify where quality improvement efforts should be focused. In the course of these efforts, hospitals may find it useful to drill down by types of surgery to the responses for the data element VTE Prophylaxis. The analysis would identify surgical patients who had prophylaxis ordered which was not the recommended prophylaxis.

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:
- Goldhaber SZ, Dunn K, MacDougall RC. New onset of venous thromboembolism among hospitalized patients at Brigham and Women’s Hospital is caused more often by prophylaxis failure than by withholding treatment. Chest. 2000;118:1680-1684. PMID: 11115458.
- Bratzler DW, Raskob GE, Murray CK, et al. Underuse of venous


## VTE Prophylaxis Options for Surgery

<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Recommended Prophylaxis Options</th>
</tr>
</thead>
</table>
| Intracranial Neurosurgery Appendix A, Table 5.17 | Any of the following:  
- Intermittent pneumatic compression devices (IPC) with or without graduated compression stockings (GCS)  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)  
- LDUH or LMWH combined with IPC or GCS |
| General Surgery Appendix A, Table 5.19 | Any of the following:  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS |
| General Surgery with a reason for not administering pharmacological prophylaxis Appendix A, Table 5.19 | Any of the following:  
- Graduated Compression stockings (GCS)  
- Intermittent pneumatic compression devices (IPC) |
| Gynecologic Surgery Appendix A, Table 5.20 | Any of the following:  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- Intermittent pneumatic compression devices (IPC)  
- LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS |
| Urologic Surgery Appendix A, Table 5.21 | Any of the following:  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- Intermittent pneumatic compression devices (IPC)  
- Graduated compression stockings (GCS)  
- LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS |
| Elective Total Hip Replacement Appendix A, Table 5.22 | Any of the following started within 24 hours of surgery:  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- Oral Factor Xa Inhibitor  
- Warfarin |
<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Recommended Prophylaxis Options(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Total Knee Replacement Appendix A, Table 5.23</td>
<td>Any of the following:</td>
</tr>
<tr>
<td></td>
<td>• Low molecular weight heparin (LMWH)</td>
</tr>
<tr>
<td></td>
<td>• Factor Xa Inhibitor</td>
</tr>
<tr>
<td></td>
<td>• Oral Factor Xa Inhibitor(^3)</td>
</tr>
<tr>
<td></td>
<td>• Warfarin</td>
</tr>
<tr>
<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td></td>
<td>• Venous foot pump (VFP)</td>
</tr>
<tr>
<td>Hip Fracture Surgery Appendix A, Table 5.24</td>
<td>Any of the following:</td>
</tr>
<tr>
<td></td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
</tr>
<tr>
<td></td>
<td>• Low molecular weight heparin (LMWH)</td>
</tr>
<tr>
<td></td>
<td>• Factor Xa Inhibitor</td>
</tr>
<tr>
<td></td>
<td>• Warfarin</td>
</tr>
<tr>
<td>Elective Total Hip Replacement with a reason for not administering pharmacological prophylaxis Appendix A, Table 5.22</td>
<td>Any of the following:</td>
</tr>
<tr>
<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td></td>
<td>• Venous foot pump (VFP)</td>
</tr>
<tr>
<td>Hip Fracture Surgery with a reason for not administering pharmacological prophylaxis Appendix A, Table 5.24</td>
<td>Any of the following:</td>
</tr>
<tr>
<td></td>
<td>• Graduated Compression Stockings (GCS)</td>
</tr>
<tr>
<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td></td>
<td>• Venous foot pump (VFP)</td>
</tr>
</tbody>
</table>

\(^1\) Patients who receive neuraxial anesthesia or have a documented reason for not administering pharmacological prophylaxis may pass the performance measure if either appropriate pharmacological or mechanical prophylaxis is ordered.

\(^2\) Current guidelines recommend postoperative low molecular weight heparin for Intracranial Neurosurgery.

\(^3\) The U.S. Food and Drug Administration has approved Xarelto (rivaroxaban) to reduce the risk of blood clots, deep vein thrombosis (DVT) and pulmonary embolism (PE) following knee or hip replacement surgery ONLY.
SCIP-VTE-1: Surgery patients with Recommended Venous Thromboembolism Prophylaxis Ordered

Numerator: Surgery patients with recommended venous thromboembolism (VTE) prophylaxis ordered anytime from hospital arrival to 24 hours after Anesthesia End Time.

Denominator: All selected surgery patients.
Note: If VTE Prophylaxis field is populated with an allowable value of 1, 2, 3, 4, 5, 6, 7 or 8 and the corresponding VTE Timely field is Missing, the entire case will be rejected by the Joint Commission and CMS warehouses.
Note: If VTE Prophylaxis field is populated with an allowable value of 1, 2, 3, 4, 5, 6, 7, or 8 and the corresponding VTE Timely field is Missing, the entire case will be rejected by the Joint Commission and CMS warehouses.
SCIP-Venous Thromboembolism (VTE)-1: Surgery patients with Recommended Venous Thromboembolism Prophylaxis Ordered

Numerator: Surgery patients with recommended Venous Thromboembolism (VTE) prophylaxis ordered anytime from hospital arrival to 24 hours after Anesthesia End Time.

Denominator: All selected surgery patients.

Variable Key: Patient Age, Length of Stay (LOS), Surgery Length, Surgery Days

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code.

4. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

5. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.14, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.14, continue processing and proceed to the LOS calculation.
6. Calculate LOS. LOS, in days, is equal to the Discharge Date minus the Admission Date.

7. Check LOS
   a. If the LOS is less than or equal to 2 days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Calculation. Stop processing.
   b. If the LOS is greater than 2 days, continue processing and proceed to Clinical Trial.

8. 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 Preadmission Oral Anticoagulation Therapy.

9. Check Preadmission Oral Anticoagulation Therapy
   a. If Preadmission Oral Anticoagulation Therapy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Preadmission Oral Anticoagulation Therapy 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 Preadmission Oral Anticoagulation Therapy equals No, continue processing and proceed to Anesthesia Start Date.

10. 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.

11. Calculate Surgery Days. Surgery Days, in days, is equal to the Anesthesia Start Date minus the Admission Date.
12. 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 Perioperative Death.

13. 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 Anesthesia Start Time.

14. Check Anesthesia Start Time
   a. If the Anesthesia Start Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Anesthesia Start Time 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 the Anesthesia Start Time equals a Non Unable to Determine Value, continue processing and proceed to Anesthesia End Date.

15. 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 the Anesthesia End Date equals a Non Unable to Determine Value, continue processing and proceed to Anesthesia End Time.

16. Check Anesthesia End Time
   a. If the Anesthesia End Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Anesthesia End Time 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 the Anesthesia End Time equals a Non Unable to Determine Value, continue processing and proceed to the Surgery Length calculation.
17. Calculate Surgery Length. Surgery Length, in minutes, is equal to the Anesthesia End Date and Anesthesia End Time minus the Anesthesia Start Date and Anesthesia Start Time.

18. Check Surgery Length
   a. If the Surgery Length is less than or equal to 60 minutes, 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 Length is greater than 60 minutes, continue processing and proceed to Reason for Not Administering VTE Prophylaxis.

19. Check Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Reason for Not Administering VTE Prophylaxis equals 3, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Reason for Not Administering VTE Prophylaxis equals 1, 2, or 4, continue processing and proceed to VTE Prophylaxis.

20. Check VTE Prophylaxis
   a. If no values are populated in the VTE grid, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If VTE Prophylaxis equals A, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If the VTE grid is populated with any of values 1, 2, 3, 4, 5, 6, 7, 8, continue processing and proceed to recheck the ICD-9-CM Principal Procedure Code. Note: If VTE Prophylaxis field is populated with an allowable value of 1, 2, 3, 4, 5, 6, 7, 8 and the corresponding VTE Timely field is Missing, the entire case will be rejected by The Joint Commission and Centers for Medicare and Medicaid Services (CMS) warehouses.

   a. If the ICD-9-CM Principal Procedure Code is on Tables 5.17, 5.20, 5.21, or 5.23, continue processing. Proceed to step 26 and recheck ICD-9-CM Principal Procedure Code for Tables 5.17, 5.20, 5.21, 5.22, 5.23, and 5.24. Do not check steps 22 through 25 for ICD-9-CM Principal Procedure Code for Tables 5.17, 5.20, 5.21, 5.22, 5.23, and 5.24 as steps 22 through 25 check for codes on Tables 5.19, 5.22, and 5.24 only.
b. If the ICD-9-CM Principal Procedure Code is on Tables 5.19, 5.22, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

22. Recheck ICD-9-CM Principal Procedure Code only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.20, 5.21 or 5.23
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.19, continue processing and recheck VTE Prophylaxis.

23. Recheck VTE Prophylaxis only if the ICD-9-CM Principal Procedure Code is on Table 5.19
   a. If any VTE Prophylaxis equals 1, 2, or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
   b. If none of the VTE Prophylaxis equals 1, 2, or 5, continue processing and proceed to recheck Reason for Not Administering VTE Prophylaxis.

24. Recheck Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis equals 1 or 4, continue processing and proceed to Anesthesia Type.
      1. If Anesthesia Type is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
      2. If Anesthesia Type equals 1 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
      3. If Anesthesia Type equals 2 or 3, continue processing and recheck VTE Prophylaxis.
   b. If Reason for Not Administering VTE Prophylaxis equals 2, continue processing and recheck VTE Prophylaxis.

25. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis 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 none of the VTE Prophylaxis equals 3 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
26. Recheck ICD-9-CM Principal Procedure Code for Tables 5.17, 5.20, 5.21, 5.22, 5.23, and 5.24 only if ICD-9-CM Principal Procedure Code was not on Table 5.19
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.17, continue processing and recheck VTE Prophylaxis.
      1. If any VTE Prophylaxis equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If none of the VTE Prophylaxis equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Tables 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

27. Recheck ICD-9-CM Principal Procedure Code for Tables 5.20, 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code was not on Tables 5.17 or 5.19
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.20, continue processing and recheck VTE Prophylaxis.
      1. If any VTE Prophylaxis equals 1, 2, 3 or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If none of the VTE Prophylaxis equals 1, 2, 3, or 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Tables 5.21, 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

28. Recheck ICD-9-CM Principal Procedure Code for Tables 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.19 or 5.20.
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.21, continue processing and recheck VTE Prophylaxis.
      1. If any VTE Prophylaxis equals 1, 2, 3, 4, or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If none of the VTE Prophylaxis equals 1, 2, 3, 4, or 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
b. If the ICD-9-CM Principal Procedure Code is on Tables 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

29. Recheck ICD-9-CM Principal Procedure Code for Tables 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.19, 5.20 or 5.21.
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.22, continue processing and recheck VTE Prophylaxis.
   b. If the ICD-9-CM Principal Procedure Code is on Tables 5.23 or 5.24, continue processing. Proceed to step 34 and recheck ICD-9-CM Principal Procedure Code for Tables 5.23 and 5.24. Do not recheck step 30, 31 and 33 VTE Prophylaxis or step 32 Reason for Not Administering VTE Prophylaxis.

30. Recheck VTE Prophylaxis only if the ICD-9-CM Principal Procedure Code is on Table 5.22
   a. If any VTE Prophylaxis equals 2, 5, 6, 8, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
   b. If none of the VTE Prophylaxis equals 2, 5, 6, 8, continue processing and proceed to recheck VTE Prophylaxis.

31. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 1, continue processing and check ICD-9-CM Principal or Other Diagnosis Codes.
      1. If any of the ICD-9-CM Principal or Other Diagnosis Codes is on Table 5.13, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If none of the ICD-9-CM Principal or Other Diagnosis Codes is on Table 5.13, continue processing and recheck Reason for Not Administering VTE Prophylaxis.
   b. If none of the VTE Prophylaxis equals 1, continue processing and proceed to recheck Reason for Not Administering VTE Prophylaxis.

32. Recheck Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis equals 1 or 4, continue processing and recheck Anesthesia Type.
      1. If Anesthesia Type is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
2. If Anesthesia Type equals 1 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
3. If Anesthesia Type equals 2 or 3, continue processing and recheck VTE Prophylaxis.
   b. If Reason for Not Administering VTE Prophylaxis equals 2, continue processing and proceed to recheck VTE Prophylaxis.

33. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 3 or 7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
   b. If none of the VTE Prophylaxis equals 3 or 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

34. Recheck ICD-9-CM Principal Procedure Code for Tables 5.23 and 5.24 only if the ICD-9-CM Principal Procedure Code was not on Tables 5.17, 5.19, 5.20, 5.21, or 5.22.
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.23, continue processing and recheck VTE Prophylaxis.
      1. If Any VTE Prophylaxis is equal to 2, 3, 5, 6, 7, 8, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If None of the VTE Prophylaxis is equal to 2, 3, 5, 6, 7, 8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.24, continue processing and recheck VTE Prophylaxis.

35. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 1, 2, 5, 6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
   b. If none of the VTE Prophylaxis equals 1, 2, 5, 6, continue processing and proceed to recheck Reason for Not Administering VTE Prophylaxis.

36. Recheck Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis equals 1 or 4, continue processing and recheck Anesthesia Type.
      1. If Anesthesia Type is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
2. If Anesthesia Type equals 1 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

3. If Anesthesia Type equals 2 or 3, continue processing and recheck VTE Prophylaxis.
   b. If Reason for Not Administering VTE Prophylaxis equals 2, continue processing and proceed to recheck VTE Prophylaxis.

37. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 3, 4, or 7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
   b. If none of the VTE Prophylaxis equals 3, 4, or 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-VTE-2

Performance Measure Name: Surgery Patients Who Received Appropriate Venous Thromboembolism Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery

Description: Surgery patients who received appropriate Venous Thromboembolism (VTE) prophylaxis within 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.

Rationale: There are over 30 million surgeries performed in the United States each year. Despite the evidence that VTE is one of the most common postoperative complications and prophylaxis is the most effective strategy to reduce morbidity and mortality, it is often underused. The frequency of Venous Thromboembolism (VTE), that includes deep vein thrombosis and pulmonary embolism, is related to the type and duration of surgery, patient risk factors, duration and extent of postoperative immobilization, and use or nonuse of prophylaxis. According to Heit et al, 2000, surgery was associated with over a twenty-fold increase in the odds of being diagnosed with VTE. Studies have shown that appropriately used thromboprophylaxis has a positive risk/benefit ratio and is cost effective. Prophylaxis recommendations for this measure are based on selected surgical procedures from the 2008 American College of Chest Physicians guidelines.

Timing of prophylaxis is based on the type of procedure, prophylaxis selection, and clinical judgment regarding the impact of patient risk factors. The optimal start of pharmacologic prophylaxis in surgical patients varies and must be balanced with the efficacy-versus-bleeding potential. Due to the inherent variability related to the initiation of prophylaxis for surgical procedures, 24 hours prior to surgery to 24 hours post surgery was recommended by consensus of the SCIP Technical Expert Panel in order to establish a timeframe that would encompass most procedures.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Surgery patients who received appropriate Venous Thromboembolism (VTE) prophylaxis within 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.
Included Populations: Not applicable

Excluded Populations: None

Data Elements:
- Anesthesia Type
- VTE Prophylaxis
- VTE Timely

Denominator Statement: All selected surgery patients

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
- Burn patients (as defined in Appendix A, Table 5.14 for ICD-9-CM codes)
- Patients enrolled in clinical trials
- Patients who are on oral anticoagulation therapy prior to admission
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients whose total surgery time is less than or equal to 60 minutes
- Patients who stay less than two nights
- Patients who expire perioperatively
- Patients with reasons for not administering both mechanical and pharmacological prophylaxis
- Patients who did not receive VTE Prophylaxis (as defined in the Data Dictionary)

Data Elements:
- Admission Date
- Anesthesia End Date
- Anesthesia End Time
- Anesthesia Start Date
- Anesthesia Start Time
- Birthdate
- Clinical Trial
- Discharge Date
- ICD-9-CM Principal Diagnosis Code
• **ICD-9-CM Principal Procedure Code**
• **Perioperative Death**
• **Preadmission Oral Anticoagulation Therapy**
• **Reason for Not Administering VTE Prophylaxis**

**Risk Adjustment:** No

**Data Collection Approach:** Retrospective data sources for required data elements include administrative data and medical records.

**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:** Measure rates for SCIP-VTE-2 should be analyzed in conjunction with SCIP-VTE-1 in order to identify focus areas for quality improvement. Low measure rates may indicate the need for staff education or evaluation of organizational factors and processes of care. Note that rates for SCIP-VTE-2 may be lower than those for SCIP-VTE-1 as a result of more stringent criteria. SCIP-VTE-2 requires documentation that prophylaxis was ordered and actually started, whereas SCIP-VTE-1 requires only documentation of an order.

**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:**
- Goldhaber SZ, Dunn K, MacDougall RC. New onset of venous thromboembolism among hospitalized patients at Brigham and Women's Hospital is caused more
often by prophylaxis failure than by withholding treatment. *Chest.* 000;118:1680-1684. PMID: 11115458.

# VTE Prophylaxis Options for Surgery

<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Recommended Prophylaxis Options</th>
</tr>
</thead>
</table>
| **Intracranial Neurosurgery**  
Appendix A, Table 5.17 | Any of the following:  
- Intermittent pneumatic compression devices (IPC) with or without graduated compression stockings (GCS)  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)²  
- LDUH or LMWH² combined with IPC or GCS |
| **General Surgery**  
Appendix A, Table 5.19 | Any of the following:  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS |
| **General Surgery with a reason for not administering pharmacological prophylaxis**  
Appendix A, Table 5.19 | Any of the following:  
- Graduated Compression stockings (GCS)  
- Intermittent pneumatic compression devices (IPC) |
| **Gynecologic Surgery**  
Appendix A, Table 5.20 | Any of the following:  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- Intermittent pneumatic compression devices (IPC)  
- LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS |
| **Urologic Surgery**  
Appendix A, Table 5.21 | Any of the following:  
- Low-dose unfractionated heparin (LDUH)  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- Intermittent pneumatic compression devices (IPC)  
- Graduated compression stockings (GCS)  
- LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS |
| **Elective Total Hip Replacement**  
Appendix A, Table 5.22 | Any of the following started within 24 hours of surgery:  
- Low molecular weight heparin (LMWH)  
- Factor Xa Inhibitor  
- **Oral Factor Xa Inhibitor³**  
- Warfarin |
### VTE Prophylaxis Options for Surgery

<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Recommended Prophylaxis Options¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elective Total Knee Replacement</strong></td>
<td>Any of the following:</td>
</tr>
<tr>
<td>Appendix A, Table 5.23</td>
<td>• Low molecular weight heparin (LMWH)</td>
</tr>
<tr>
<td></td>
<td>• Factor Xa Inhibitor</td>
</tr>
<tr>
<td></td>
<td>• <strong>Oral Factor Xa Inhibitor³</strong></td>
</tr>
<tr>
<td></td>
<td>• Warfarin</td>
</tr>
<tr>
<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td></td>
<td>• Venous foot pump (VFP)</td>
</tr>
<tr>
<td><strong>Hip Fracture Surgery</strong></td>
<td>Any of the following:</td>
</tr>
<tr>
<td>Appendix A, Table 5.24</td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
</tr>
<tr>
<td></td>
<td>• Low molecular weight heparin (LMWH)</td>
</tr>
<tr>
<td></td>
<td>• Factor Xa Inhibitor</td>
</tr>
<tr>
<td></td>
<td>• Warfarin</td>
</tr>
<tr>
<td>**Elective Total Hip Replacement with a reason for not</td>
<td>Any of the following:</td>
</tr>
<tr>
<td>administering pharmacological prophylaxis**</td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td>Appendix A, Table 5.22</td>
<td>• Venous foot pump (VFP)</td>
</tr>
<tr>
<td><strong>Hip Fracture Surgery with a reason for not</strong></td>
<td>Any of the following:</td>
</tr>
<tr>
<td>administering pharmacological prophylaxis**</td>
<td>• Graduated Compression Stockings (GCS)</td>
</tr>
<tr>
<td>Appendix A, Table 5.24</td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td></td>
<td>• Venous foot pump (VFP)</td>
</tr>
</tbody>
</table>

¹ Patients who receive neuraxial anesthesia or have a documented reason for not administering pharmacological prophylaxis may pass the performance measure if either appropriate pharmacological or mechanical prophylaxis is ordered.

² Current guidelines recommend postoperative low molecular weight heparin for Intracranial Neurosurgery.

³ The U.S. Food and Drug Administration has approved Xarelto (rivaroxaban) to reduce the risk of blood clots, deep vein thrombosis (DVT) and pulmonary embolism (PE) following knee or hip replacement surgery ONLY.
SCIP-VTE-2: Surgery Patients Who Received Appropriate Venous Thromboembolism Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery

**Numerator:** Surgery patients who received appropriate venous thromboembolism (VTE) prophylaxis 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.

**Denominator:** All selected surgery patients.

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**Variable Key:**
- Patient Age
- LOS
- Surgery Length
- Surgery Days
Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)  SCIP-VTE-2-8
Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-12 (1Q12) through 06-30-12 (2Q12)  SCIP-VTE-2-9

Note: If VTE Prophylaxis field is populated with an allowable value of 1, 2, 3, 4, 5, 6, 7 or 8 and the corresponding VTE Timely field is Missing, the entire case will be rejected by the Joint Commission and CMS warehouses.

Note: When evaluating VTE Timely, consider only the values corresponding to the recommended VTE Prophylaxis.

Specified by the Joint Commission and CMS.
Note: If VTE Prophylaxis field is populated with an allowable value of 1, 2, 3, 4, 5, 6, 7, or 8 and the corresponding VTE Timely field is Missing, the entire case will be rejected by the Joint Commission and CMS warehouses.

Note: When evaluating VTE Timely, consider only the values corresponding to the recommended VTE Prophylaxis.
SCIP- Venous Thromboembolism (VTE)-2: Surgery Patients Who Received Appropriate Venous Thromboembolism Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery

Numerator: Surgery patients who received Venous Thromboembolism (VTE) prophylaxis 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.

Denominator: All selected surgery patients.

Variable Key: Patient Age, Length of Stay (LOS), Surgery Length, Surgery Days

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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code.

4. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, the case will proceed to a Measure Category Assignment of B and will not be in the measure population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

5. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.14, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.14, continue processing and proceed to the LOS calculation.
6. Calculate LOS. LOS, in days, is equal to the Discharge Date minus the Admission Date.

7. Check LOS
   a. If the LOS is less than or equal to 2 days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Calculation. Stop processing.
   b. If the LOS is greater than 2 days, continue processing and proceed to Clinical Trial.

8. 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 Preadmission Oral Anticoagulation Therapy.

9. Check Preadmission Oral Anticoagulation Therapy
   a. If Preadmission Oral Anticoagulation Therapy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Preadmission Oral Anticoagulation Therapy 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 Preadmission Oral Anticoagulation Therapy equals No, continue processing and proceed to Anesthesia Start Date.

10. 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.

11. Calculate Surgery Days. Surgery Days, in days, is equal to the Anesthesia Start Date minus the Admission Date.
12. 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 Perioperative Death.

13. 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 Anesthesia Start Time.

14. Check Anesthesia Start Time
   a. If the Anesthesia Start Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Anesthesia Start Time 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 the Anesthesia Start Time equals a Non Unable to Determine Value, continue processing and proceed to Anesthesia End Date.

15. 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 the Anesthesia End Date equals a Non Unable to Determine Value, continue processing and proceed to Anesthesia End Time.

16. Check Anesthesia End Time
   a. If the Anesthesia End Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Anesthesia End Time 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 the Anesthesia End Time equals a Non Unable to Determine Value, continue processing and proceed to the Surgery Length calculation.
17. Calculate Surgery Length. Surgery Length, in minutes, is equal to the Anesthesia End Date and Anesthesia End Time minus the Anesthesia Start Date and Anesthesia Start Time.

18. Check Surgery Length
   a. If the Surgery Length is less than or equal to 60 minutes, 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 Length is greater than 60 minutes, continue processing proceed to Reason for Not Administering VTE Prophylaxis.

19. Check Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If Reason for Not Administering VTE Prophylaxis equals 3, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If Reason for Not Administering VTE Prophylaxis equals 1, 2, or 4, continue processing and proceed to VTE Prophylaxis.

20. Check VTE Prophylaxis
   a. If no values are populated in the VTE grid, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If VTE Prophylaxis equals A, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   c. If the VTE grid is populated with any of values 1, 2, 3, 4, 5, 6, 7, 8, continue processing and proceed to recheck the ICD-9-CM Principal Procedure Code. Note: If VTE Prophylaxis field is populated with an allowable value of 1, 2, 3, 4, 5, 6, 7, 8 and the corresponding VTE Timely field is Missing, the entire case will be rejected by The Joint Commission and Centers for Medicare and Medicaid Services (CMS) warehouses.

   a. If the ICD-9-CM Principal Procedure Code is on Tables 5.17, 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing. Proceed to step 25 and recheck ICD-9-CM Principal Procedure Code for Tables 5.17, 5.20, 5.21, 5.22, 5.23, and 5.24. Do not recheck step 22 and step 24 VTE Prophylaxis or step 23 Reason for Not Administering VTE Prophylaxis for Tables 5.17, 5.20, 5.21, 5.22, 5.23, and 5.24 as steps 22 through 24 check for codes on Table 5.19 only.
b. If the ICD-9-CM Principal Procedure Code is on Table 5.19, continue processing and recheck VTE Prophylaxis.

22. Recheck VTE Prophylaxis only if the ICD-9-CM Principal Procedure Code is on Table 5.19
   a. If any VTE Prophylaxis equals 1, 2, or 5, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      1. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 5, continue processing and recheck Reason for Not Administering VTE Prophylaxis.
   b. If none of the VTE Prophylaxis equals 1, 2, or 5, continue processing and proceed to recheck Reason for Not Administering VTE Prophylaxis.

23. Recheck Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis equals 1 or 4, continue processing and proceed to Anesthesia Type.
      1. If Anesthesia Type is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
      2. If Anesthesia Type equals 1 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
      3. If Anesthesia Type equals 2 or 3, continue processing and recheck VTE Prophylaxis.
   b. If Reason for Not Administering VTE Prophylaxis equals 2, continue processing and recheck VTE Prophylaxis.

24. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 3 or 4, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      1. If VTE Timely equals Yes for VTE Prophylaxis of 3 or 4, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If VTE Timely equals No for VTE Prophylaxis of 3 and 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
b. If none of the VTE Prophylaxis equals 3 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

25. Recheck ICD-9-CM Principal Procedure Code for Tables 5.17, 5.20, 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code was not on Table 5.19
a. If the ICD-9-CM Principal Procedure Code is on Table 5.17, continue processing and recheck VTE Prophylaxis.
   1. If any VTE Prophylaxis equals 1, 2, or 3, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      i. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      ii. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   2. If none of the VTE Prophylaxis equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Tables 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

26. Recheck ICD-9-CM Principal Procedure Code for Tables 5.20, 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17 or 5.19.
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.20, continue processing and recheck VTE Prophylaxis.
      1. If any VTE Prophylaxis equals 1, 2, 3 or 5, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
         i. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3 or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
         ii. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3 and 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
Assignment of D and will be in the Measure Population. Stop processing.

2. If none of the VTE Prophylaxis equals 1, 2, 3, or 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Tables 5.21, 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

27. Recheck ICD-9-CM Principal Procedure Code for Tables 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.19, or 5.20.

a. If the ICD-9-CM Principal Procedure Code is on Table 5.21, continue processing and recheck VTE Prophylaxis.

1. If any VTE Prophylaxis equals 1, 2, 3, 4, or 5, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.

i. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3 or 4 or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.

ii. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3 and 4 and 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

2. If none of the VTE Prophylaxis equals 1, 2, 3, 4, or 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Tables 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

28. Recheck ICD-9-CM Principal Procedure Code for Tables 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.19, 5.20, or 5.21.

a. If the ICD-9-CM Principal Procedure Code is on Table 5.22, continue processing and recheck VTE Prophylaxis.

b. If the ICD-9-CM Principal Procedure Code is on Tables 5.23 or 5.24, continue processing. Proceed to step 33 and recheck ICD-9-CM Principal Procedure Code for Tables 5.23 and 5.24. Do not recheck steps 29, 30.
and 32 VTE Prophylaxis or step 31 Reason for Not Administering VTE Prophylaxis.

29. Recheck VTE Prophylaxis only if the ICD-9-CM Principal Procedure Code is on Table 5.22
   a. If any VTE Prophylaxis equals 2, 5, 6, 8, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      1. If VTE Timely equals Yes for VTE Prophylaxis of 2 or 5 or 6 or 8, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If VTE Timely equals No for VTE Prophylaxis of 2 and 5 and 6 and 8, continue processing and recheck VTE Prophylaxis.
   b. If none of the VTE Prophylaxis equals 2, 5, 6, 8, continue processing and proceed to recheck VTE Prophylaxis.

30. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 1, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      1. If VTE Timely equals Yes for VTE Prophylaxis of 1, continue processing and check ICD-9-CM Principal or Other Diagnosis Codes.
         i. If any of the ICD-9-CM Principal or Other Diagnosis Codes is on Table 5.13, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
         ii. If none of the ICD-9-CM Principal or Other Diagnosis Codes is on Table 5.13, continue processing and recheck Reason for Not Administering VTE Prophylaxis.
      2. If VTE Timely equals No for VTE Prophylaxis of 1, continue processing and recheck Reason for Not Administering VTE Prophylaxis.
   b. If none of the VTE Prophylaxis equals 1, continue processing and proceed to recheck Reason for Not Administering VTE Prophylaxis.

31. Recheck Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis equals 1 or 4, continue processing and recheck Anesthesia Type.
      1. If Anesthesia Type is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
2. If Anesthesia Type equals 1 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
3. If Anesthesia Type equals 2 or 3, continue processing and recheck VTE Prophylaxis.

b. If Reason for Not Administering VTE Prophylaxis equals 2, continue processing and proceed to recheck VTE Prophylaxis.

32. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 3 or 7, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      1. If VTE Timely equals Yes for VTE Prophylaxis of 3 or 7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If VTE Timely equals No for VTE Prophylaxis of 3 and 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If none of the VTE Prophylaxis equals 3 or 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

33. Recheck ICD-9-CM Principal Procedure Code for Tables 5.23 and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.19, 5.20, 5.21, or 5.22.
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.23, continue processing and recheck VTE Prophylaxis.
      1. If Any VTE Prophylaxis is equal to 2, 3, 5, 6, 7, 8, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
         i. If VTE Timely equals Yes for VTE Prophylaxis of 2 or 3 or 5 or 6 or 7 or 8, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
         ii. If VTE Timely equals No for VTE Prophylaxis of 2 and 3 and 5 and 6 and 7 and 8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
2. If none of the VTE Prophylaxis is equal to 2, 3, 5, 6, 7, 8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Table 5.24, continue processing and recheck VTE Prophylaxis.

34. Recheck VTE Prophylaxis
   a. If any VTE Prophylaxis equals 1, 2, 5, 6, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      1. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 5 or 6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      2. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 5 and 6, continue processing and recheck Reason for Not Administering VTE Prophylaxis.
   b. If none of the VTE Prophylaxis equals 1, 2, 5, 6, continue processing and proceed to recheck Reason for Not Administering VTE Prophylaxis.

35. Recheck Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis equals 1 or 4, continue processing and recheck Anesthesia Type.
      1. If Anesthesia Type is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
      2. If Anesthesia Type equals 1 or 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
      3. If Anesthesia Type equals 2 or 3, continue processing and recheck VTE Prophylaxis.
   b. If Reason for Not Administering VTE Prophylaxis equals 2, continue processing and proceed to recheck VTE Prophylaxis.

36. Recheck VTE Prophylaxis
   a. If none of the VTE Prophylaxis equals 3, 4, or 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If any VTE Prophylaxis equals 3, 4, or 7, continue processing and check VTE Timely. Note: When evaluating VTE Timely consider only the values corresponding to the recommended VTE Prophylaxis.
      1. If VTE Timely equals Yes for VTE Prophylaxis of 3 or 4 or 7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
2. If VTE Timely equals No for VTE Prophylaxis of 3 or 4 or 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.