NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

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>
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<tr>
<td>SCIP-Inf-3b</td>
<td>Prophylactic Antibiotics Discontinued Within 48 Hours After Surgery End Time - CABG</td>
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<tr>
<td>SCIP-Inf-3c</td>
<td>Prophylactic Antibiotics Discontinued Within 48 Hours After Surgery End Time - Other Cardiac Surgery</td>
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<td>SCIP-Inf-3d</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Hip Arthroplasty</td>
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<td>SCIP-Inf-3e</td>
<td>Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time - Knee Arthroplasty</td>
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<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

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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)

**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 whose ICD-9-CM principal procedure was performed entirely by Laparoscope
- 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) 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
- Laparoscope
- 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 (Allowable Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIP-Inf3a</td>
<td>Overall Rate</td>
</tr>
<tr>
<td>SCIP-Inf3b</td>
<td>CABG</td>
</tr>
<tr>
<td>SCIP-Inf3c</td>
<td>Other Cardiac Surgery</td>
</tr>
<tr>
<td>SCIP-Inf3d</td>
<td>Hip Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf3e</td>
<td>Knee Arthroplasty</td>
</tr>
<tr>
<td>SCIP-Inf3f</td>
<td>Colon Surgery</td>
</tr>
<tr>
<td>SCIP-Inf3g</td>
<td>Hysterectomy</td>
</tr>
<tr>
<td>SCIP-Inf3h</td>
<td>Vascular Surgery</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 category rate is calculated.

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

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### Antibiotic Days I

<table>
<thead>
<tr>
<th>Antibiotic Days I</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( = \frac{Surgical \text{ Incision Date} - \text{Antibiotic Administration Date}}{\text{(in days)}} )</td>
<td>Calculated for all antibiotic doses, or Antibiotic Days I ( \leq 0 ).</td>
</tr>
</tbody>
</table>

### Antibiotic Administration Route

- \( = 3, 10 \) for all antibiotic doses
- \( = 1, 2 \) for any antibiotic dose

### Antibiotic Administration Date

- Non-UTD date for at least one antibiotic dose
- \( \geq 1 \) for at least one antibiotic dose
- \( \leq 1440 \) minutes for all antibiotic doses with non-UTD date and time

### Antibiotic Grid Not Populated

- Antibiotic Name on Table 2.1
- Antibiotic Name All on Table 3.11

### 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'.

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**Specifications Manual for National Hospital Inpatient Quality Measures**

**Discharges 10-01-10 (4Q10) through 03-31-11 (1Q11)**

**SCIP-Inf -3-7**
Anesthesia End Date

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

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

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Discharges 10-01-10 (4Q10) through 03-31-11 (1Q11)  SCIP-Inf -3-8
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.

Stop here for CMS. Continue to ‘L’ for The Joint Commission.
For all Stratified Measures (b-h)

Not in Measure Population

Overall Rate Category Assignment

ICD-9-CM Principal Procedure Code

On Table 5.01

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

Inf-3

Z

For Stratified Measure SCIP-Inf-3b

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

Inf-3

Z

For Stratified Measure SCIP-Inf-3c

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

Inf-3

Z

For Stratified Measure SCIP-Inf-3d

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

Inf-3

Z

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

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

On Table 5.05

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

On Table 5.03

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

On Table 5.06 or 5.07

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

On Table 5.08

Stop
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 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) 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 47 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 47 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 Laparoscope.

6. **Check Laparoscope**
   a. If Laparoscope is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   b. If Laparoscope 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 for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.
   c. If Laparoscope equals 2, 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 47 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 47 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.

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 47 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 47 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.

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 47 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.

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 47 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 47 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.
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 47 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 47 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.

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 47 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 47 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.

14. 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 47 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 47 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.

15. 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 47 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.

16. 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 47 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.

17. 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 47 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 47 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.

18. 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 47 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.

19. 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 47 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.

20. 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 47 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.

21. 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 47 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.

22. 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 47 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.

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

24. 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.

25. 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 47 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.

26. 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 47 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 47 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 31 Antibiotic Timing I.

27. 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.

28. 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 47 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 47 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.

29. 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 47 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.

30. 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 47 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.

31. 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.

32. 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.
33. 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 47 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.

34. 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 47 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 47 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.

35. 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 47 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 47 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.

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

37. 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.

38. 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 47 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.

39. 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 47 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.

40. 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 47 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.

41. 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 47 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 47 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.

42. 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 47 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.

43. 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.

44. 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.

45. 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 47 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.

46. 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 7, 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, 4, 5, 6 and None equals 7, 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 7, 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, 4, 5, 6 and None equals 7, 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.

47. For The Joint Commission Only, continue processing for the Stratified Measures. Note: Initialize the Measure Category Assignment for each strata measure (b-g) 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.

48. 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.

49. 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.

50. 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.
51. 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.

52. 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.

53. 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.

54. 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.