

**HOSPITAL OUTPATIENT DEPARTMENT QUALITY MEASURES
SURGERY**

Set Measure ID #	Measure Short Name
OP-6	Timing of Antibiotic Prophylaxis
OP-7	Antibiotic Selection

OP SURGICAL GENERAL DATA ELEMENT LIST

General Data Element Name	Collected For:
<i>Arrival Time</i>	All Records
<i>Birthdate</i>	All Records
<i>CMS Certification Number</i> ^{1,2}	All Records
<i>First Name</i>	All Records
<i>Hispanic Ethnicity</i>	All Records
<i>Last Name</i>	All Records
<i>National Provider Identifier</i> ^{1,2}	Optional for All Records
<i>Outpatient Encounter Date</i>	All Records
<i>Patient HIC#</i>	Collected by CMS for patients with a <i>Payment Source</i> of Medicare who have a standard HIC number
<i>Patient Identifier</i>	All Records
<i>Payment Source</i>	All Records
<i>Physician 1</i>	Optional for All Records
<i>Physician 2</i>	Optional for All Records
<i>Postal Code</i>	All Records
<i>Race</i>	All Records
<i>Sex</i>	All Records

OP SURGICAL SPECIFIC DATA ELEMENT LIST

OP Surgical Data Element Name	Collected For:
<i>Antibiotic</i>	OP-6, OP-7
<i>Antibiotic Allergy</i>	OP-7
<i>Antibiotic Name</i>	OP-6, OP-7
<i>Antibiotic Route</i>	OP-6, OP-7
<i>Antibiotic Timing</i>	OP-6
<i>Case Canceled</i>	OP-6, OP-7
<i>Clinical Trial</i>	OP-6, OP-7
<i>CPT[®] Code</i>	OP-6, OP-7
<i>CPT[®] Code Date</i>	OP-6, OP-7
<i>Infection Prior to Anesthesia</i>	OP-6, OP-7
<i>Replacement</i>	OP-6, OP-7
<i>Vancomycin</i>	OP-7

¹ Transmission Data Element

² Defined in the Transmission Data Element List within the Hospital Outpatient Measure Data Transmission section of this manual

OP-6 and OP-7 Hospital Outpatient Population

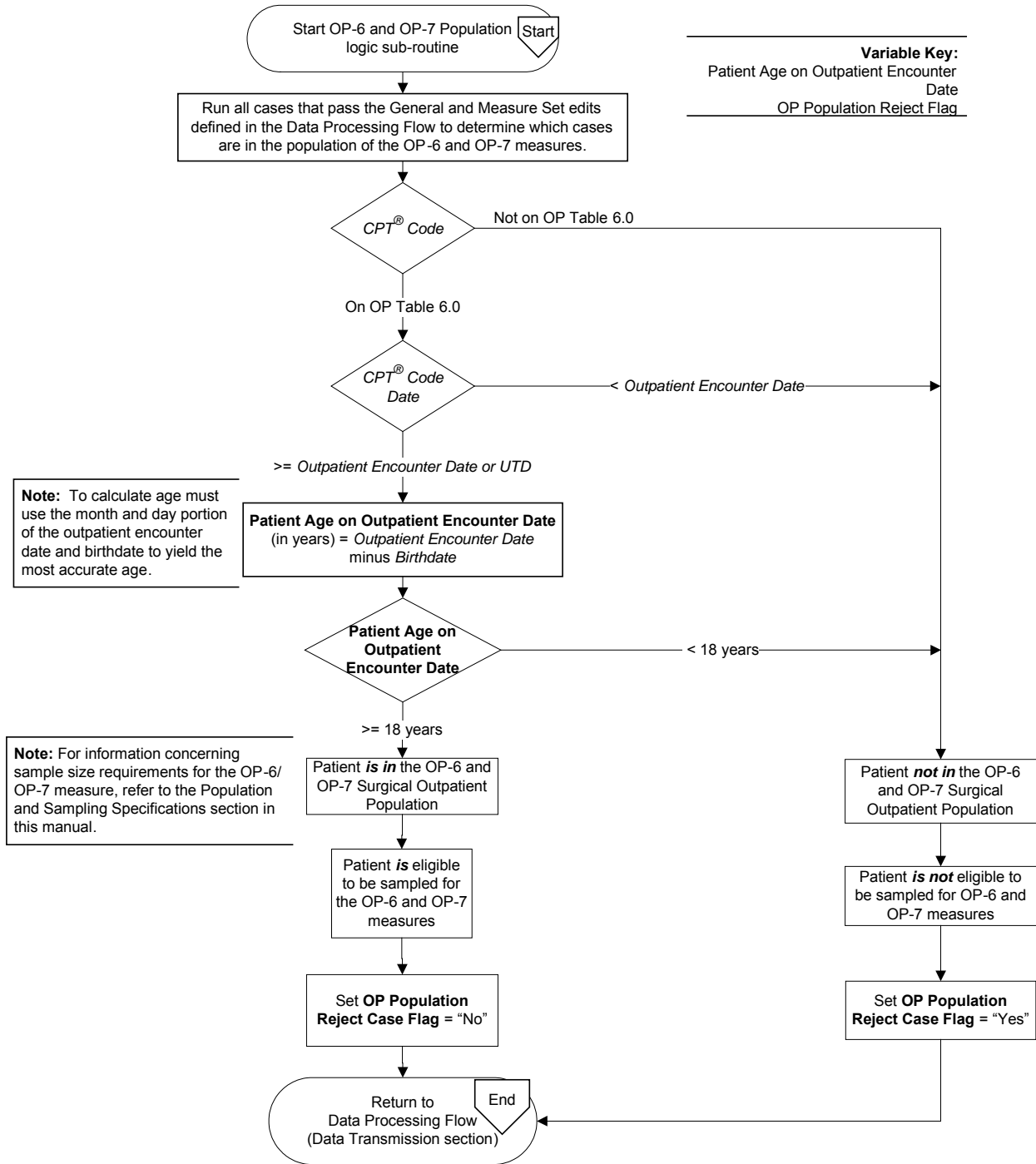
The population of the OP-6 and OP-7 Surgical measures is identified using four data elements in this order:

- *CPT® Code*
- *CPT® Code Date*
- *Outpatient Encounter Date*
- *Birthdate*

Patients seen in a hospital-based outpatient surgery center are included in the OP-6 and OP-7 Hospital Outpatient Population and are eligible to be sampled if they have:

- A Current Procedural Terminology (*CPT®*) Code for surgery as defined in Appendix A, OP Table 6.0, and
- A Patient Age on Outpatient Encounter Date (Outpatient Encounter Date – Birthdate) \geq 18 years

Surgical Hospital Outpatient Population Algorithm OP-6 and OP-7



Algorithm Narrative for Surgical Hospital Outpatient Population OP-6 and OP-7

Variable Key: Patient Age on Outpatient Encounter Date, OP Population Reject Flag

1. Start processing. Start OP-6 and OP-7 Population logic sub-routine.
2. Run all cases that pass the General and Measure Set edits defined in the Data Processing Flow to determine which cases are in the population of the OP-6 and OP-7 measures. Continue processing and proceed to *CPT[®] Code*.
3. Check *CPT[®] Code*.
 - a. If the *CPT[®] Code* for a patient is not on OP Table 6.0, the patient is not in the OP-6 and OP-7 Surgical Outpatient Population.
 - i) This patient is not eligible to be sampled for OP-6 and OP-7 measures.
 - ii) Set OP Population Reject Case Flag equals “Yes”. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If the *CPT[®] Code* for a patient is on OP Table 6.0, continue processing the patient and proceed to *CPT[®] Code Date*.
4. Check *CPT[®] Code Date*.
 - a. If the *CPT[®] Code Date* for a patient is prior to *Outpatient Encounter Date*, patient is not in the OP-6 and OP-7 Surgical Outpatient Population.
 - i) This patient is not eligible to be sampled for OP-6 and OP-7 measures.
 - ii) Set OP Population Reject Case Flag equals “Yes”. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If the *CPT[®] Code Date* is greater than or equal to *Outpatient Encounter Date* or UTD, continue processing.
5. Calculate Patient Age on *Outpatient Encounter Date*. Patient Age, in years, is equal to the *Outpatient Encounter Date* minus the *Birthdate*. Use the month and day portion of the *Outpatient Encounter Date* and *Birthdate* to yield the most accurate age.
6. Check Patient Age on *Outpatient Encounter Date*.
 - a. If Patient Age on *Outpatient Encounter Date* is less than 18 years, patient is not in the OP-6 and OP-7 Surgical Outpatient Population.
 - i) Patient is not eligible to be sampled for OP-6 and OP-7 measures.
 - ii) Set OP Population Reject Case Flag equals “Yes”. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If Patient Age on *Outpatient Encounter Date* is greater than or equal to 18 years, patient is in the OP-6 and OP-7 Surgical Outpatient Population.

Note: For information concerning sample size requirements for the OP-6/OP-7 measure, refer to the Population and Sampling Specifications section in this manual.

 - i) Patient is eligible to be sampled for the OP-6 and OP-7 measures.

- ii) Set OP Population Reject Case Flag equals “No”.
7. Return to Data Processing Flow (Data Transmission section). Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form

Measure Set: Hospital Outpatient Surgery

Measure ID#: OP- 6

Outpatient Setting: Hospital Outpatient Department Surgery

Performance Measure Name: Timing of Antibiotic Prophylaxis

Description: Surgical patients with prophylactic antibiotics initiated within one hour* prior to surgical incision.

*Patients who received vancomycin or a fluoroquinolone for prophylaxis should have the antibiotic 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: Multiple studies have demonstrated that timing is critical to the effectiveness of surgical antimicrobial prophylaxis and current guidelines recommend dosing within 1 hour before incision. It has been demonstrated that antibiotics to prevent experimental infections were effective only if administered during the 3 to 4 hour period after inoculation of bacteria into the wound (Miles, 1957). Furthermore, it has been reported that a variety of antimicrobials could prevent the development of experimental infections, but only if given within about 3 hours following wound contamination (Burke, 1961). In randomized clinical trials reported in 1964 and 1969, antimicrobials given before, during, and shortly after abdominal surgery were effective in preventing surgical site infection (SSI). The lowest rates of SSI in abdominal operations were associated with prophylaxis started within one hour prior to the incision (Stone, 1976). Similar findings have also been reported for cardiac operations (Classen, 1992). In a recent review of data from a European total joint arthroplasty registry, antibiotic delivery just before surgical incision was the most important factor in reducing surgical site infection rates.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if initiating vancomycin, in Appendix C, OP Table 6.12, or a fluoroquinolone, in Appendix C, OP Table 6.11).

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:

- *Antibiotic Timing*

Denominator Statement: Surgical patients with no evidence of prior infection.

Included Populations:

- Patients with a *CPT*[®] Code of selected surgeries as defined in Appendix A, OP Table 6.0

Excluded Populations:

- Patients who are less than 18 years of age
- Patients whose procedure is canceled prior to incision as defined in the Data Dictionary
- Patients with a *CPT*[®] Code of gastrostomy placement that represents a *Replacement* only, as defined in the Data Dictionary
- Patients enrolled in a *Clinical Trial* as defined in the Data Dictionary
- Patients with an *Infection Prior to Anesthesia* as defined in the Data Dictionary
- Patients who receive oral or intramuscular antibiotics only

Data Elements:

- *Antibiotic*
- *Antibiotic Name*
- *Antibiotic Route*
- *Birthdate*
- *Case Canceled*
- *Clinical Trial*
- *CPT*[®] Code
- *Infection Prior to Anesthesia*
- *Outpatient Encounter Date*
- *Replacement*

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 until patient leaves from the outpatient setting. Refer to Appendix C, OP Table 6.0 which contains a complete listing of antibiotics.

Measure Analysis Suggestions: Consideration may be given to relating this measure to OP-7 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, for additional information see the Population and Sampling Specifications Section.

Data Reported As: Aggregate rate generated from count data reported as a proportion

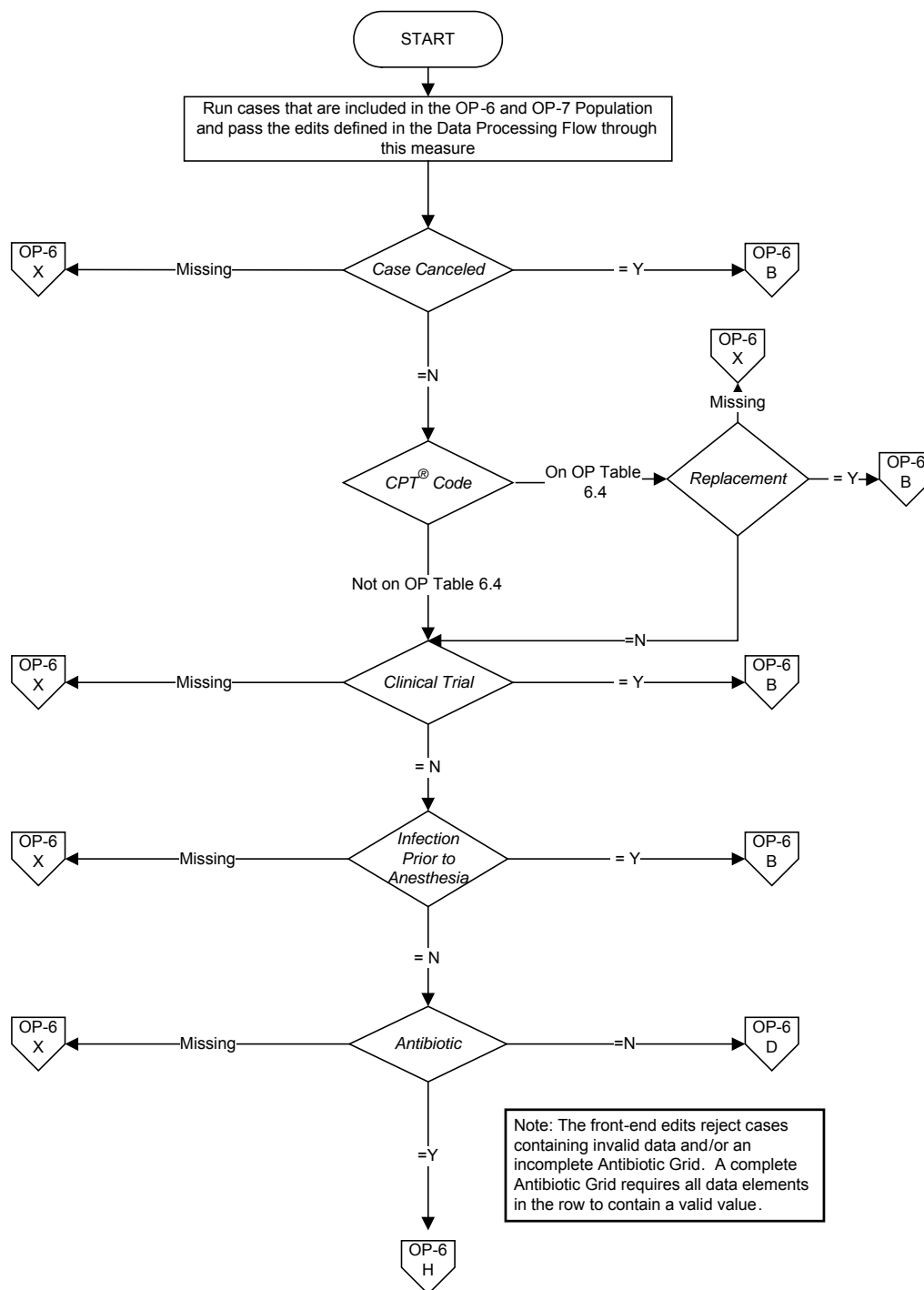
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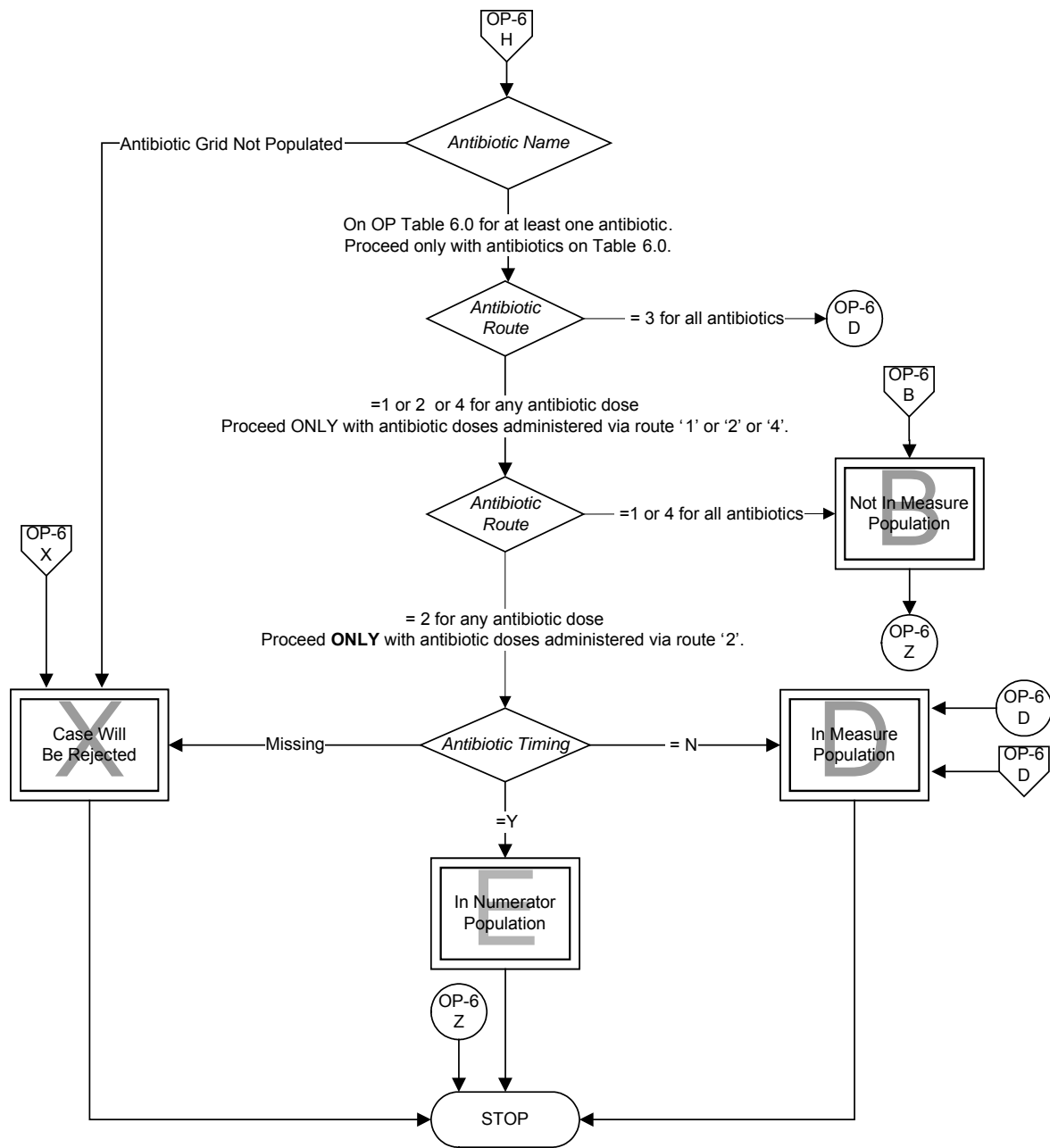
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- Silver A, Eichorn A, Kral J, et al. Timeliness and use of antibiotic prophylaxis in selected inpatient surgical procedures. *Am J Surg*. 1996;171:548-552.
- Stone HH, Hooper CA, Kolb LD, et al. Antibiotic prophylaxis in gastric, biliary, and colonic surgery. *Ann Surg*. 1976;184:443-452.

OP-6: Timing of Antibiotic Prophylaxis

Numerator: Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if initiating vancomycin, in Appendix C, OP Table 6.12, or a fluoroquinolone, in Appendix C, OP Table 6.11).

Denominator: Surgical patients with no evidence of prior infection.





Algorithm Narrative for OP-6: Timing of Antibiotic Prophylaxis

Numerator: Surgical patients with prophylactic antibiotics initiated within one hour prior to surgical incision (two hours if initiating vancomycin, in Appendix C, OP Table 6.12, or a fluoroquinolone, in Appendix C, OP Table 6.11).

Denominator: Surgical patients with no evidence of prior infection.

1. Start processing. Run cases that are included in the OP-6 and OP-7 Population and pass the edits defined in the Data Processing Flow through this measure.
2. Check *Case Canceled*.
 - a. If *Case Canceled* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Case Canceled* equals “Yes”, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Case Canceled* equals No, continue processing and proceed to *CPT*[®] Code.
3. Check *CPT*[®] Code.
 - a. If the *CPT*[®] Code is on OP Table 6.4, continue processing and proceed to *Replacement*.
 - i) Check *Replacement*
 - (1) If *Replacement* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - (2) If *Replacement* equals “Yes”, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - (3) If *Replacement* equals No, continue processing and proceed to Clinical Trial.
 - b. If the *CPT*[®] Code is not on OP Table 6.4, 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

- c. If *Clinical Trial* equals No, continue processing and proceed to *Infection Prior to Anesthesia*.
5. 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Infection Prior to Anesthesia* equals No, continue processing and proceed to *Antibiotic*.
6. Check *Antibiotic*.
 - a. If *Antibiotic* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Antibiotic* equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Antibiotic* equals “Yes”, continue processing and proceed to *Antibiotic Name*.

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 a valid value.
7. Check *Antibiotic Name*.
 - a. If Antibiotic Grid not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. *Antibiotic Name* must be on OP Table 6.0 for at least one antibiotic. Proceed only with antibiotics on Table 6.0. Continue processing and proceed to *Antibiotic Route*.
8. Check *Antibiotic Route*.
 - a. If *Antibiotic Route* equals 3 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Antibiotic Route* equals 1 or 2 or 4 for any antibiotic dose, proceed only with antibiotic doses administered via route 1 or 2 or 4. Continue processing for *Antibiotic Route*.
9. Check *Antibiotic Route*.
 - a. If *Antibiotic Route* equals 1 or 4 for all antibiotics, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

- b. If *Antibiotic Route* equals 2 for any antibiotic dose, proceed only with antibiotic doses administered via route 2. Continue processing and proceed to *Antibiotic Timing*.

10. Check *Antibiotic Timing*.

- a. If *Antibiotic Timing* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- b. If *Antibiotic Timing* equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- c. If *Antibiotic Timing* equals “Yes”, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form

Measure Set: Hospital Outpatient Surgery

Measure ID #: OP-7

Outpatient Setting: Hospital Outpatient Department 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 quinolones are recommended for some urologic operations. 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: Surgical patients who received prophylactic antibiotics recommended for their specific operation.

Included populations: Not Applicable

Excluded Populations: None

Data Elements:

- *Antibiotic Allergy*
- *Antibiotic Name*
- *Vancomycin*

Denominator Statement: Surgical patients with no evidence of prior infection.

Included Populations:

- Patients with a *CPT*[®] Code of selected surgeries as defined in Appendix A, OP Table 6.0.

Excluded Populations:

- Patients less than 18 years of age

- Patients whose procedure is canceled prior to incision as defined in the Data Dictionary
- Patients with a CPT® Code of gastrostomy placement that represents a *Replacement* only, as defined in the Data Dictionary
- Patients enrolled in a *Clinical Trial* as defined in the Data Dictionary
- Patients with an *Infection Prior to Anesthesia* as defined in the Data Dictionary
- Patients who do not receive any antibiotics during the encounter

Data Elements:

- *Antibiotic*
- *Antibiotic Route*
- *Birthdate*
- *Case Canceled*
- *Clinical Trial*
- *CPT® Code*
- *Infection Prior to Anesthesia*
- *Outpatient Encounter Date*
- *Replacement*

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 until the patient leaves the outpatient setting. Refer to Appendix C, OP Table 6.0, which contains a complete listing of antibiotics.

Measure Analysis Suggestions: Consideration may be given by relating this measure to OP-6 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 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, for additional information see the Population and Sampling Specifications Section.

Data Reported As: Aggregate rate generated from count data reported as a proportion

Selected References:

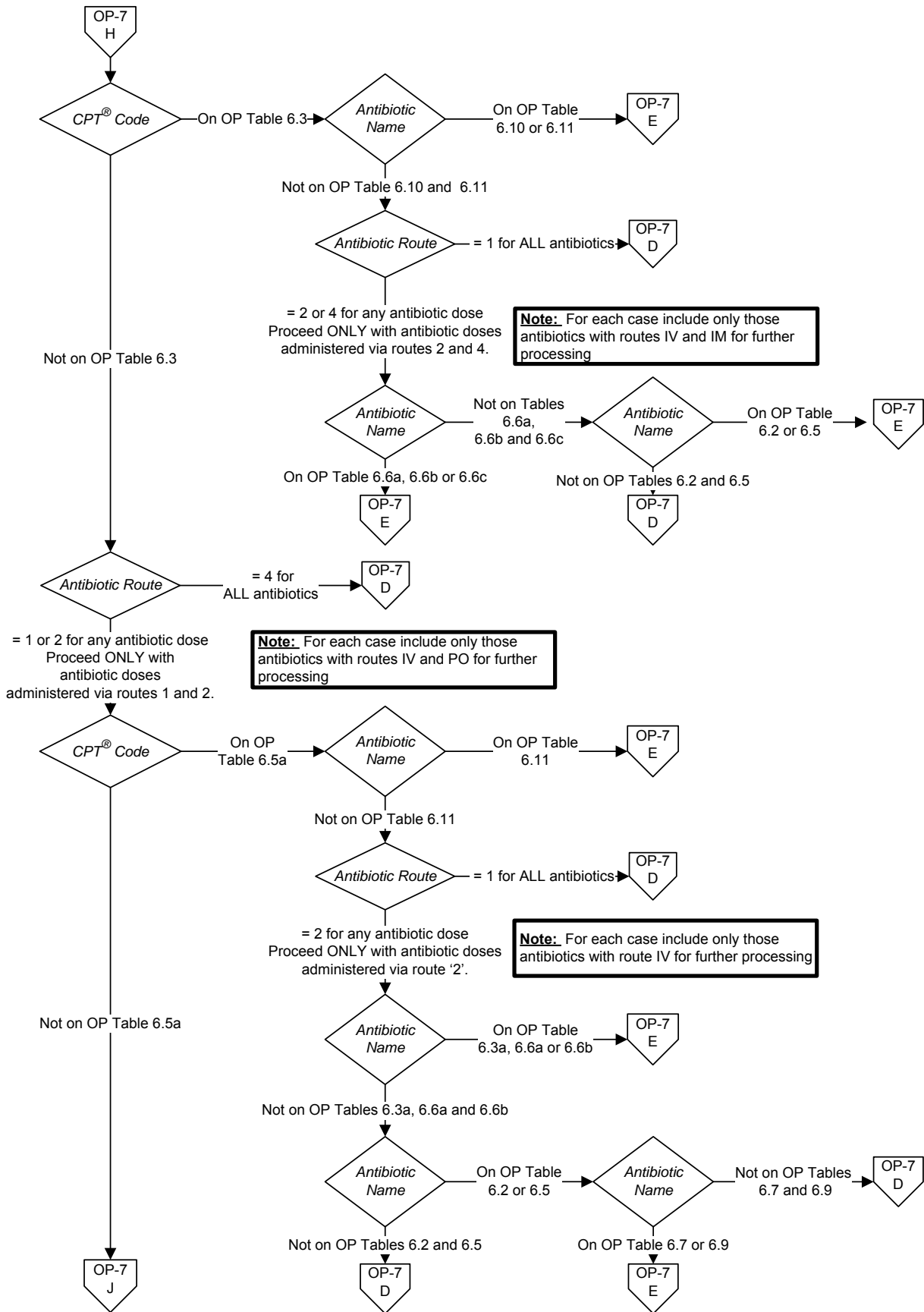
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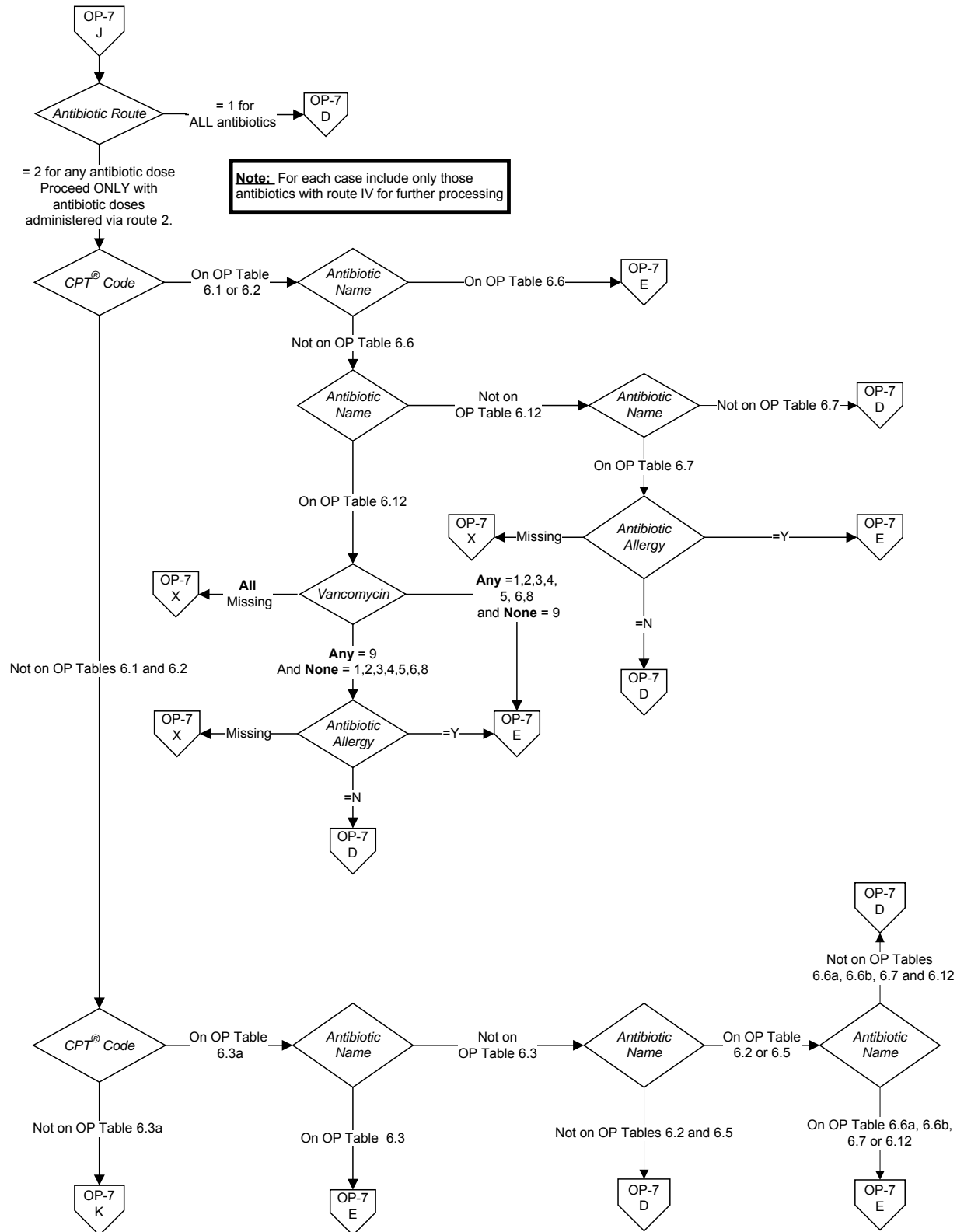
Prophylactic Antibiotic Regimen Selection for Surgery

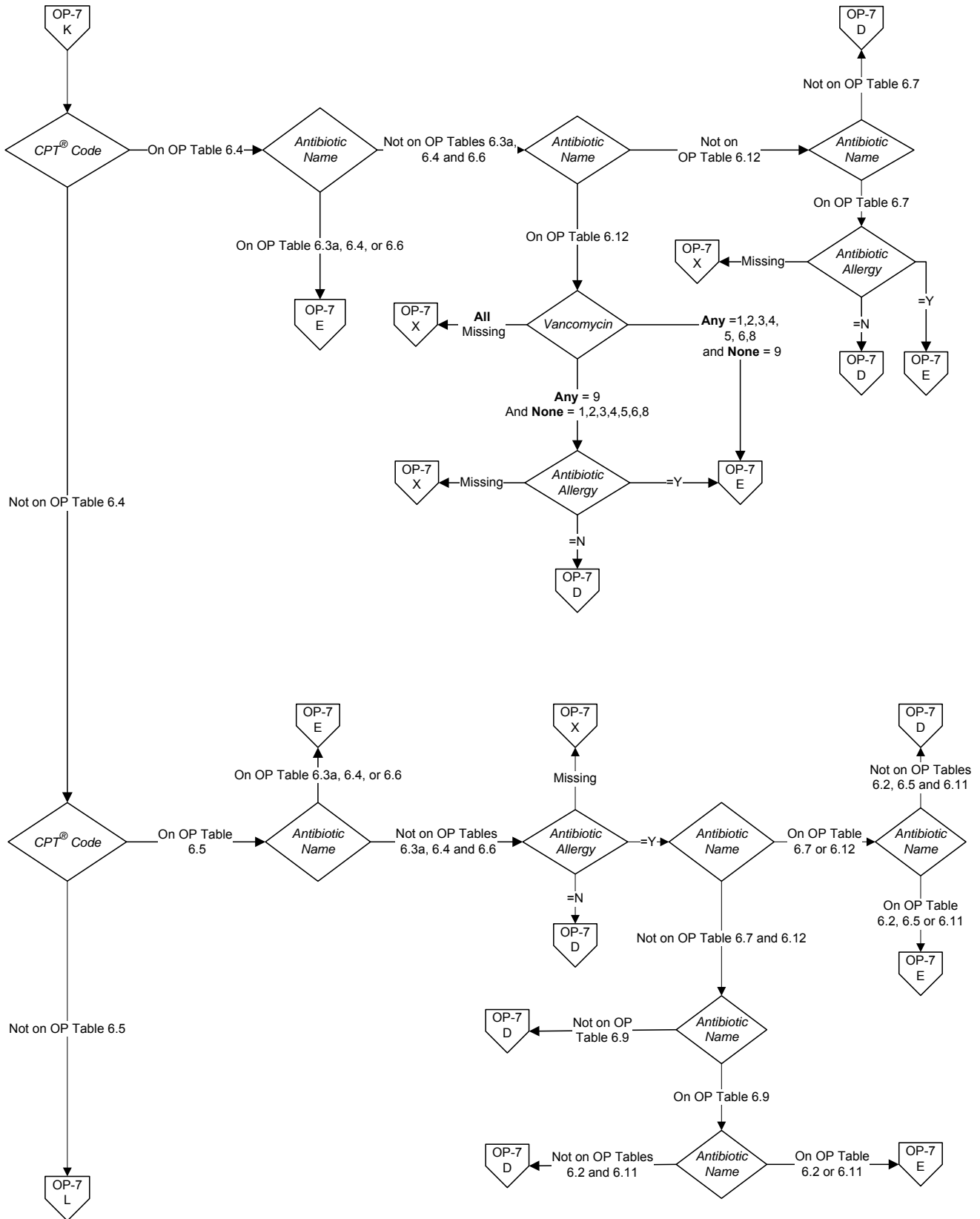
Surgical Procedure (Appendix A)	Approved Antibiotics (Appendix C)
Cardiac (Pacemakers or AICDs) or Vascular	
OP Table 6.1	Cefazolin or Cefuroxime, OP Table 6.6 or Vancomycin* OP Table 6.12 If β -lactam allergy: Vancomycin OP Table 6.12 or Clindamycin OP Table 6.7
Orthopedic/Podiatry	
OP Table 6.2	Cefazolin or Cefuroxime OP Table 6.6 or Vancomycin* OP Table 6.12 If β -lactam allergy: Vancomycin OP Table 6.12 or Clindamycin OP Table 6.7
Genitourinary	
Prostate biopsy ^{††} OP Table 6.3	Quinolone [†] OP Table 6.11 OR Sulfamethoxazole/Trimethoprim [†] OP Table 6.10 OR 1 st Generation cephalosporin OP Table 6.6a OR 2 nd Generation cephalosporin OP Table 6.6b OR 3 rd Generation cephalosporin OP Table 6.6c OR Aminoglycoside OP Table 6.2 OR Aztreonam OP Table 6.5
Penile prosthesis insertion, removal, revision OP Table 6.3a	Ampicillin/Sulbactam or Ticarcillin/Clavulanate or Piperacillin/Tazobactam OP Table 6.3 OR Aminoglycoside OP Table 6.2 + 1 st Generation cephalosporin OP Table 6.6a OR Aminoglycoside OP Table 6.2 + 2 nd Generation cephalosporin OP Table 6.6b OR Aminoglycoside OP Table 6.2 + Vancomycin OP Table 6.12 OR Aminoglycoside OP Table 6.2 + Clindamycin OP Table 6.7 OR Aztreonam OP Table 6.5 + 1 st Generation cephalosporin OP Table 6.6a OR Aztreonam OP Table 6.5 + 2 nd Generation cephalosporin OP Table 6.6b OR Aztreonam OP Table 6.5 + Vancomycin OP Table 6.12 OR Aztreonam OP Table 6.5 + Clindamycin OP Table 6.7
Gastric/Biliary	
PEG placement OP Table 6.4	Cefazolin OP Table 6.6 OR Cefuroxime OP Table 6.6 OR Cefoxitin OP Table 6.4 OR Cefotetan OP Table 6.4 OR Ampicillin/Sulbactam OP Table 6.3a OR Cefazolin OP Table 6.6 + Metronidazole OP Table 6.9 OR Cefuroxime OP Table 6.6 + Metronidazole OP Table 6.9 OR Vancomycin* OP Table 6.12 If β -lactam allergy: Clindamycin OP Table 6.7 \pm Aminoglycoside OP Table 6.2 OR Clindamycin OP Table 6.7 \pm Quinolone OP Table 6.11 OR Vancomycin OP Table 6.12 \pm Aminoglycoside OP Table 6.2 OR Vancomycin OP Table 6.12 \pm Quinolone OP Table 6.11

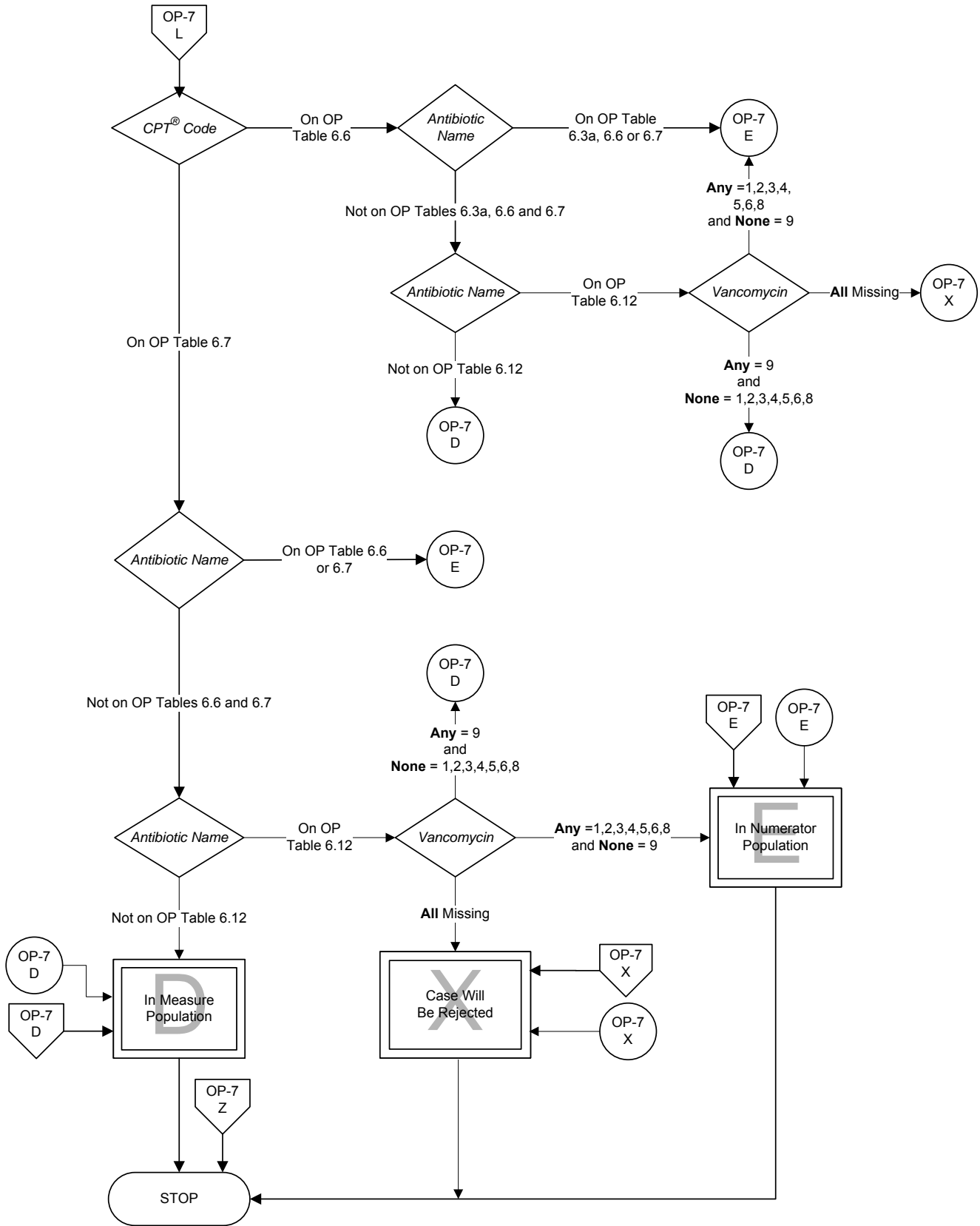
Prophylactic Antibiotic Regimen Selection for Surgery continued

Surgical Procedure (Appendix A)	Approved Antibiotics (Appendix C)
Gynecological	
Laparoscopically-assisted hysterectomy, Vaginal hysterectomy OP Table 6.5	Cefazolin or Cefuroxime OP Table 6.6, Cefoxitin or Cefotetan OP Table 6.4 OR Ampicillin/Sulbactam OP Table 6.3a If β -lactam allergy: Metronidazole OP Table 6.9 + Aminoglycoside OP Table 6.2 OR Metronidazole OP Table 6.9 + Quinolone OP Table 6.11 OR Clindamycin OP Table 6.7 + Aminoglycoside OP Table 6.2 OR Clindamycin OP Table 6.7 + Aztreonam OP Table 6.5 OR Clindamycin OP Table 6.7 + Quinolone OP Table 6.11 OR Vancomycin OP Table 6.12 + Aminoglycoside OP Table 6.2 OR Vancomycin OP Table 6.12 + Aztreonam OP Table 6.5 OR Vancomycin OP Table 6.12 + Quinolone OP Table 6.11
Pubovaginal sling OP Table 6.5a	1 st Generation cephalosporin OP Table 6.6a OR 2 nd Generation cephalosporin OP Table 6.6b OR Ampicillin/Sulbactam OP Table 6.3a OR Quinolone [†] OP Table 6.11 OR Aminoglycoside OP Table 6.2 + Clindamycin OP Table 6.7 OR Aminoglycoside OP Table 6.2 + Metronidazole OP Table 6.9 OR Aztreonam OP Table 6.5 + Clindamycin OP Table 6.7 OR Aztreonam OP Table 6.5 + Metronidazole OP Table 6.9
Head and Neck	
OP Table 6.6	Cefazolin or Cefuroxime OP Table 6.6 OR Ampicillin/Sulbactam OP Table 6.3a OR Clindamycin OP Table 6.7 \pm Aminoglycoside OP Table 6.2 OR Vancomycin* OP Table 6.12
Neurological	
OP Table 6.7	Cefazolin or Cefuroxime OP Table 6.6, or Vancomycin* OP Table 6.12 OR Clindamycin OP Table 6.7
Special Considerations	
<p>*Vancomycin is acceptable with a physician/APN/PA/pharmacist documented justification for its use (see data element <i>Vancomycin</i>).</p> <p>[†]The only operations for which oral antibiotics alone are acceptable are the Prostate biopsy and Pubovaginal sling procedures.</p> <p>^{††} The only operations for which intramuscular antibiotics alone are acceptable are the Prostate biopsy procedures.</p>	









Algorithm Narrative for OP-7: Prophylactic Antibiotic Selection for Surgical Patients

Numerator: Surgical patients who received prophylactic antibiotics recommended for their specific operation.

Denominator: Surgical patients with no evidence of prior infection.

1. Start processing. Run cases that are included in the OP-6 and OP-7 Population and pass the edits defined in the Data Processing Flow through these measures.
2. Check *Case Canceled*.
 - a. If *Case Canceled* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Case Canceled* equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Case Canceled* equals No, continue processing and proceed to *CPT[®] Code*.
3. Check *CPT[®] Code*.
 - a. If the *CPT[®] Code* is on OP Table 6.4, continue processing and proceed to *Replacement*.
 - i) If *Replacement* is missing, the case will proceed to a Measure Category Assignment X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ii) If *Replacement* equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - iii) If *Replacement* equals No, continue processing and proceed to *Clinical Trial*.
 - b. If the *CPT[®] Code* is not on OP Table 6.4, 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Clinical Trial* equals No, continue processing and proceed to *Infection Prior to Anesthesia*.
5. 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - 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. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Infection Prior to Anesthesia* equals No, continue processing and proceed to *Antibiotic*.
6. Check *Antibiotic*.
- a. If *Antibiotic* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Antibiotic* equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - c. If *Antibiotic* equals Yes, continue processing and proceed to *Antibiotic Name*.
7. Check *Antibiotic Name*.
- a. If Antibiotic Grid not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Antibiotic Name* on OP Table 6.0 for at least one antibiotic. Proceed only with antibiotics on Table 6.0. Continue processing and proceed to *Antibiotic Route*.
- 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 a valid value.
8. Check *Antibiotic Route*.
- a. If *Antibiotic Route* equals 3 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If *Antibiotic Route* equals 1, 2 or 4 for any antibiotic dose, proceed only with antibiotic doses administered via routes 1, 2 and 4. Continue processing and proceed to *CPT[®] Code*.
- Note: For each case, include only those antibiotics with routes PO, IV and IM for further processing.
9. Check *CPT[®] Code*.
- a. If the *CPT[®] Code* is on OP Table 6.3, continue processing and proceed to *Antibiotic Name*.
 - i) If any *Antibiotic Name* is on OP Table 6.10 or 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

- ii) If all *Antibiotic Name* is not on OP Table 6.10 and 6.11, continue processing and proceed to *Antibiotic Route*.
- iii) If *Antibiotic Route* equals 1 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- iv) If *Antibiotic Route* equals 2 or 4 for any antibiotic dose, proceed only with antibiotic doses administered via routes 2 and 4. Continue processing and proceed to *Antibiotic Name*.

Note: For each case include only those antibiotics with routes IV and IM for further processing.

- v) If any *Antibiotic Name* is on Table 6.6a, 6.6b or 6.6c, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- vi) If all *Antibiotic Name* is not on Tables 6.6a, 6.6b and 6.6c, continue processing for *Antibiotic Name*.
- vii) If all *Antibiotic Name* is not on OP Tables 6.2 and 6.5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- viii) If any *Antibiotic Name* is on Table 6.2 or 6.5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- ix) If all *Antibiotic Name* is not on OP Tables 6.7 and 6.9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

b. If the *CPT*[®] Code is not on OP Table 6.3, continue processing for *Antibiotic Route*.

10. Check *Antibiotic Route*.

- a. If the *Antibiotic Route* is equal to 4 for ALL antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- b. If the *Antibiotic Route* is equal to 1 or 2 for any antibiotic dose, proceed only with antibiotic doses administered via routes 1 and 2. Continue processing and proceed to *CPT*[®] Code.

Note: For each case include only those antibiotics with routes IV and PO for further processing.

11. Check *CPT*[®] Code.

- a. If the *CPT*[®] Code is on OP Table 6.5a, continue processing and proceed to *Antibiotic Name*.

- i) If any *Antibiotic Name* is on OP Table 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- ii) If all *Antibiotic Name* is not on OP Table 6.11, continue processing and proceed to *Antibiotic Route*.
- iii) If *Antibiotic Route* equals 1 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- iv) If *Antibiotic Route* equals 2 for any antibiotic dose, proceed only with antibiotic doses administered via route 2. Continue processing and proceed to *Antibiotic Name*.

Note: For each case include only those antibiotics with route IV for further processing.

- v) If any *Antibiotic Name* is on OP Table 6.3a, 6.6a, or 6.6b, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - vi) If all *Antibiotic Name* is not on OP Tables 6.3a, 6.6a and 6.6b, continue processing and proceed to *Antibiotic Name*.
 - vii) If all *Antibiotic Name* is not on OP Table 6.2 or 6.5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - viii) If any *Antibiotic Name* is on OP Table 6.2 or 6.5, continue processing for *Antibiotic Name*.
 - ix) If any *Antibiotic Name* is on OP Table 6.7 or 6.9, the case will proceed to Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - x) If all *Antibiotic Name* is not on OP Tables 6.7 and 6.9, the case will proceed to Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- b. If the *CPT*[®] Code is not on OP Table 6.5a, continue processing and proceed to *Antibiotic Route*.

12. Check *Antibiotic Route*.

- a. If *Antibiotic Route* equals 1 for all antibiotics, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- b. If *Antibiotic Route* equals 2 for any antibiotic dose, proceed only with antibiotic doses administered via route 2. Continue processing and proceed to *CPT*[®] Code.

Note: For each case include only those antibiotics with routes IV for further processing.

13. Check CPT[®] Code.

- a. If the CPT[®] Code is on OP Table 6.1 or 6.2, continue processing and proceed to *Antibiotic Name*.
 - i) If any *Antibiotic Name* is on OP Table 6.6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ii) If all *Antibiotic Name* is not on OP Table 6.6, continue processing for *Antibiotic Name*.
 - iii) If any *Antibiotic Name* is on OP Table 6.12, continue processing and proceed to *Vancomycin*.
 - iv) If *Vancomycin* is all missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - v) If *Vancomycin* is any equals 9 and none equals 1, 2, 3, 4, 5, 6, 8, continue processing and proceed to *Antibiotic Allergy*.
 - vi) If *Antibiotic Allergy* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - vii) If *Antibiotic Allergy* equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - viii) If *Antibiotic Allergy* equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ix) If *Vancomycin* any equals 1, 2, 3, 4, 5, 6, 8 and none equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - x) If all *Antibiotic Name* is not on OP Table 6.12, continue processing for *Antibiotic Name*.
 - xi) If any *Antibiotic Name* is on OP Table 6.7, continue processing and proceed to *Antibiotic Allergy*.
 - xii) If *Antibiotic Allergy* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - xiii) If *Antibiotic Allergy* equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - xiv) If *Antibiotic Allergy* equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

- xv) If all *Antibiotic Name* is not on OP Table 6.7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If the *CPT*[®] *Code* is not on OP Tables 6.1 and 6.2, continue processing for *CPT*[®] *Code*.
14. Check *CPT*[®] *Code*.
- a. If the *CPT*[®] *Code* is on OP Table 6.3a, continue processing and proceed to *Antibiotic Name*.
 - i) If any *Antibiotic Name* is on OP Table 6.3, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ii) If all *Antibiotic Name* is not on OP Table 6.3, continue processing for *Antibiotic Name*.
 - iii) If all *Antibiotic Name* is not on OP Tables 6.2 and 6.5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - iv) If any *Antibiotic Name* is on OP Table 6.2 or 6.5, continue processing for *Antibiotic Name*.
 - v) If any *Antibiotic Name* is on OP Table 6.6a, 6.6b, 6.7, or 6.12, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - vi) If all *Antibiotic Name* is not on OP Tables 6.6a, 6.6b, 6.7 and 6.12, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - b. If the *CPT*[®] *Code* is not on OP Table 6.3a, continue processing for *CPT*[®] *Code*.

15. Check *CPT*[®] *Code*.

- a. If the *CPT*[®] *Code* is on OP Table 6.4, continue processing and proceed to *Antibiotic Name*.
 - i) If any *Antibiotic Name* is on OP Table 6.3a or 6.4 or 6.6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ii) If all *Antibiotic Name* is not on OP Tables 6.3a, 6.4 and 6.6, continue processing and proceed to *Antibiotic Name*.
 - iii) If any *Antibiotic Name* is on OP Table 6.12, continue processing and proceed to *Vancomycin*.
 - iv) If *Vancomycin* is all missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

- v) If *Vancomycin* is any equals 9 and none equals 1, 2, 3, 4, 5, 6, 8, continue processing and proceed to *Antibiotic Allergy*.
- vi) If *Antibiotic Allergy* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- vii) If *Antibiotic Allergy* equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- viii) If *Antibiotic Allergy* equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- ix) If *Vancomycin* any equals 1, 2, 3, 4, 5, 6, 8 and none equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- x) If all *Antibiotic Name* is not on OP Table 6.12, continue processing for *Antibiotic Name*.
- xi) If any *Antibiotic Name* is on OP Table 6.7, continue processing and proceed to *Antibiotic Allergy*.
- xii) If *Antibiotic Allergy* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- xiii) If *Antibiotic Allergy* equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- xiv) If *Antibiotic Allergy* equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- xv) If all *Antibiotic Name* is not on OP Table 6.7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

b. If the *CPT*[®] Code is not on OP Table 6.4, continue processing for *CPT*[®] Code.

16. Check *CPT*[®] Code.

- a. If the *CPT*[®] Code is on OP Table 6.5, continue processing and proceed to *Antibiotic Name*.
 - i) If any *Antibiotic Name* is on OP Table 6.3a, 6.4, or 6.6, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ii) If all *Antibiotic Name* is not on OP Tables 6.3a, 6.4, and 6.6, continue processing and proceed to *Antibiotic Allergy*.

- iii) If *Antibiotic Allergy* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- iv) If *Antibiotic Allergy* equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- v) If *Antibiotic Allergy* equals Yes, continue processing and proceed to *Antibiotic Name*.
- vi) If any Antibiotic Name is on OP Table 6.7 or 6.12, continue processing for *Antibiotic Name*.
- vii) If any *Antibiotic Name* is on OP Table 6.2, 6.5 or 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- viii) If all *Antibiotic Name* is not on OP Tables 6.2, 6.5 and 6.11, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- ix) If all *Antibiotic Name* is not on OP Table 6.7 and 6.12, continue processing for *Antibiotic Name*.
- x) If all *Antibiotic Name* is not on OP Table 6.9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- xi) If any *Antibiotic Name* is on OP Table 6.9, continue processing for *Antibiotic Name*.
- xii) If any *Antibiotic Name* is on OP Table 6.2 or 6.11, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- xiii) If all *Antibiotic Name* is not on OP Tables 6.2 and 6.11, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.

b. If the *CPT*[®] Code is not on OP Table 6.5, continue processing for *CPT*[®] Code.

17. Check *CPT*[®] code.

- a. If the *CPT*[®] Code is on OP Table 6.6, continue processing and check for *Antibiotic Name*.
 - i) If any *Antibiotic Name* is on OP Table 6.3a, 6.6 or 6.7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ii) If all *Antibiotic Name* is not on OP Tables 6.3a, 6.6 and 6.7, continue processing and proceed to *Antibiotic Name*.
 - iii) If any *Antibiotic Name* is on OP Table 6.12, continue processing and proceed to *Vancomycin*.

- iv) If *Vancomycin* is all missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - v) If *Vancomycin* Any equals 9 and None equals 1,2,3,4,5,6,8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - vi) If *Vancomycin* Any equals 1,2,3,4,5,6,8 and None equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - vii) If all *Antibiotic Name* is not on OP Table 6.12, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
- b. If the *CPT*[®] Code is on OP Table 6.7, continue processing and proceed to *Antibiotic Name*.
- i) If any *Antibiotic Name* is on OP Table 6.6 or 6.7, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - ii) If all *Antibiotic Name* is not on OP Tables 6.6 and 6.7, continue processing for *Antibiotic Name*.
 - iii) If any *Antibiotic Name* is on OP Table 6.12, continue processing and proceed to *Vancomycin*.
 - iv) If *Vancomycin* is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - v) If *Vancomycin* Any equals 9 and None equals 1,2,3,4,5,6,8, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - vi) If *Vancomycin* Any equals 1,2,3,4,5,6,8 and None equals 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.
 - vii) If all *Antibiotic Name* is not on OP Table 6.12, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section.