

**NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE****Measure Information Form  
Collected For:  
CMS Voluntary Only****Measure Set:** Surgical Care Improvement Project (SCIP)**Set Measure ID #:** SCIP-Inf-2

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

**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 whose Principal Procedure was on Table 5.25
- 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 did not receive any antibiotics within the timeframe 24 hours before *Surgical Incision Date and Time* (i.e., patient did not receive prophylactic antibiotics) through discharge
- Patients who received antibiotics prior to arrival and did not receive any antibiotics during this hospitalization

- Patients who received ONLY oral or intramuscular (IM) antibiotics or the route was unable to be determined
- Patients who received ALL antibiotics greater than 1440 minutes prior to Surgical Incision Date and Time

#### **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 Other Procedure Codes*
- *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 record documents. Some hospitals may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunities for improvement at the point of care/service. However, complete documentation includes the principal or other ICD-9-CM diagnosis and procedure codes, which require retrospective data entry.

**Data Accuracy:** 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:**

- American College of Obstetricians and Gynecologists (ACOG) Committee on Practice Bulletins ACOG Practice Bulletin No 104 Antibiotic prophylaxis for gynecologic procedures. *Obstet Gynecol* May 2009; 113(5) : 1180-1189.
- American Society of Health-System Pharmacists. ASHP therapeutic guidelines on antimicrobial prophylaxis in surgery. *Am J Health Syst Pharm*. 1999;56:1839-1888.
- Bratzler DW, Dellinger EP, Olsen KM, Perl TM, Auwaerter PG, Bolon MK, Fish DN, Napolitano LM, Sawyer RG, Slain D, Steinberg JP, Weinstein RA. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am J Health-Syst Pharm*. 2013; 70:195-283.
- Bratzler DW, Houck PM, for the Surgical Infection Prevention Guidelines Writers Group. Antimicrobial prophylaxis for surgery: An advisory statement from the National Surgical Infection Prevention Project. *CID*. 2004;38(15 June):1706-1715.
- Dellinger EP, Gross PA, Barrett TL, et al. Quality standard for antimicrobial prophylaxis in surgical procedures. *Clin Infect Dis*. 1994;18:422-427.
- Gilbert DN, Moellering RC Jr., Elipoulos GM, Chamber HF, Saag MS, eds. The Sanford Guide to Antimicrobial Therapy 2009. 39st ed. Sperryville, VA: *Antimicrobial Therapy, Inc*; 2009.
- Itani KMF, Wilson SE, Awad SS, Jensen EH, Finn TS, Abramson MA. Ertapenem versus cefotetan prophylaxis in elective colorectal surgery. *N Engl J Med*. 2006 Dec 21; 355 (25): 2640-2651.
- Mangram AJ, Horan TC, Pearson ML, et al. Guidelines for prevention of surgical site infection, 1999. *Infect Control Hosp Epidemiol*. 1999;20:247-280.
- No author listed. The Medical letter. Antimicrobial prophylaxis for Surgery. *Med Lett Drugs Ther*. 2009; 82: 47-52.
- Page CP, Bohnen JM, Fletcher JR, et al. Antimicrobial prophylaxis for surgical wounds. *Arch Surg*. 1993;128:79-88.

## Prophylactic Antibiotic Regimen Selection for Surgery

Surgical Procedures See Appendix A ICD-9-CM Code Tables	Approved Antibiotics See Appendix C Medication Tables
<b>Coronary Artery Bypass Graft Table 5.01</b> or <b>Other Cardiac Surgery Table 5.02</b> or <b>Vascular Surgery Table 5.08</b>	Cefazolin or Cefuroxime Table 3.1 or Vancomycin <sup>1</sup> Table 3.8  <b>If <math>\beta</math>-lactam allergy:</b> Vancomycin <sup>2</sup> Table 3.8 or Clindamycin <sup>2</sup> Table 3.9
<b>Hip Arthroplasty Table 5.04</b> or <b>Knee Arthroplasty Table 5.05</b>	Cefazolin or Cefuroxime Table 3.2 or Vancomycin <sup>1</sup> Table 3.8  <b>If <math>\beta</math>-lactam allergy:</b> Vancomycin <sup>2</sup> Table 3.8 or Clindamycin <sup>2</sup> Table 3.9
<b>Colon Surgery Table 5.03</b>	Cefotetan or Cefoxitin, or Ampicillin/Sulbactam Table 3.5 or Ertapenem <sup>3</sup> Table 3.6b or Metronidazole Table 3.6a + Cefazolin Table 3.2 or Metronidazole Table 3.6a + Cefuroxime Table 3.2 or Metronidazole Table 3.6a <sup>4</sup> + Ceftriaxone Table 3.6  <b>If <math>\beta</math>-lactam allergy:</b> 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

**Prophylactic Antibiotic Regimen Selection for Surgery (continued)**

<b>Surgical Procedures See Appendix A ICD-9-CM Code Tables</b>	<b>Approved Antibiotics See Appendix C Medication Tables</b>
<b>Abdominal Hysterectomy Table 5.06 or Vaginal Hysterectomy Table 5.07</b>	Cefotetan or Cefazolin or Cefoxitin or Cefuroxime or Ampicillin/Sulbactam Table 3.7  <b>If <math>\beta</math>-lactam allergy:</b> 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 or Vancomycin Table 3.8 + Aminoglycoside Table 2.11 or Vancomycin Table 3.8 + Aztreonam Table 2.7 or Vancomycin Table 3.8 + Quinolone Table 3.12
<b>Principal Procedure Code of Abdominal Hysterectomy Table 5.06 with an Other Procedure Code of Colon Surgery Table 5.03 or Vaginal Hysterectomy Table 5.07 with an Other Procedure Code of Colon Surgery Table 5.03</b>	Cefotetan or Cefazolin or Cefoxitin or Cefuroxime or Ampicillin/Sulbactam Table 3.7 or Ertapenem <sup>3</sup> Table 3.6b  <b>If <math>\beta</math>-lactam allergy:</b> 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 or Vancomycin Table 3.8 + Aminoglycoside Table 2.11 or Vancomycin Table 3.8 + Aztreonam Table 2.7 or Vancomycin Table 3.8 + Quinolone Table 3.12

## **Special Considerations:**

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<sup>1</sup> Vancomycin is acceptable with a physician/APN/PA/pharmacist documented justification for its use (see data element *Vancomycin*)

<sup>2</sup> For cardiac, orthopedic, and vascular surgery, if the patient is allergic to beta-lactam antibiotics, Vancomycin or Clindamycin are acceptable substitutes.

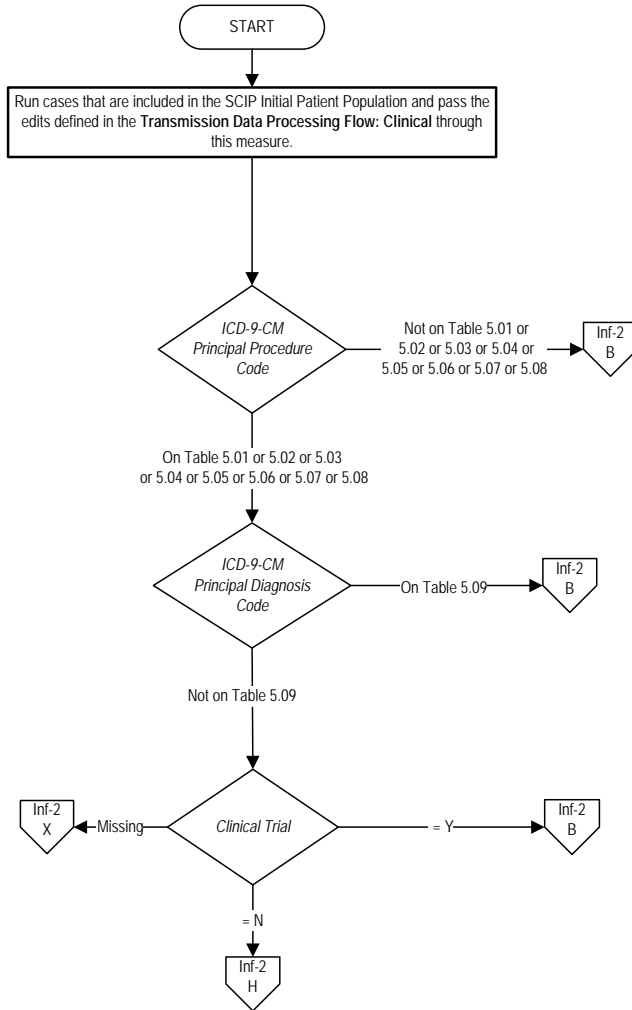
<sup>3</sup> A single dose of Ertapenem is recommended for colon procedures.

<sup>4</sup> This combination should only be used in hospitals where surgical site infection surveillance demonstrates gram negative surgical infections resistant to first and second generation cephalosporins. It is recommended not to be used routinely.

## 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:**  
Antibiotic Timing I  
Antibiotic Timing II  
Surgery Days

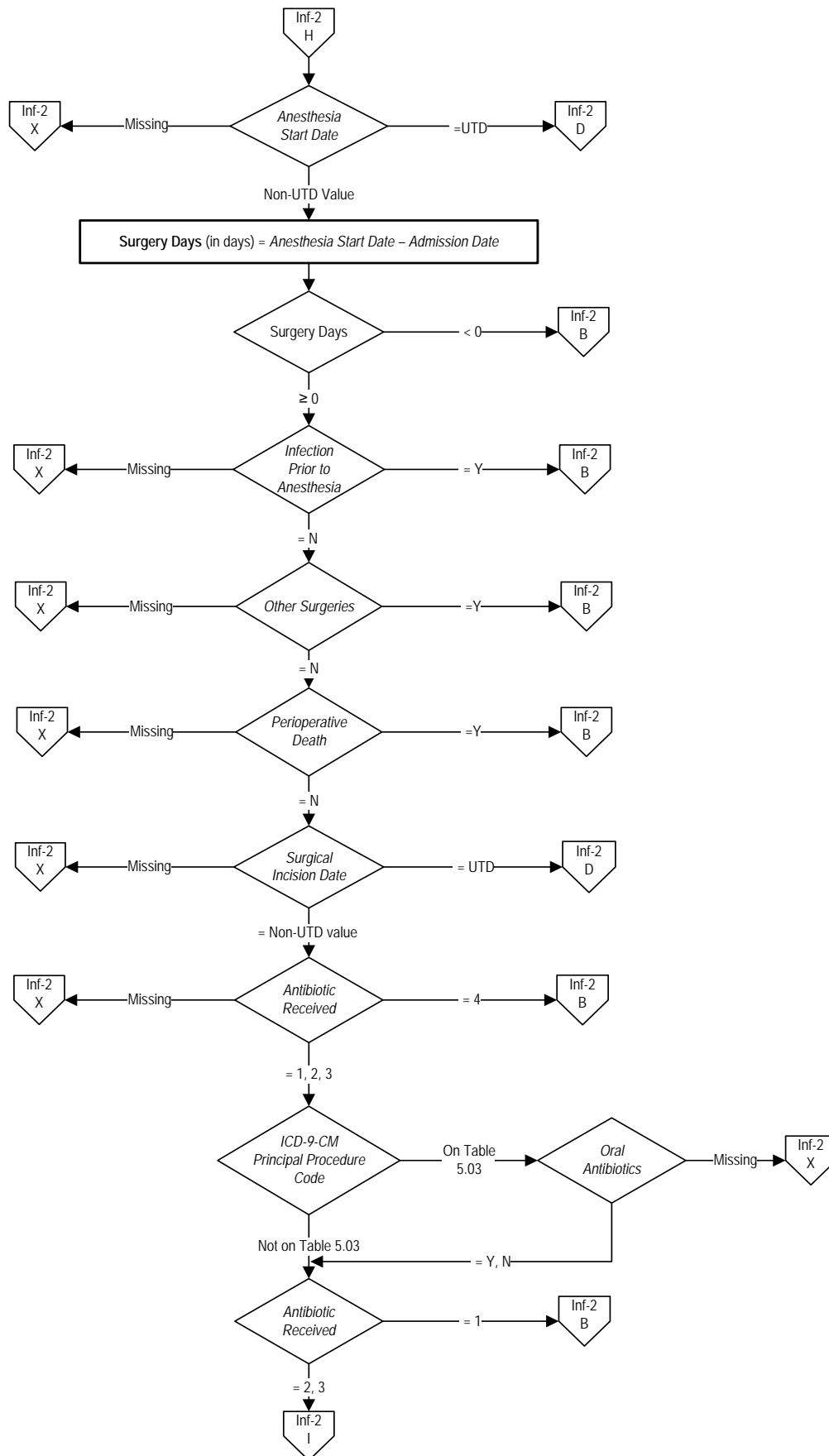
### Stratification Table:

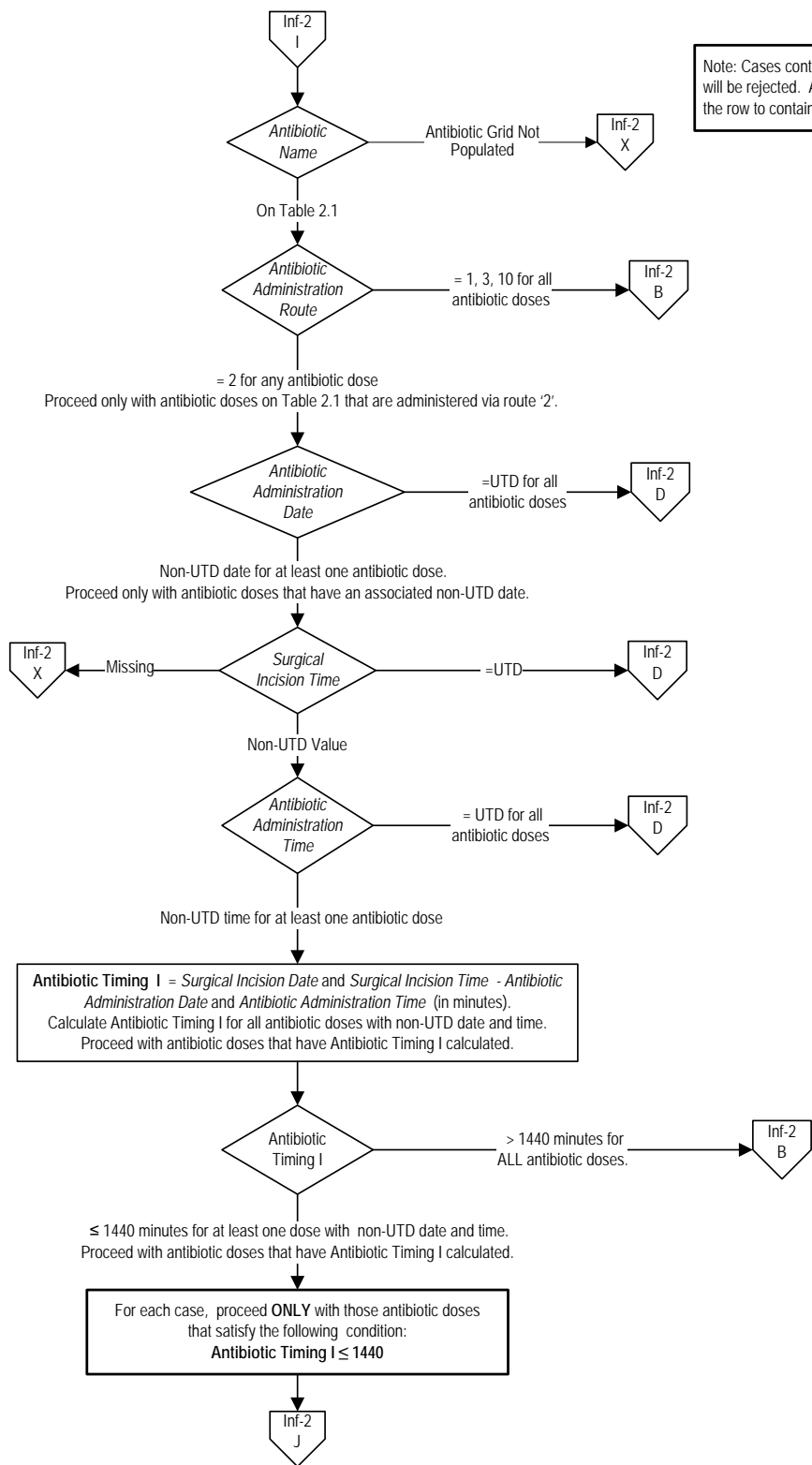
Set#	Stratified By	*Principal Procedure Code (Allowable Value)
SCIP-Inf2a	Overall Rate	**
SCIP-Inf2b	CABG	Table 5.01
SCIP-Inf2c	Other Cardiac Surgery	Table 5.02
SCIP-Inf2d	Hip Arthroplasty	Table 5.04
SCIP-Inf2e	Knee Arthroplasty	Table 5.05
SCIP-Inf2f	Colon Surgery	Table 5.03
SCIP-Inf2g	Hysterectomy	Table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

\* 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.

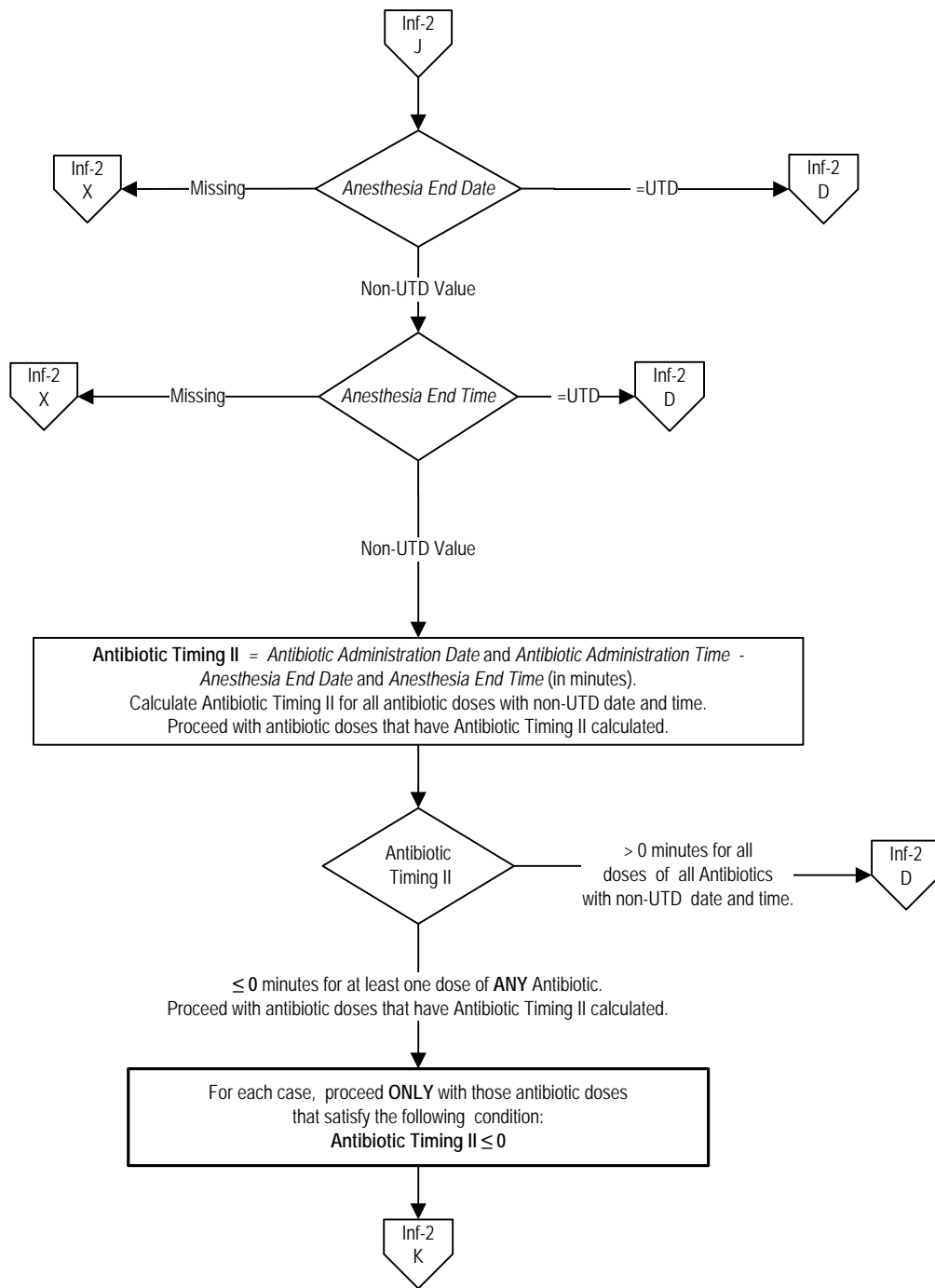
\*\* No allowable value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.

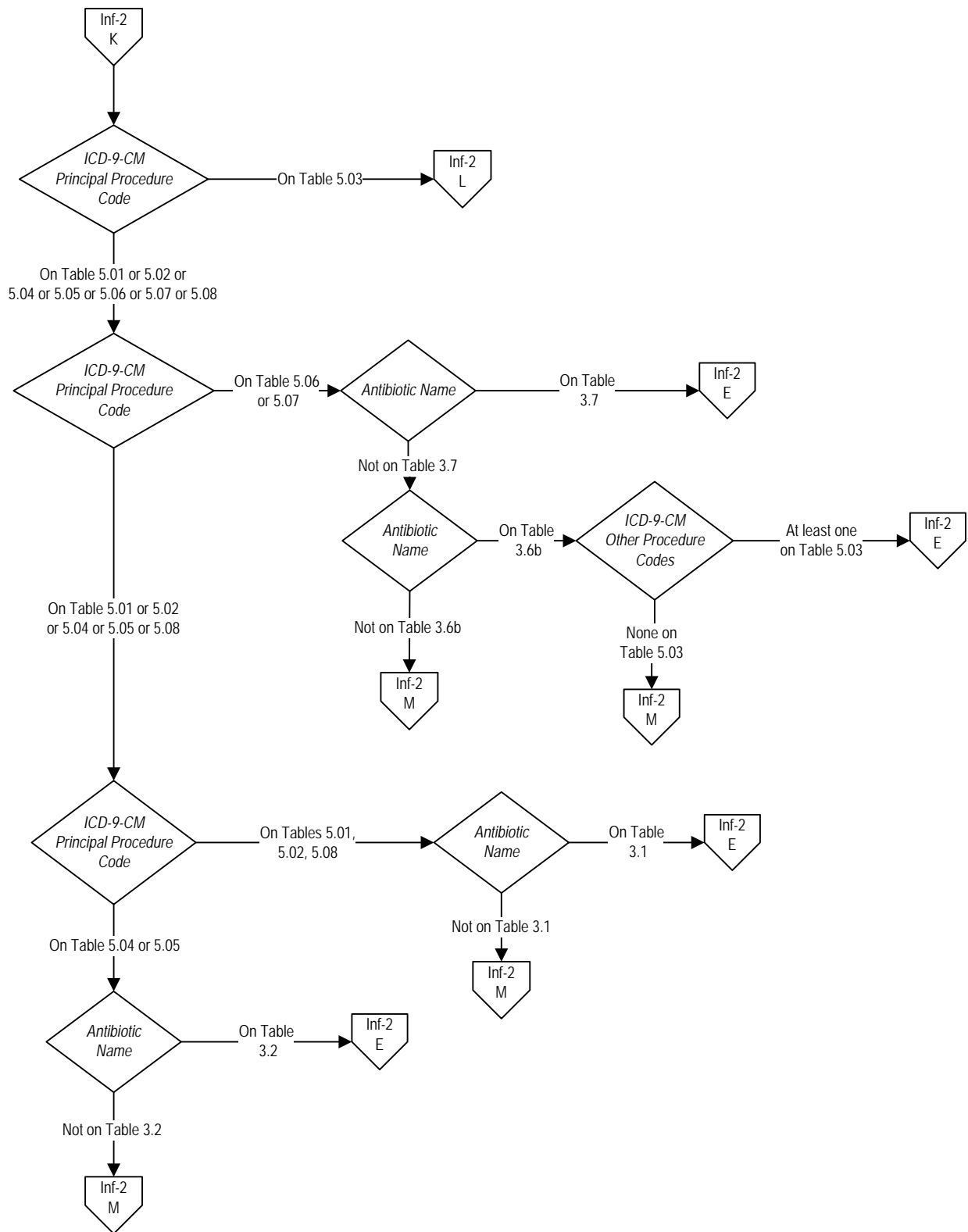


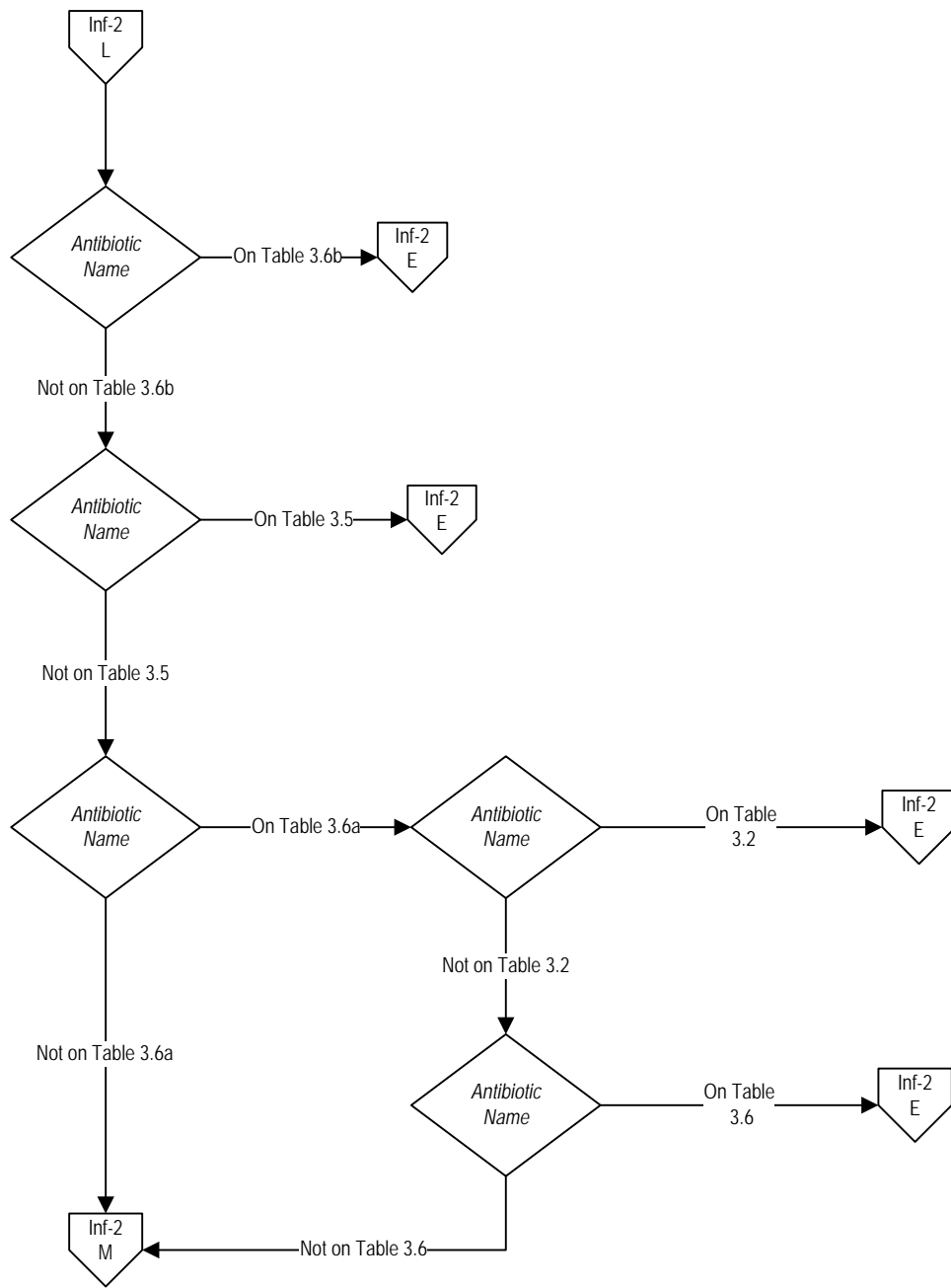


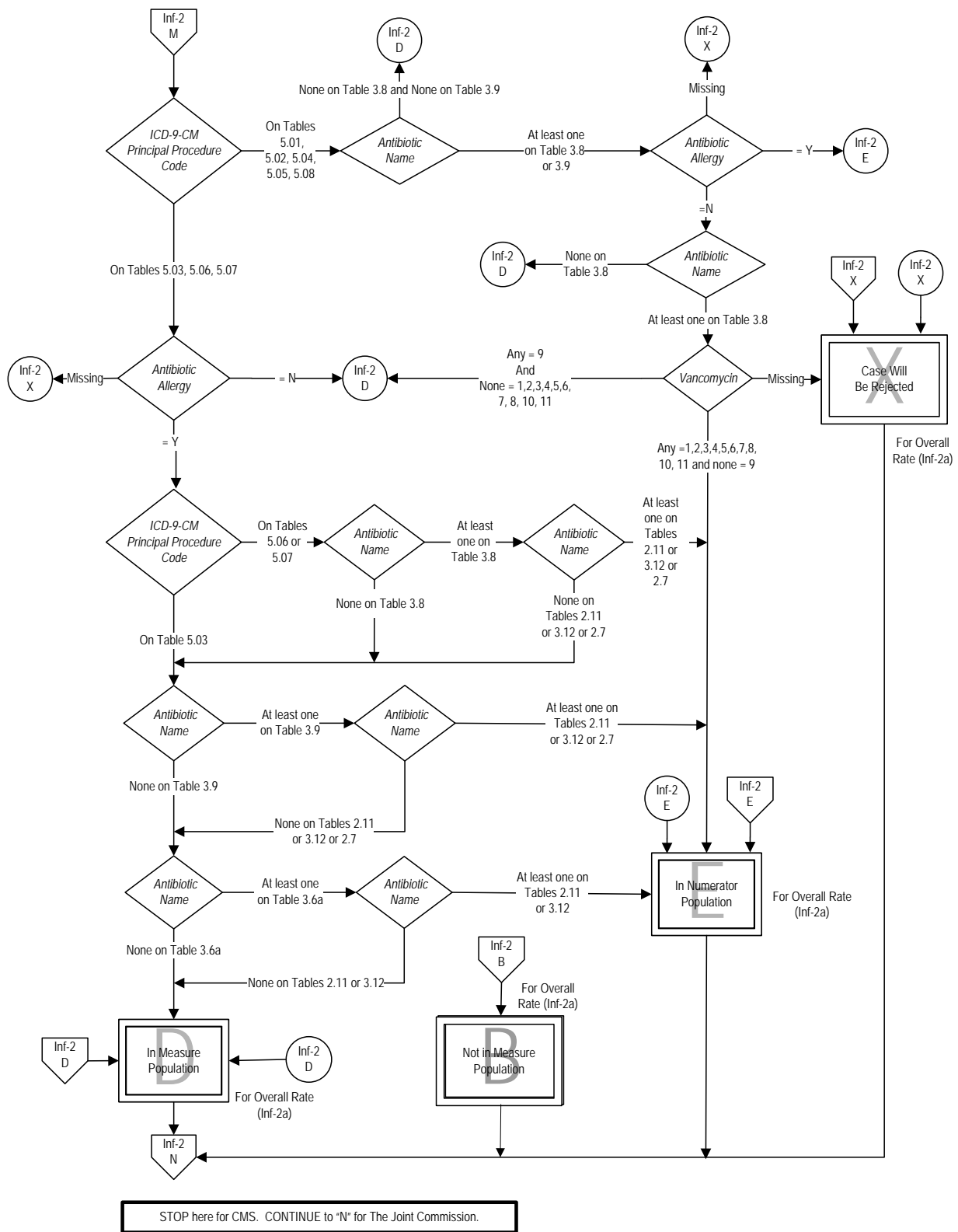


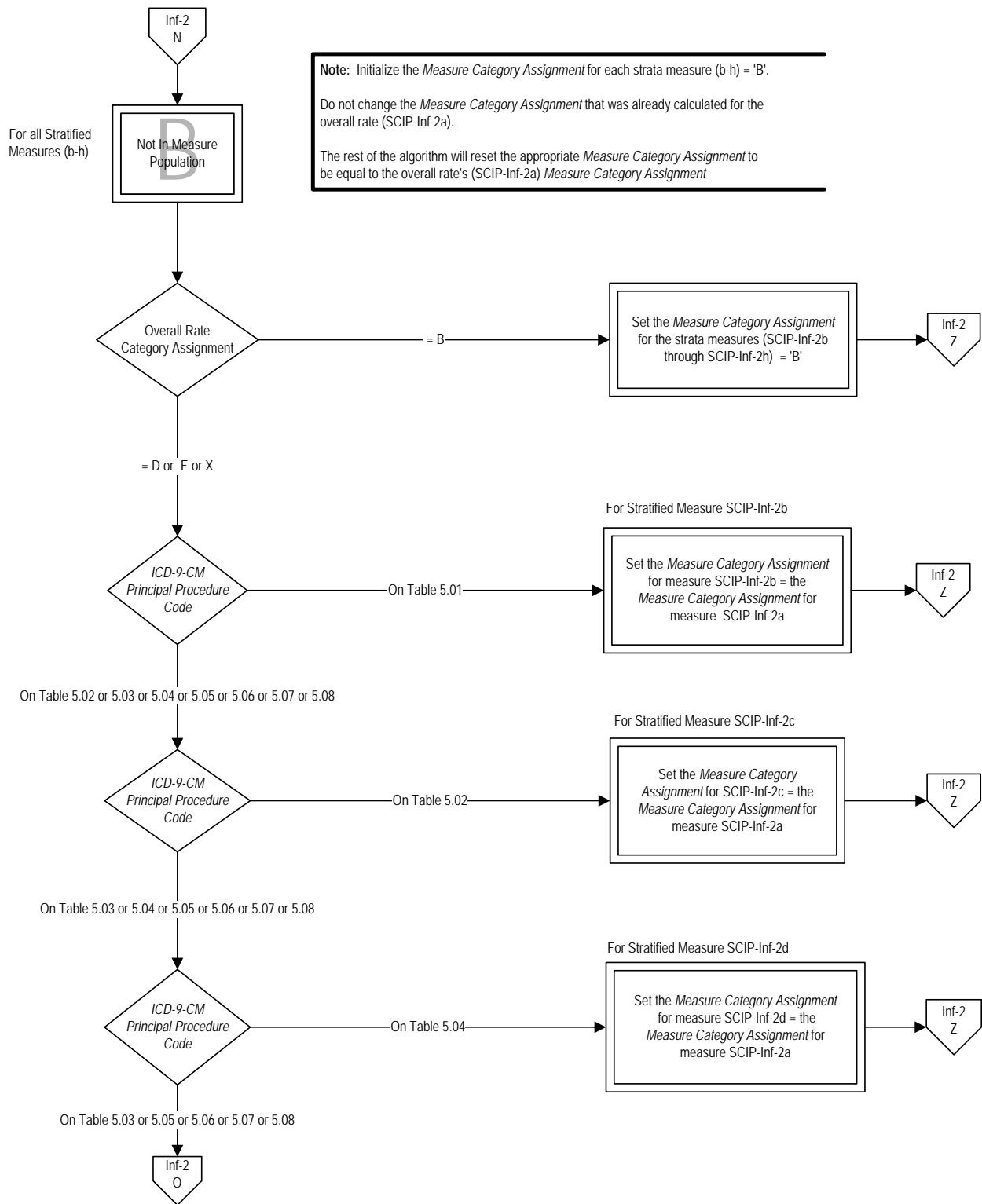
Note: Cases containing invalid data and/or an incomplete Antibiotic Grid will be rejected. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or 'UTD'.

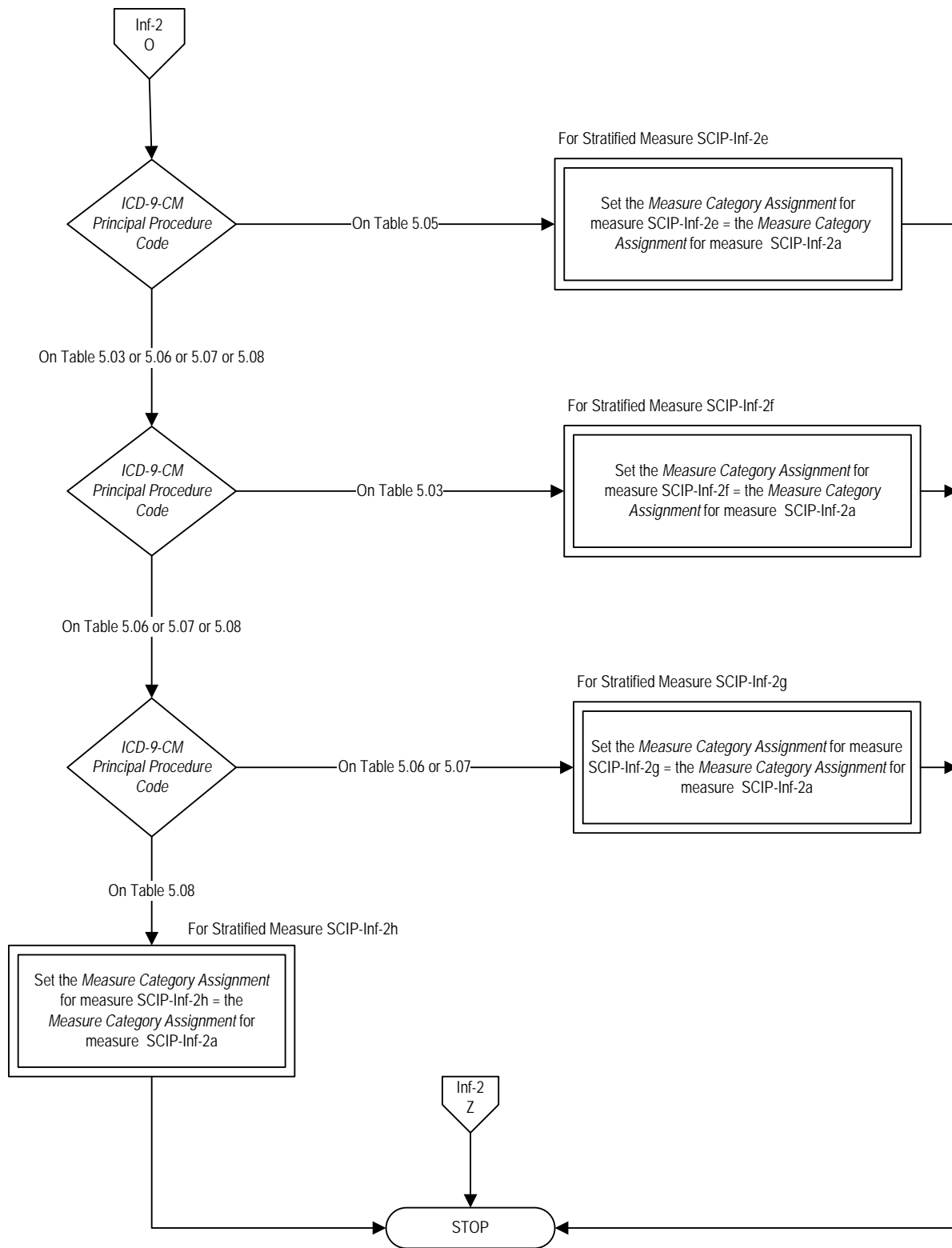














## SCIP-Infection (Inf)-2: Prophylactic Antibiotics Selection for Surgical Patients

**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.

**Variable Key:** Antibiotic Timing I, Antibiotic Timing II, 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.

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

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 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 44 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 check ICD-9-CM Principal Diagnosis Code.
3. 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 44 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.
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 for CMS. Proceed to step 44 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 44 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.
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 for CMS. Proceed to step 44 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 44 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.
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 for CMS. Proceed to step 44 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.

8. 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 44 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 44 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.
  
9. 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 44 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 44 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.
  
10. 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 44 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 44 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.
  
11. 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 44 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 44 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.
- 12. Check Antibiotic Received
  - a. If Antibiotic Received is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 44 and check the Stratified Measures for Overall Rate (SCIP- Inf-2a) for The Joint Commission.
  - b. If Antibiotic Received equals 1, 2 or 3, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.
  - c. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
- 13. Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Received equals 1, 2 or 3
  - a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, continue processing and proceed to step 15 and re-check Antibiotic Received.
  - b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to check Oral Antibiotics.
- 14. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
  - b. If Oral Antibiotics equals Yes or No, continue processing and proceed to recheck Antibiotic Received.
- 15. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
  - b. If Antibiotic Received equals 2 or 3, continue processing and proceed to Antibiotic Name.
- 16. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission. Note: Cases containing invalid data and/or an incomplete Antibiotic Grid will be rejected. 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.
17. Check Antibiotic Administration Route
- a. If the Antibiotic Administration Route is equal to 1, 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
  - b. If the Antibiotic Administration Route is equal to 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 route 2.
18. 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 44 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 Surgical Incision Time. Proceed only with antibiotic doses that have an associated Non Unable to Determine date.
19. 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 44 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 44 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.
20. 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 44 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 proceed to the Antibiotic Timing I calculation.
21. 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.
22. Check Antibiotic Timing I
- a. If the Antibiotic Timing I is less than or equal to 1440 minutes for at least one antibiotic dose with non Unable to Determine date and time, proceed with antibiotic doses that have Antibiotic Timing I calculated, continue processing and check Anesthesia End Date. For each case, proceed ONLY with those antibiotic doses that satisfy the following condition: Antibiotic Timing I less than or equal to 1440.
  - b. If the Antibiotic Timing I is greater than 1440 minutes 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
23. 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 44 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 44 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 Anesthesia End Time.

24. 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 44 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, 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
  - c. If the Anesthesia End Time is equal to a Non Unable to Determine Value, continue processing and proceed to the Antibiotic Timing II calculation.
25. 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.
26. Check Antibiotic Timing II
  - a. If the Antibiotic Timing II is less than or equal to 0 minutes for at least one dose of ANY Antibiotic, proceed with antibiotic doses that have Antibiotic Timing II calculated, continue processing and recheck ICD-9-CM Principal Procedure Code. For each case, proceed ONLY with antibiotic doses that satisfy the following condition: Antibiotic Timing II less than or equal to zero.
  - b. If the Antibiotic Timing II is greater than 0 minutes for all doses of antibiotics with non Unable to Determine date and time, 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
27. 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 31 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.
28. 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 29 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.
    - i. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    - ii. If the Antibiotic Name is not on Table 3.7, continue processing and recheck if Antibiotic Name is on Table 3.6b.
    - iii. 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.
    - iv. If at least one ICD-9-CM 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    - v. If no ICD-9-CM Other Procedure Code is on Table 5.03 or if the Antibiotic Name is not on Table 3.6b, continue processing and proceed to step 34 to recheck ICD-9-CM Principal Procedure Code.
29. 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.
    - i. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    - ii. If the Antibiotic Name is not on Table 3.1, continue processing and proceed to step 34 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 Antibiotic Name.
30. 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 44 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 34 and recheck Antibiotic Name.
31. 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 44 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.
32. 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 44 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.
33. Recheck Antibiotic Name
- a. If the Antibiotic Name is on Table 3.6a, continue processing and recheck Antibiotic Name.
    - i. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    - ii. If the Antibiotic name is not on Table 3.2, continue processing and recheck Antibiotic Name.
    - iii. If the Antibiotic Name is on Table 3.6, 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission
    - iv. If the Antibiotic Name is not on Table 3.6, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.
  - b. If the Antibiotic Name is not on Table 3.6a, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.
34. 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 39 and check Antibiotic Allergy, Do not check step 35 and 37 to see if Antibiotic Name is on Tables 3.8 or 3.9, do not check step 36 Antibiotic Allergy or step 38 Vancomycin.
35. 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 44 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.
36. 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 44 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 44 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.
37. 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 44 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.
38. 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 44 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 44 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
39. 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 44 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 44 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 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 5.06 or 5.07, continue processing and recheck Antibiotic Name.
  - b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to step 42 and recheck Antibiotic Name.
41. Recheck Antibiotic Name
- a. If at least one of the Antibiotic Names is on Table 3.8, continue processing and recheck Antibiotic Name.
    - i. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    - ii. 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 3.8, continue processing and recheck Antibiotic Name.
42. Recheck Antibiotic Name
- a. If at least one of the Antibiotic Names is on Table 3.9, continue processing and recheck Antibiotic Name.
    - i. 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 44 and check the Stratified Measures for Overall Rate (SCIP-Inf-2a) for The Joint Commission.
    - ii. 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.
43. Recheck Antibiotic Name
- a. If at least one of the Antibiotic Names is on Table 3.6a, continue processing and recheck Antibiotic Name.
    - i. 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.
    - ii. 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.
44. 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.
45. Check Overall Rate Category Assignment

- a. If the Overall Rate Category Assignment is equal to B, 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 or X, continue processing and check the ICD-9-CM Principal Procedure Code.
46. 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.
47. 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.
48. 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.
49. 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-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.
50. 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.
51. 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.