NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-Inf-1

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

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

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

Rationale: A goal of prophylaxis with antibiotics is to establish bactericidal tissue and serum levels at the time of skin incision. Studies performed in the 1960's and 1970's demonstrated that a common reason for failure of prophylaxis was delay of antibiotic administration until after the operation. In a study of 2,847 surgery patients at LDS Hospital in Salt Lake City, it was found that the lowest incidence of post-operative infection was associated with antibiotic administration during the one hour prior to

surgery. The risk of infection increased progressively with greater time intervals between administration and skin incision. This relationship was observed whether antibiotics preceded or followed skin incision (Classen 1993).

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

Type of Measure: Process

Improvement Noted As: An increase in the rate.

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

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:

- *Anesthesia Start Date*
- *Antibiotic Administration Date*
- *Antibiotic Administration Time*
- *Surgical Incision Date*
- *Surgical Incision Time*

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

Included Populations:

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

AND

- An *ICD-9-CM Principal Procedure Code* of selected surgeries (as defined in Appendix A, Table 5.01-5.08 for ICD-9-CM codes).

Excluded Populations:

- Patients less than 18 years of age
- Patients who have a Length of Stay greater than 120 days
- Patients who had a hysterectomy and a caesarean section performed during this hospitalization
- Patients who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 for ICD-9-CM

codes)
- Patients 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 had other procedures requiring general or spinal anesthesia that occurred within 3 days (4 days for CABG or Other Cardiac Surgery) prior to or after the procedure of interest (during separate surgical episodes) during this hospital stay
- Patients who were receiving antibiotics more than 24 hours prior to surgery
- Patients who were receiving antibiotics within 24 hours prior to arrival (except colon surgery patients taking oral prophylactic antibiotics)

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

Risk Adjustment: No

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

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

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

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

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

Selected References:

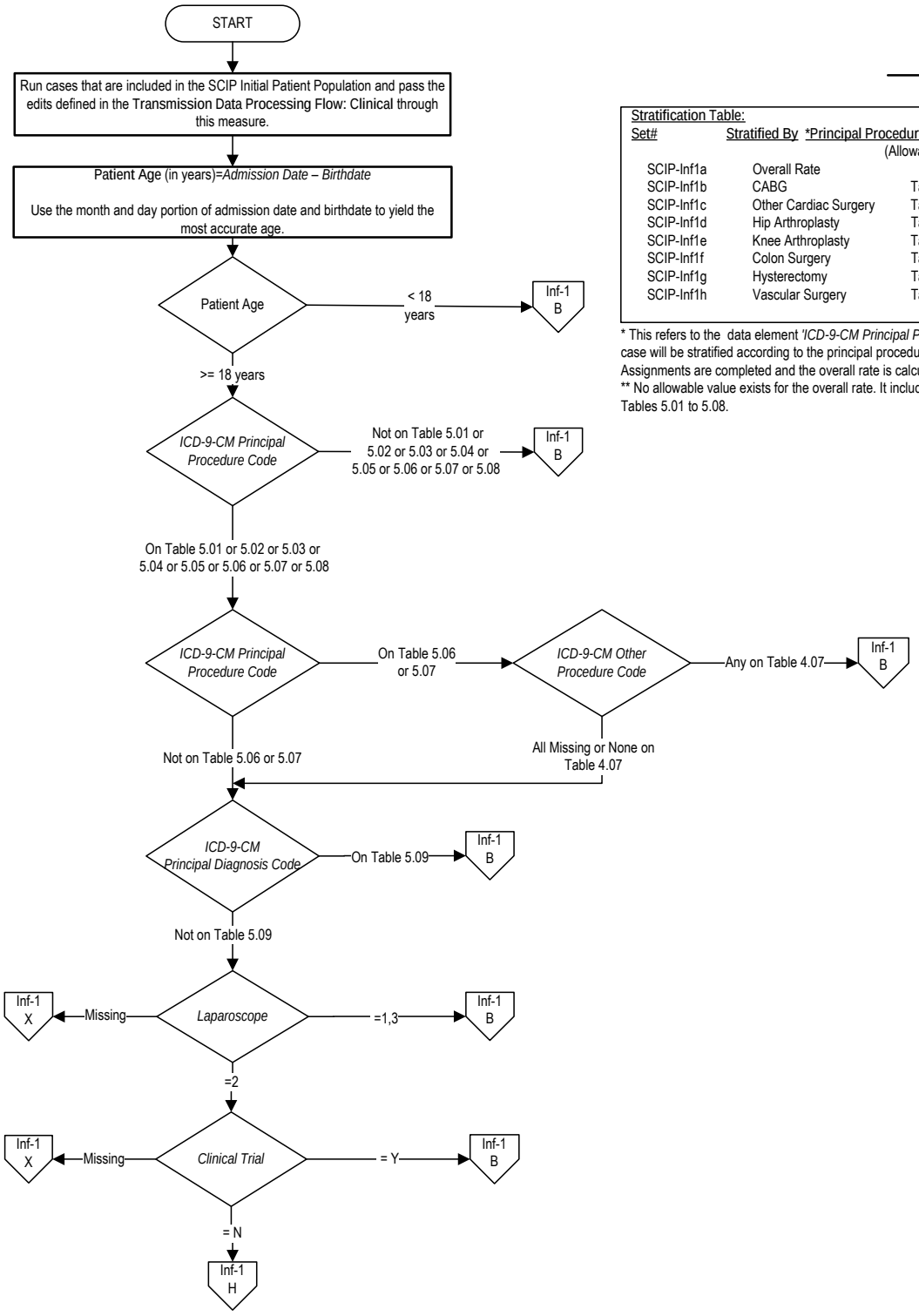
- Bratzler DW, Houck PM, for the Surgical Infection Prevention Guidelines Writers Group. Antimicrobial prophylaxis for surgery: An advisory statement from the National Surgical Infection Prevention Project. *CID*. 2004:38(15 June):1706-1715.
- Mangram AJ, Horan TC, Pearson ML, et al. Guidelines for prevention of surgical site infection, 1999. *Infect Control Hosp Epidemiol.* 1999;20:247-280.
- Silver A, Eichorn A, Kral J, et al. Timeliness and use of antibiotic prophylaxis in selected inpatient surgical procedures. *Am J Surg.* 1996;171:548-552.
- Larsen RA, Evans RS, Burke JP, et al. Improved perioperative antibiotic use and reduced surgical wound infections through use of computer decision analysis. *Infect Control Hosp Epidemiol.* 1989;10:316-320.
- Finkelstein R, Reinhertz G, Embom A. Surveillance of the use of antibiotic prophylaxis in surgery. *Isr J Med Sci.* 1996;32:1093-1097.
- Matuschka PR, Cheadle WG, Burke JD, et al. A new standard of care: administration of preoperative antibiotics in the operating room. *Am Surg.* 1997;63:500-503.
- Gorecki P, Schein M, Rucinski JC, et al. Antibiotic administration in patients undergoing common surgical procedures in a community teaching hospital: the chaos continues. *World J Surg.* 1999;23:429-432.
- Bernard HR, Cole WR. The prophylaxis of surgical infections: the effect of prophylactic antimicrobial drugs on the incidence of infection following potentially contaminated operations. *Surgery.* 1964;56:151-157.
- Polk HC, Lopez-Mayor JF. Postoperative wound infection: a prospective study of determinant factors and prevention. *Surgery.* 1969;66:97-103.
- Stone HH, Hooper CA, Kolb LD, et al. Antibiotic prophylaxis in gastric, biliary, and colonic surgery. *Ann Surg.* 1976;184:443-452.
- 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.

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

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

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

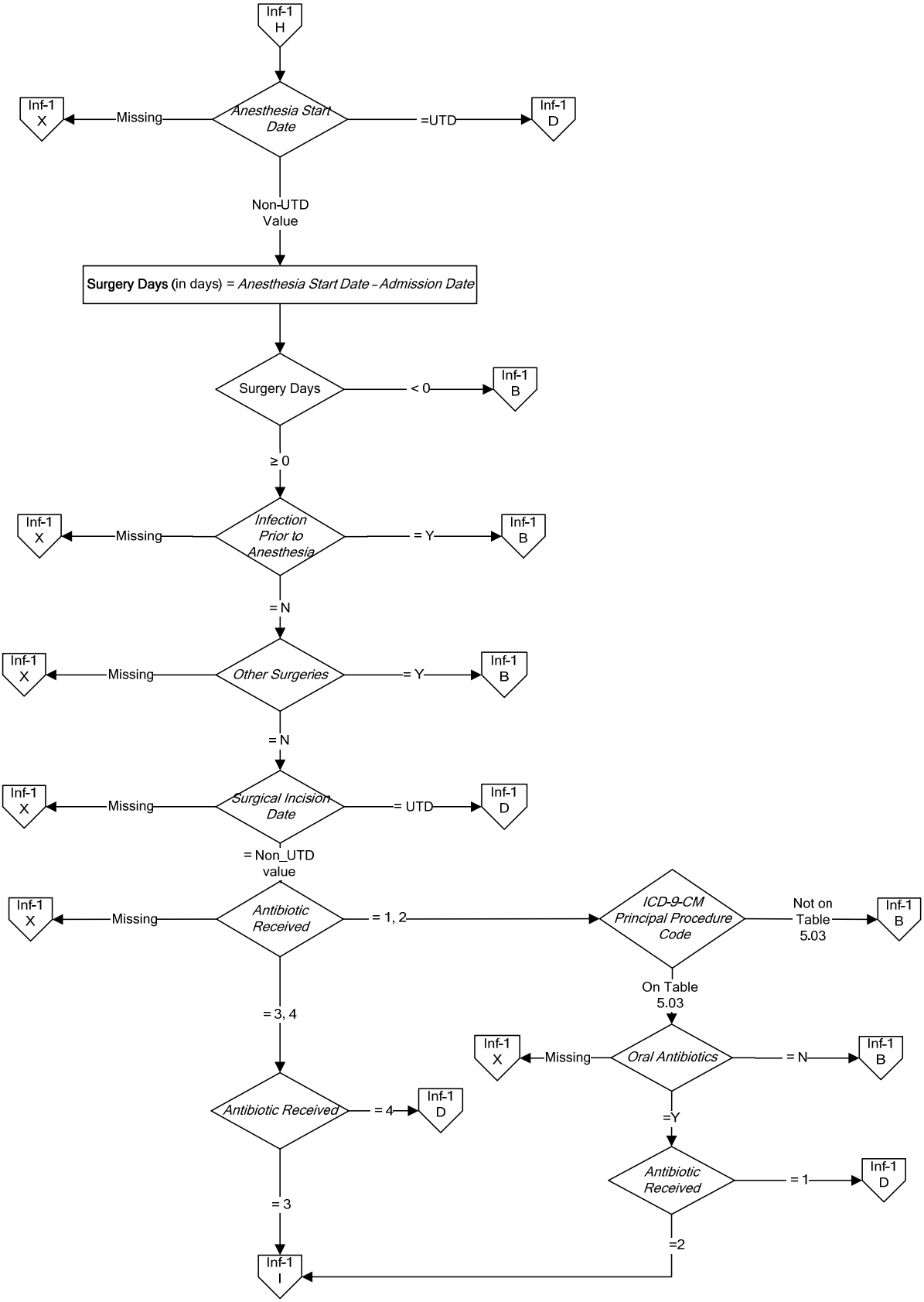
Variable Key:
Patient Age
Antibiotic Days I
Antibiotic Timing I
Surgery Days



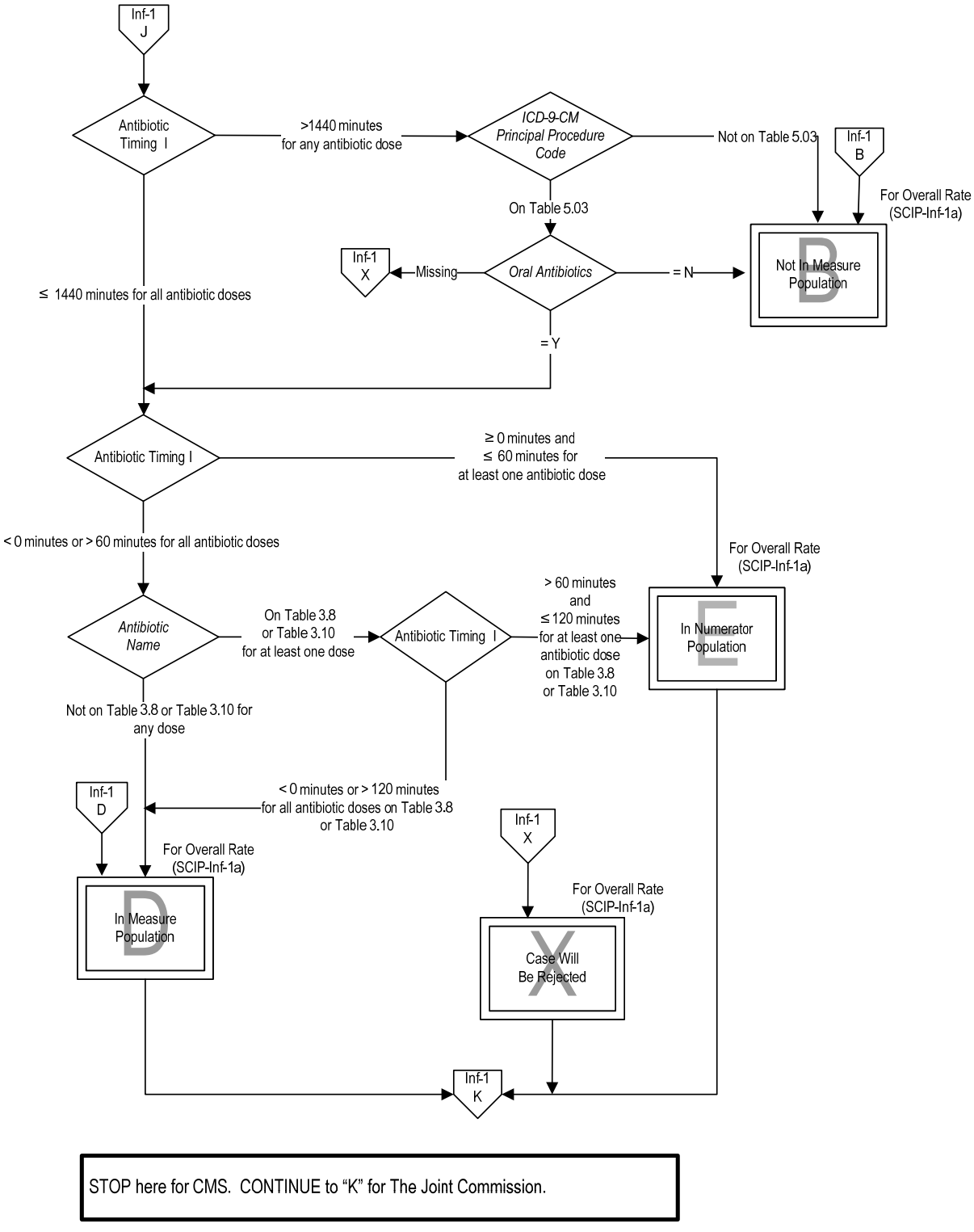
Stratification Table:

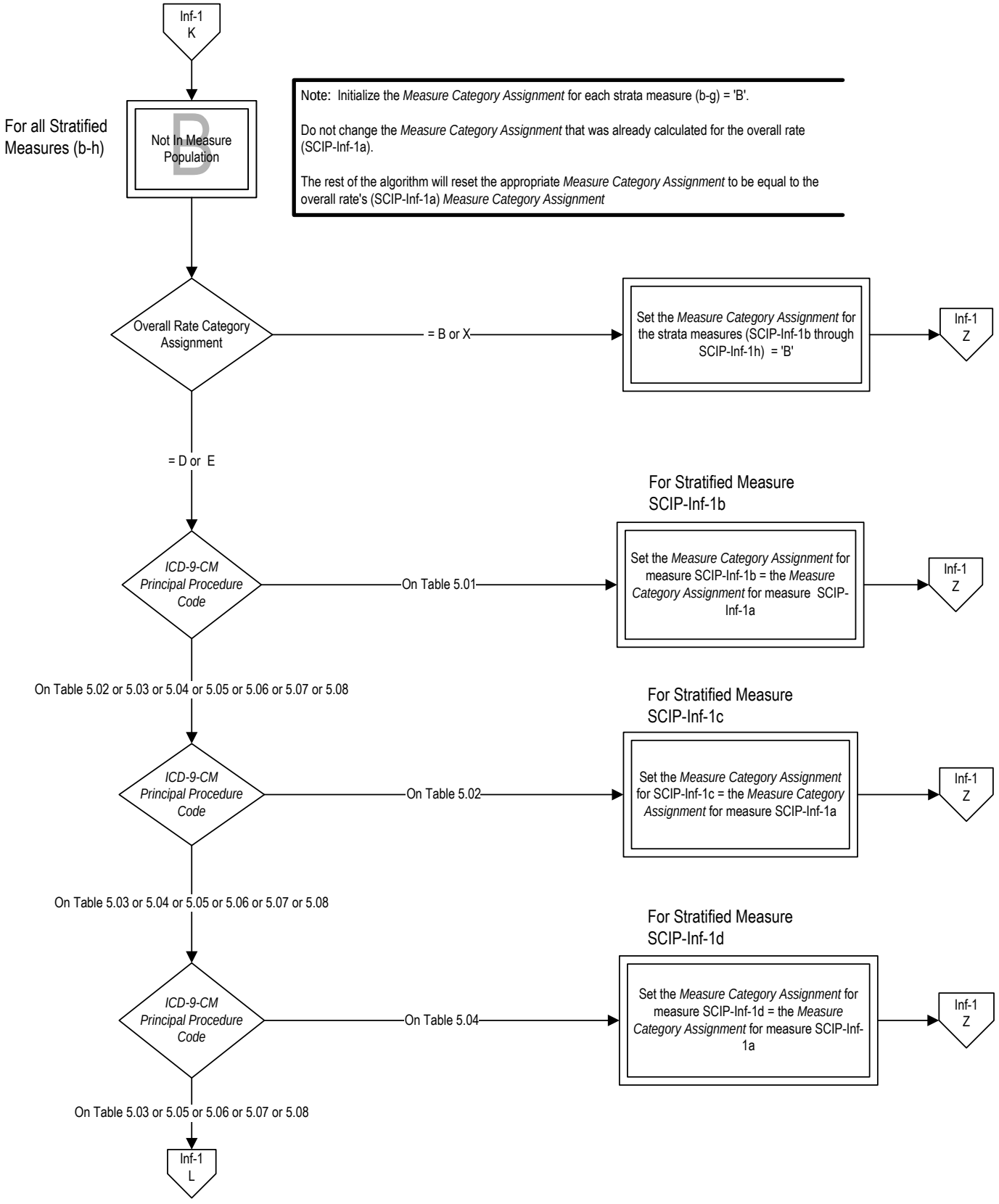
Set#	Stratified By	*Principal Procedure Code (Allowable Value)
SCIP-Inf1a	Overall Rate	**
SCIP-Inf1b	CABG	Table 5.01
SCIP-Inf1c	Other Cardiac Surgery	Table 5.02
SCIP-Inf1d	Hip Arthroplasty	Table 5.04
SCIP-Inf1e	Knee Arthroplasty	Table 5.05
SCIP-Inf1f	Colon Surgery	Table 5.03
SCIP-Inf1g	Hysterectomy	Table 5.06 Or 5.07
SCIP-Inf1h	Vascular Surgery	Table 5.08

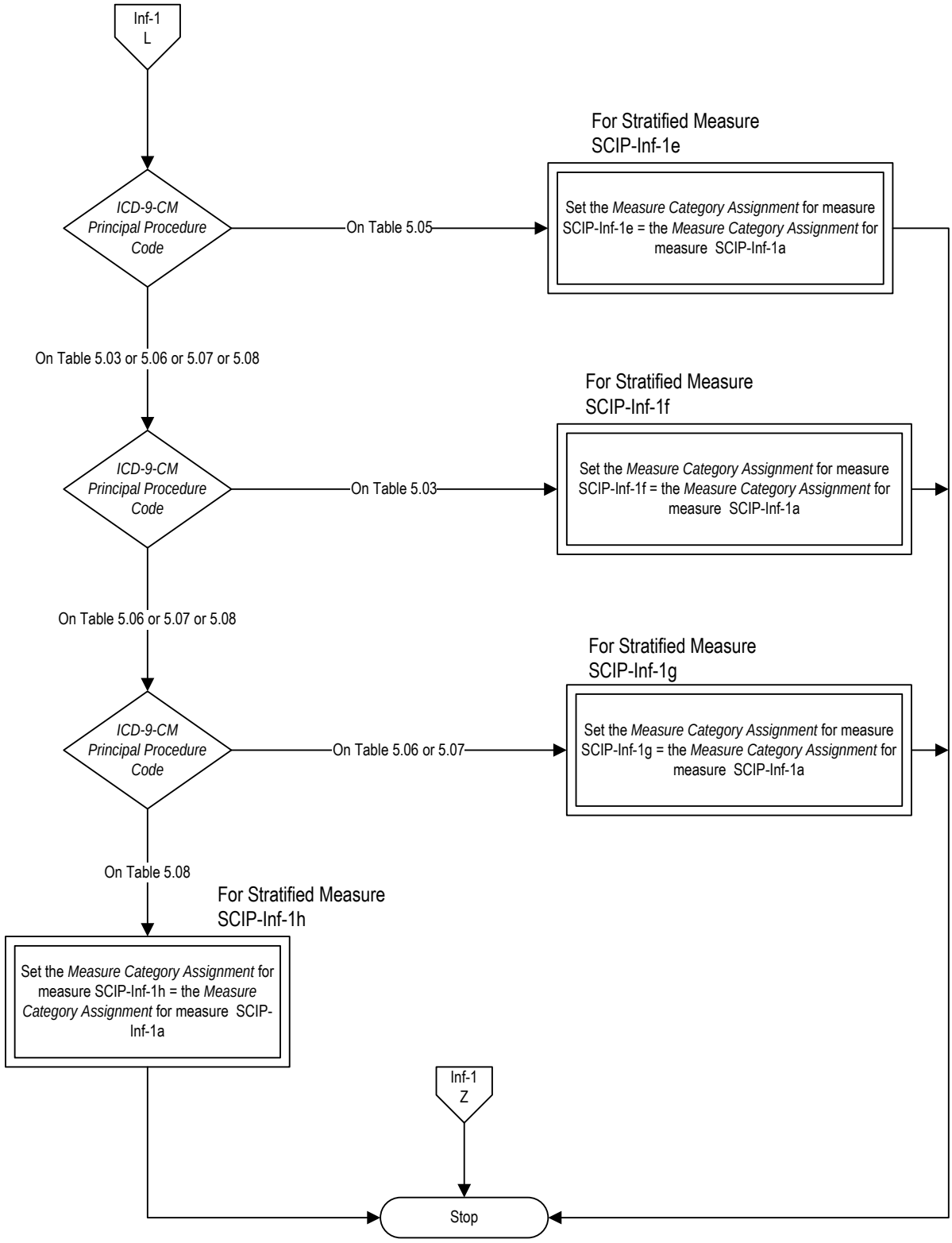
* This refers to the data element *'ICD-9-CM Principal Procedure Code'*. Each case will be stratified according to the principal procedure code, after the Category Assignments are completed and the overall rate is calculated.
** No allowable value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.


Inf-1 H
Anesthesia Start Date
Missing
Inf-1 X
=UTD
Inf-1 D
Non-UTD Value
Surgery Days (in days) = Anesthesia Start Date – Admission Date
Surgery Days
< 0
Inf-1 B
≥ 0
Infection Prior to Anesthesia
Missing
Inf-1 X
= Y
Inf-1 B
= N
Other Surgeries
Missing
Inf-1 X
= Y
Inf-1 B
= N
Surgical Incision Date
Missing
Inf-1 X
= UTD
Inf-1 D
= Non_UTD value
Antibiotic Received
Missing
Inf-1 X
= 1, 2
ICD-9-CM Principal Procedure Code
Not on Table 5.03
Inf-1 B
On Table 5.03
= 3, 4
Antibiotic Received
= 4
Inf-1 D
= 3
Oral Antibiotics
Missing
Inf-1 X
= N
Inf-1 B
=Y
Antibiotic Received
= 1
Inf-1 D
=2
Inf-1 I

Inf-1 I
Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or 'UTD'.
Antibiotic Name
Antibiotic Grid Not Populated
Inf-1 X
On Table 2.1
Antibiotic Administration Route
=3,10 for all antibiotic doses
Inf-1 D
=1,2 for any antibiotic dose
Proceed only with antibiotic doses on Table 2.1 that are administered vial routes '1' or '2'.
Antibiotic Administration Date
=UTD for all antibiotic doses
Inf-1 D
Non-UTD date for at least one antibiotic dose
Note: Proceed only with antibiotic doses that have an associated non-UTD date.
Antibiotic Days I = Surgical Incision Date - Antibiotic Administration Date (in days)
Antibiotic Days I
> 1 for at least one antibiotic dose
ICD-9-CM Principal Procedure Code
Not on Table 5.03
Inf-1 B
On Table 5,03
≤ 1 for all antibiotic doses
Antibiotic Days I
< 0 for all antibiotic doses
Inf-1 D
Inf-1 X
Missing
Oral Antibiotics
= N
Inf-1 B
=Y
≥ 0 for any antibiotic dose
Inf-1 X
Missing
Surgical Incision Time
=UTD
Inf-1 D
Non-UTD Value
Antibiotic Administration Time
=UTD for all antibiotic doses
Inf-1 D
Non-UTD time for at least one antibiotic dose
Note: Proceed only with antibiotic doses that have an associated non-UTD time.
Antibiotic Timing I = Surgical Incision Date and Surgical Incision Time - Antibiotic Administration Date and Antibiotic Administration Time (in minutes)
Inf-1 J


Inf-1 J
Antibiotic Timing I
>1440 minutes for any antibiotic dose
ICD-9-CM Principal Procedure Code
Not on Table 5.03
Inf-1 B
For Overall Rate (SCIP-Inf-1a)
On Table 5.03
Inf-1 X
Missing
Oral Antibiotics
= N
Not In Measure Population
D
≤ 1440 minutes for all antibiotic doses
= Y
Antibiotic Timing I
≥ 0 minutes and ≤ 60 minutes for at least one antibiotic dose
< 0 minutes or > 60 minutes for all antibiotic doses
For Overall Rate (SCIP-Inf-1a)
Antibiotic Name
On Table 3.8 or Table 3.10 for at least one dose
Antibiotic Timing I
> 60 minutes and ≤ 120 minutes for at least one antibiotic dose on Table 3.8 or Table 3.10
In Numerator Population
E
Not on Table 3.8 or Table 3.10 for any dose
< 0 minutes or > 120 minutes for all antibiotic doses on Table 3.8 or Table 3.10
Inf-1 D
For Overall Rate (SCIP-Inf-1a)
In Measure Population
D
Inf-1 X
For Overall Rate (SCIP-Inf-1a)
Case Will Be Rejected
X
Inf-1 K
STOP here for CMS. CONTINUE to "K" for The Joint Commission.


Inf-1
K
For all Stratified Measures (b-h)
D
Not In Measure Population
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-1a).
The rest of the algorithm will reset the appropriate *Measure Category Assignment* to be equal to the overall rate's (SCIP-Inf-1a) *Measure Category Assignment*
Overall Rate Category Assignment
= B or X
Set the *Measure Category Assignment* for the strata measures (SCIP-Inf-1b through SCIP-Inf-1h) = 'B'
Inf-1
Z
= D or E
For Stratified Measure SCIP-Inf-1b
ICD-9-CM Principal Procedure Code
On Table 5.01
Set the *Measure Category Assignment* for measure SCIP-Inf-1b = the *Measure Category Assignment* for measure SCIP-Inf-1a
Inf-1
Z
On Table 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08
For Stratified Measure SCIP-Inf-1c
ICD-9-CM Principal Procedure Code
On Table 5.02
Set the *Measure Category Assignment* for SCIP-Inf-1c = the *Measure Category Assignment* for measure SCIP-Inf-1a
Inf-1
Z
On Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08
For Stratified Measure SCIP-Inf-1d
ICD-9-CM Principal Procedure Code
On Table 5.04
Set the *Measure Category Assignment* for measure SCIP-Inf-1d = the *Measure Category Assignment* for measure SCIP-Inf-1a
Inf-1
Z
On Table 5.03 or 5.05 or 5.06 or 5.07 or 5.08
Inf-1
L


Inf-1
L
ICD-9-CM
Principal Procedure
Code
On Table 5.05
For Stratified Measure
SCIP-Inf-1e
Set the Measure Category Assignment for measure SCIP-Inf-1e = the Measure Category Assignment for measure SCIP-Inf-1a
On Table 5.03 or 5.06 or 5.07 or 5.08
ICD-9-CM
Principal Procedure
Code
On Table 5.03
For Stratified Measure
SCIP-Inf-1f
Set the Measure Category Assignment for measure SCIP-Inf-1f = the Measure Category Assignment for measure SCIP-Inf-1a
On Table 5.06 or 5.07 or 5.08
ICD-9-CM
Principal Procedure
Code
On Table 5.06 or 5.07
For Stratified Measure
SCIP-Inf-1g
Set the Measure Category Assignment for measure SCIP-Inf-1g = the Measure Category Assignment for measure SCIP-Inf-1a
On Table 5.08
For Stratified Measure
SCIP-Inf-1h
Set the Measure Category Assignment for measure SCIP-Inf-1h = the Measure Category Assignment for measure SCIP-Inf-1a
Inf-1
Z
Stop

SCIP-Infection (Inf)-1: Prophylactic Antibiotics Received Within One Hour Prior to Surgical Incision

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

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

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

Stratification Table

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

Set Number	Stratified By the Overall Rate	Principal Procedure Code
SCIP-Inf 1a	Overall Rate	No allowable Value exists for the overall rate. It includes all procedures on Tables 5.01 to 5.08.
SCIP-Inf 1b	Coronary Artery Bypass Graft (CABG)	Table 5.01
SCIP-Inf 1c	Other Cardiac Surgery	Table 5.02
SCIP-Inf 1d	Hip Arthroplasty	Table 5.04
SCIP-Inf 1e	Knee Arthroplasty	Table 5.05
SCIP-Inf 1f	Colon Surgery	Table 5.03
SCIP-Inf 1g	Hysterectomy	Table 5.06 or Table 5.07
SCIP-Inf 1h	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. Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age.

3. Check Patient Age
   a. If the Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for Centers for Medicare and Medicaid Services (CMS). Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

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

4. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code.

5. Recheck ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, continue processing and check ICD-9-CM Other Procedure Code.
      1. If any of the ICD-9-CM Other Procedure Codes are on Table 4.07, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
      2. If all of the ICD-9-CM Other Procedure Codes are missing or none are on Table 4.07, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.
   b. If the ICD-9-CM Principal Procedure Code is not on Table 5.06 or 5.07, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

6. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.09, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.09, continue processing and proceed to Laparoscope.

7. 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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) 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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
c. If Laparoscope equals 2, continue processing and proceed to Clinical Trial.

8. Check Clinical Trial
   a. If Clinical Trial is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If Clinical Trial equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   c. If Clinical Trial equals No, continue processing and proceed to Anesthesia Start Date.

9. 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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the Anesthesia Start Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission
   c. If Anesthesia Start Date equals a Non Unable To Determine Value, continue processing and proceed to the Surgery Days calculation.

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

11. 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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
   b. If the Surgery Days is greater than or equal to zero, continue processing and proceed to Infection Prior to Anesthesia.

12. 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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If Infection Prior to Anesthesia equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    c. If Infection Prior to Anesthesia equals No, continue processing and proceed to Other Surgeries.

13. Check Other Surgeries
    a. If Other Surgeries is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If Other Surgeries equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    c. If Other Surgeries equals No, continue processing and proceed to Surgical Incision Date.

14. 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 36 and check the Stratified Measures for Overall Rate (SCIP- Inf-1a) for The Joint Commission.
    b. If the Surgical Incision Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    c. If Surgical Incision Date equals a Non Unable To Determine Value, continue processing and proceed to Antibiotic Received.

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 D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
c. If Antibiotic Received equals 3, continue processing and proceed to step 19 and check Antibiotic Name. Do not check ICD-9-CM Principal Procedure Code, Oral Antibiotics or Antibiotic Received.

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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to check Oral Antibiotics.

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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    c. If Oral Antibiotics equals Yes, continue processing and proceed to recheck Antibiotic Received.

18. Recheck Antibiotic Received
    a. If Antibiotic Received equals 1, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If Antibiotic Received equals 2, continue processing and proceed to Antibiotic Name.

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 36 and check the Stratified Measures for Overall Rate

(SCIP-Inf-1a) for The Joint Commission. Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or Unable to Determine.

b. If the Antibiotic Name is on Table 2.1, continue processing and proceed to Antibiotic Administration Route.

20. Check Antibiotic Administration Route
    a. If the Antibiotic Administration Route is equal to 3 or 10 for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the Antibiotic Administration Route is equal to 1 or 2 for any antibiotic dose, continue processing and proceed to Antibiotic Administration Date. Proceed only with antibiotic doses on Table 2.1 that are administered via routes 1 or 2.

21. Check Antibiotic Administration Date
    a. If the Antibiotic Administration Date is equal to Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the Antibiotic Administration Date is equal to a Non Unable to Determine date for at least one antibiotic dose, continue processing and proceed to the Antibiotic Days I calculation. Note: Proceed only with antibiotic doses that have an associated non Unable to Determine date.

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

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

24. Recheck ICD-9-CM Principal Procedure Code only if the Antibiotic Days I is greater than 1 for at least one antibiotic dose

a. If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics.

25. Check Oral Antibiotics
    a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    c. If Oral Antibiotics equals Yes, continue processing and proceed to step 27 and check Surgical Incision Time. Do not recheck Antibiotic Days I.

26. Recheck Antibiotic Days I
    a. If the Antibiotic Days I is less than zero for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the Antibiotic Days I is greater than or equal to zero for any antibiotic dose, continue processing and proceed to Surgical Incision Time.

27. Check Surgical Incision Time
    a. If the Surgical Incision Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the Surgical Incision Time is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    c. If the Surgical Incision Time is equal to a Non Unable to Determine Value, continue processing and check Antibiotic Administration Time.

28. Check Antibiotic Administration Time
    a. If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and proceed to the Antibiotic Timing I calculation. Note: Proceed only with antibiotic doses that have an associated non Unable to Determine time.

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

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

31. 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 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics.

32. Check Oral Antibiotics
    a. If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.
    b. If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop

processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

c. If Oral Antibiotics equals Yes, continue processing and proceed to recheck Antibiotic Timing I.

33. Recheck Antibiotic Timing I

a. If the Antibiotic Timing I is greater than or equal to zero minutes and less than or equal to 60 minutes for at least one antibiotic dose, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

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

34. Recheck Antibiotic Name

a. If the Antibiotic Name is on Table 3.8 or Table 3.10 for at least one dose, continue processing and recheck Antibiotic Timing I.

b. If the Antibiotic Name is not on Table 3.8 or Table 3.10 for any dose, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Do not recheck Antibiotic Timing I. Stop processing for CMS. Proceed to step 36 and check the Stratified Measures for Overall Rate (SCIP-Inf-1a) for The Joint Commission.

35. Recheck Antibiotic Timing I

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

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

36. 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-1a). The

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

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

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

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

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

41. Recheck ICD-9-CM Principal Procedure Code
    a. If the ICD-9-CM Principal Procedure Code is on Table 5.05, for Stratified Measure SCIP-Inf-1e, set the Measure Category Assignment for measure

SCIP-Inf-1e to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

42. Recheck ICD-9-CM Principal Procedure Code

a. If the ICD-9-CM Principal Procedure Code is on Table 5.03, for Stratified Measure SCIP-Inf-1f, set the Measure Category Assignment for measure SCIP-Inf-1f to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code.

43. Recheck ICD-9-CM Principal Procedure Code

a. If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, for Stratified Measure SCIP-Inf-1g, set the Measure Category Assignment for measure SCIP-Inf-1g to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Table 5.08, for Stratified Measure SCIP-Inf-1h, set the Measure Category Assignment for measure SCIP-Inf-1h to equal the Measure Category Assignment for measure SCIP-Inf-1a. Stop processing.