

****NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE****

Measure Information Form

Core Measure Set: Pneumonia (PN)

Performance Measure Identifier: 14450

Performance Measure Name: (PN-6b) Initial antibiotic selection for Community-Acquired Pneumonia (CAP) in immunocompetent patients – Non intensive care unit patients.

Description: Immunocompetent non-Intensive Care Unit (ICU) patients with CAP who receive an initial antibiotic regimen during the first 24 hours that is consistent with current guidelines.

Rationale: The current North American antibiotic guidelines for PN in immunocompetent patients are from the Centers for Disease Control and Prevention (CDC), the Infectious Diseases Society of America (IDSA), the Canadian Infectious Disease Society / Canadian Thoracic Society (CIDS/CTS), and the American Thoracic Society (ATS). All four reflect that *Streptococcus pneumoniae* is the most common cause of PN, that treatment that covers “atypical” pathogens (e.g., *Legionella* species, *Chlamydia pneumoniae*, *Mycoplasma pneumoniae*) can be associated with improved survival, and that the prevalence of antibiotic resistant *S. pneumoniae* is increasing.

The CMS convened a conference of guideline authors, including Julie Gerberding, MD (CDC), John Bartlett, MD (IDSA), Ronald Grossman, MD (IDSD/CTS), and Michael Niederman, MD (ATS), to reach consensus on the antibiotic regimens that could be considered consistent with all four organizations’ guidelines. These regimens are reflected in this measure, and in the Pneumonia Antibiotic Consensus Recommendation which follows later in this section.

Type of Measure: Process

Improvement Noted as: An increase in the rate/score/number of occurrences

Numerator Statement: Non-ICU pneumonia inpatients who received an initial antibiotic regimen consistent with current guidelines during the first 24 hours of their hospitalization.

Included Populations: Non-ICU patients on the following antibiotics:

- Beta-Lactam IV or IM (ceftriaxone, cefotaxime, ampicillin-sulbactam) plus IV or oral Macrolide (erythromycin, clarithromycin, azithromycin).

- OR
- Quinolone monotherapy IV or oral (levofloxacin, gatifloxacin, moxifloxacin)
- Or
- Beta-Lactam IV or IM plus doxycycline IV or Oral.

Excluded Populations: None

Data Elements:

Arrival Date

Arrival Time

Antibiotic Administered During the First 36 Hours

Name of Antibiotic Administered During First 36 Hours (PN)

Route of Antibiotic Administration (PN)

Start Date of Antibiotic Administration (PN)

Start Time of Antibiotic Administration (PN)

Denominator Statement: Non-ICU inpatients age 18 years and older with a:

- *ICD-9-CM Principal Diagnosis Code* of pneumonia as defined in Appendix A, Table 3.1
- OR
- *ICD-9-CM Principal Diagnosis Code* of septicemia as defined in Appendix A, Table 3.2 AND *ICD-9-CM Other Diagnosis Code* of pneumonia as defined in Appendix A, Table 3.1
- OR
- *ICD-9-CM Principal Diagnosis Code* of respiratory failure as defined in Appendix A, Table 3.3 AND *ICD-9-CM Other Diagnosis Code* of pneumonia as defined in Appendix A, Table 3.1.

Included Populations: All non-ICU Pneumonia patients including patients transferred from long term care facilities.

Excluded Populations:

- Patients received in transfer from another acute care or critical access hospital including another emergency department
- Patients who had no *Working Diagnosis* of pneumonia at the time of admission
- Patients who received *Comfort Measures Only*
- Patients who are *Compromised* as defined in the Data Dictionary
- Patients who have initial antibiotic more than 36 hours from the time of arrival
- Pneumonia patients in the ICU
- Patients who do not receive antibiotics during hospitalization

Data Elements:*Admission Date**Admission Source**Antibiotic Administered During First 36 Hours After Arrival**Antibiotic Received**Birthdate**Comfort Measures Only**Compromised**ICD-9-CM Other Diagnosis Code**ICD-9-CM Principal Diagnosis Code**ICU Transfer or Admission Within First 24 Hours**Pneumonia Working Diagnosis on Admission**Transfer From Another ED***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 opportunity for improvement at the point of care/service. However, complete documentation includes the final ICD-9-CM diagnosis and procedure codes, which require retrospective data entry.

Data Accuracy:

- Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.
- In the event that a PN patient is receiving antibiotic treatment for prophylaxis, or therapeutically for another disease process, along with treatment of PN, the abstractor must be cognizant of the reason for antibiotic treatment. The antibiotic of interest for this measure is the empiric antibiotic used for the treatment of PN.

Measure Analysis Suggestions:

The time of antibiotic administration is critical to this measure. Patients who receive their initial empiric antibiotic greater than 36 hours from the time of hospital arrival are excluded from the measure. Patients who receive their initial empiric antibiotic greater than 24 hours from the time of hospital arrival will fall into the denominator, but not the numerator, even if the antibiotic was consistent with current recommendations. For quality improvement purposes, the measurement system may want to create reports to identify patients who received their antibiotic consistent with guidelines but greater than 24 hours from the time of arrival, and patients who did not receive an antibiotic consistent with guidelines. This will allow healthcare organizations to direct education effort in the appropriate direction (i.e., appropriate antibiotic selection, or timing of administration).

Terminology:

Antibiotic: Any drug, such as penicillin or streptomycin, containing any quantity of any chemical substance produced by a microorganism, which has the capacity to inhibit the growth of or destroy bacteria and other microorganisms. Antibiotics are used in the prevention and treatment of infectious diseases.

Comfort Measures Only: Commonly referred to as “palliative care” in the medical community and “comfort care” by the general public. Palliative care includes attention to the psychological and spiritual needs of the patient and support for the dying patient and the patient’s family. Usual interventions are not received because a medical decision was made to limit care to comfort measures only.

Pneumonia: Pneumonia is commonly defined as an acute infection of the pulmonary parenchyma that is associated with at least some symptoms of acute infection, accompanied by presence of acute infiltrate on chest radiograph or auscultatory findings consistent with pneumonia (such as altered breath sounds and/or localized rales) occurring in a patient not hospitalized or residing in a long term care facility for >14 days before onset of symptoms.¹

Empiric Antibiotic Therapy: Antibiotic treatment based on the clinicians judgment and the patients symptoms and sign and offered before a diagnosis has been confirmed.

Nosocomial Infection: An infection acquired by a patient in a health care organization, especially a hospital. This infection is not present or incubating before admission to a hospital.

Prophylactic Antibiotic: An antibiotic used for the prevention of disease, as in a prophylactic antibiotic administered prior to a surgical procedure.

Therapeutic Antibiotic: Antibiotic treatment tailored to a specific confirmed diagnosis or a known pathogen.

Sampling: Yes, for additional information see the Sampling Section

Age Groups: 18 years and older

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

Selected References:

- DM, Plouffle JF, Rakowsky A, Schuchat A, Whitney C and the Drug-Resistant Streptococcus pneumoniae Therapeutic Working Group, “Management of Community Heffelfinger JD, Dowell SF, Jorgensen JH, Klugman KP, Mabry LR, Musher -Acquired Pneumonia in the Era of Pneumococcal Resistance: A Report

From the Drug-Resistant Streptococcus pneumoniae Therapeutic Working Group.” Archives of Internal Medicine, 160:1399-1408, May 22, 2000.

- Bartlett JG, Dowell SF, Mandell LA, File Jr. TM, Musher DM, Fine MJ. “Guidelines From the Infectious Diseases Society of America: Practice Guidelines for the Management of Community-Acquired Pneumonia in Adults.” Clinical Infectious Diseases, Alexandria, VA, 2000, 31:347-382.
- Niederman MS, Mandell LA, Anzueto A, et al. Guidelines for the management of adults with community-acquired pneumonia. American Thoracic Society. *Am J Respir Crit Care Med*. 2000;163:1730-1754.
- Heffelfinger JD, Dowell SF, Jorgensen JH, Klugman KP, et al. Management of community-acquired pneumonia in the era of pneumococcal resistance: A report from the drug-resistant Streptococcus pneumoniae Therapeutic Working Group. *Arch Intern Med*. 2000;160:1300-1408.
- Mandell LA, Marrie TJ, Grossman RF, et al. Canadian guidelines for the initial management of community-acquired pneumonia: an evidence-based update by the Canadian Infectious Disease Society and the Canadian Thoracic Society. *Clin Infect Dis*. 2000;31:383-421.
- Fine MJ, Smith MA, Carson CA, et al. Prognosis and outcomes of patients with community-acquired pneumonia. *JAMA*. 1996;275:134-141.
- Gleason PP, Meehan TP, Fine JM, et al. Associations between initial antimicrobial regimens and medical outcomes for elderly patients with pneumonia. *Arch Intern Med*. 1999;159:2562-2572.
- Houck PM, MacLehose RF, Niederman MS, Lowery JK. Empiric antibiotic therapy and mortality among Medicare pneumonia inpatients in 10 western states, 1993, 1995, and 1997. *Chest*. 2001;119:1420-1426.
- Butler JC, Hofmann J, Cetron MS, et al. The continued emergence of drug-resistant Streptococcus pneumoniae in the United States: an update from the Centers for Disease Control and Prevention’s Pneumococcal Sentinel Surveillance System. *J Infect Dis*. 1996;174:986-993.
- Doern GV, Brueggemann A, Holley HP Jr, Rauch AM. Antimicrobial resistance of Streptococcus pneumoniae recovered from outpatients in the United States during the winter months of 1004 to 1995: results of a 30-center national surveillance study. *Antimicrob Agents Chemother*. 1996;40:1208-1213.

Pneumonia Antibiotic Consensus Recommendations

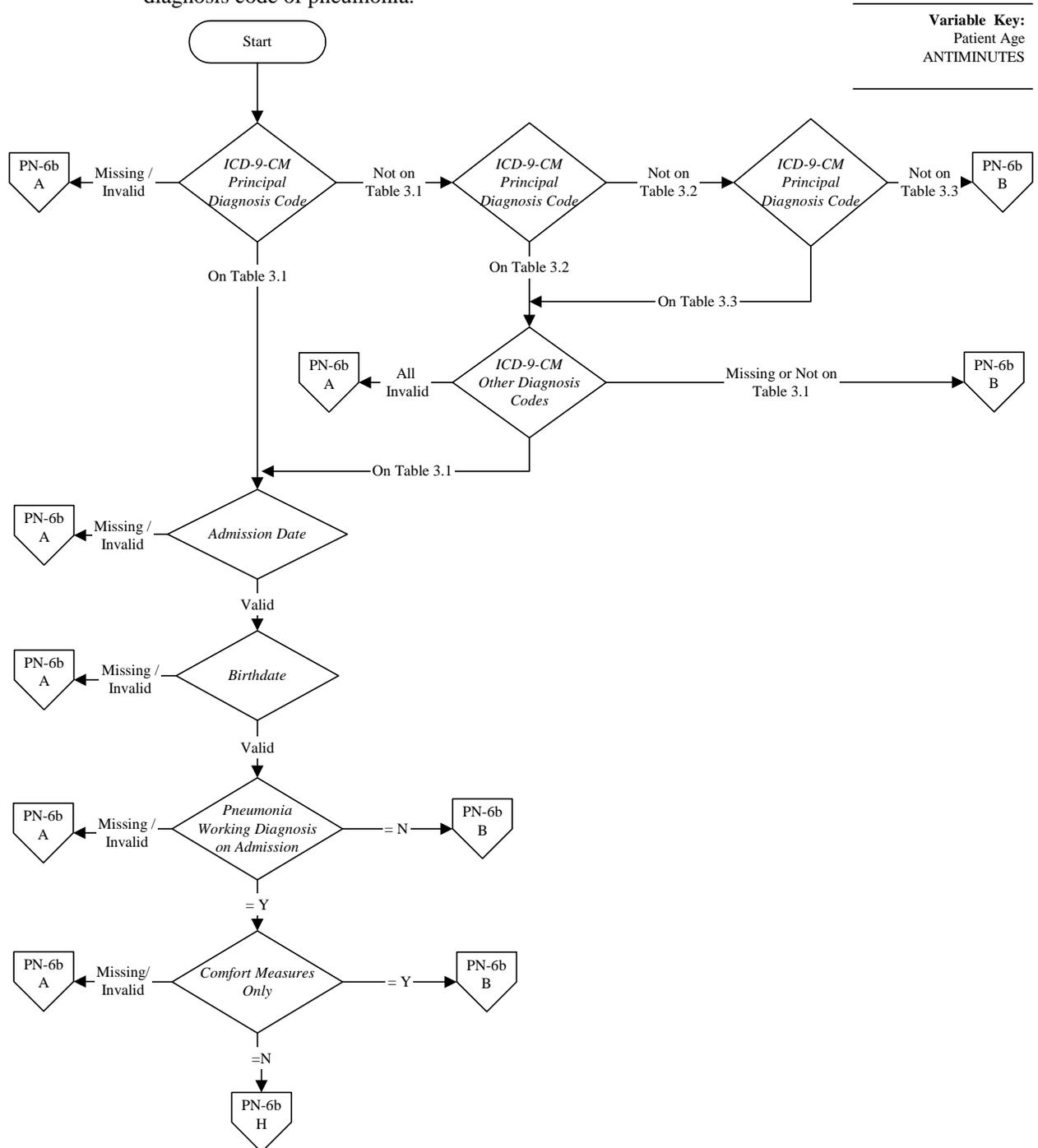
Non-ICU Patient	ICU Patient	Pseudomonal Risk*
<p>β-lactam (IV or IM) Table 2.3 + macrolide (IV or oral) Table 2.5</p> <p>Or</p> <p>Quinolone monotherapy (IV or oral) Table 2.9</p> <p>Or</p> <p>β-lactam (IV or IM) Table 2.3 + doxycycline (IV or oral) Table 2.10</p> <p>β-lactam = ceftriaxone, cefotaxime, ampicillin-sulbactam</p> <p>Macrolide = erythromycin, clarithromycin, azithromycin</p> <p>Quinolones = levofloxacin, gatifloxacin, moxifloxacin</p>	<p>β-lactam (IV) Table 2.3 + macrolide (IV) Table 2.6</p> <p>Or</p> <p>β-lactam (IV) Table 2.3 + quinolone (IV) Table 2.9</p> <p>Or</p> <p>If documented β-lactam allergy: Quinolone (IV) Table 2.9 + Clindamycin (IV) Table 2.12</p> <p>Or</p> <p>Quinolone (IV) Table 2.9 + Vancomycin (IV) Table 2.13</p> <p>β-lactam = ceftriaxone, cefotaxime, ampicillin-sulbactam</p> <p>Macrolide = erythromycin, azithromycin</p> <p>Quinolones = levofloxacin, gatifloxacin, moxifloxacin</p>	<ul style="list-style-type: none"> • In addition to the antibiotics listed under ICU, if the patient had a secondary ICD-9 code of bronchiectasis, or a positive response to the bronchiectasis question, or malnutrition [as reflected by a serum albumin below 3], these antibiotics would also be considered acceptable. <p>IV antipseudomonal β-lactam Table 2.4 +</p> <p>IV antipseudomonal quinolone Table 2.8</p> <p>Or</p> <p>IV antipseudomonal β-lactam Table 2.4 +</p> <p>IV aminoglycoside Table 2.11 + IV antipneumococcal quinolone Table 2.9 Or IV macrolide Table 2.6</p> <p>Or</p> <p>If documented β-lactam allergy: Aztreonam Table 2.7 + aminoglycoside Table 2.11 + antipneumococcal quinolone Table 2.9</p> <p>Antipseudomonal β-lactam = cefepime, imipenem, meropenem, piperacillin-tazobactam</p> <p>Aminoglycoside = gentamicin, tobramycin, amikacin</p> <p>Antipneumococcal quinolone = levofloxacin, gatifloxacin, moxifloxacin</p> <p>Macrolide = azithromycin, erythromycin</p>

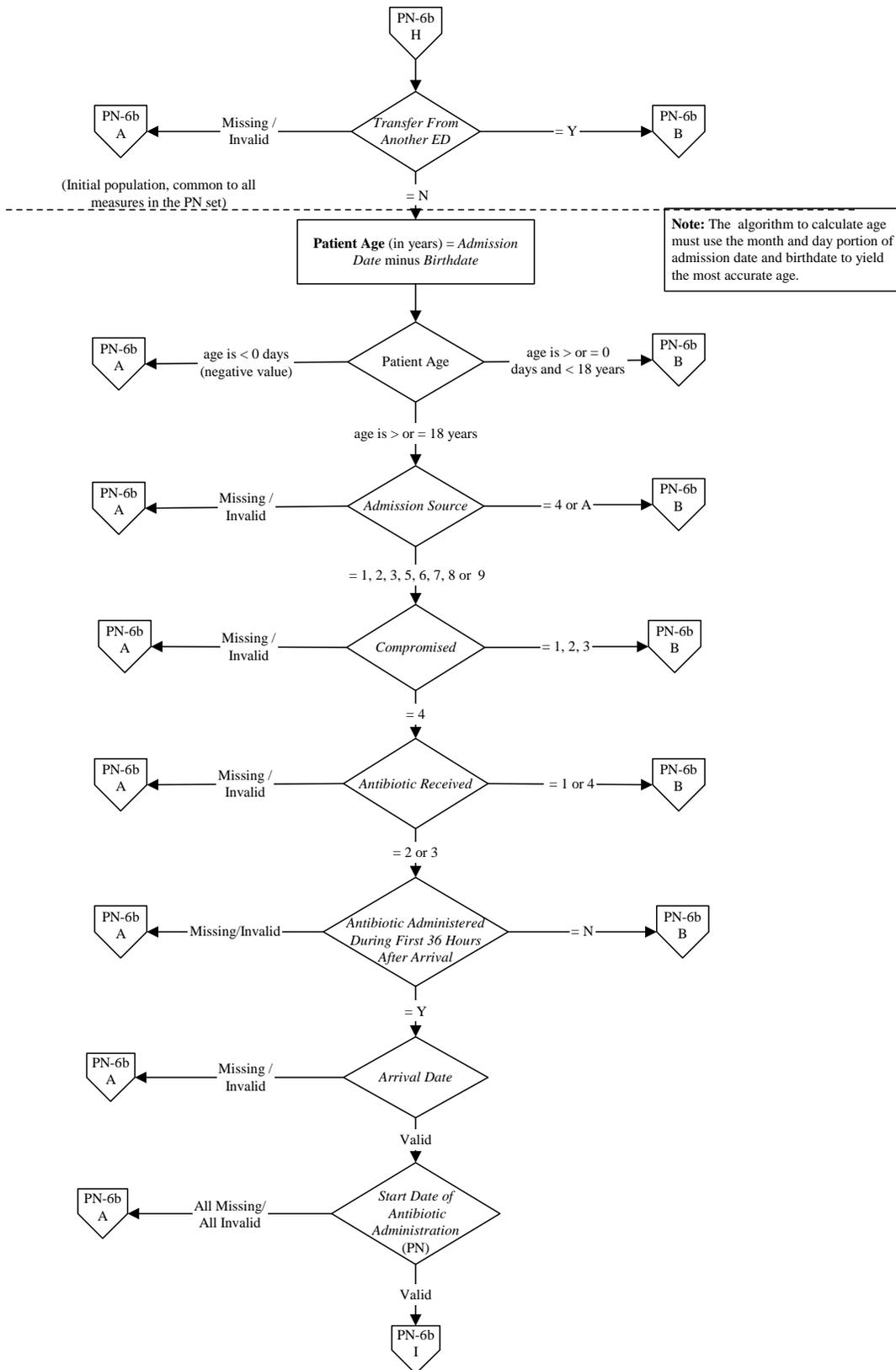
Data collected by the CMS National Pneumonia Project indicate that 78% of Medicare pneumonia patients who were hospitalized during 1998-99 received antibiotics that were consistent with guidelines published at that time. Among the states and territories this ranged from 55% to 87%. Compliance was lower among ICU patients, largely because atypical pathogen coverage was generally not common, but was only recommended for ICU patients. Subsequent revisions have made such coverage recommended for all inpatients.

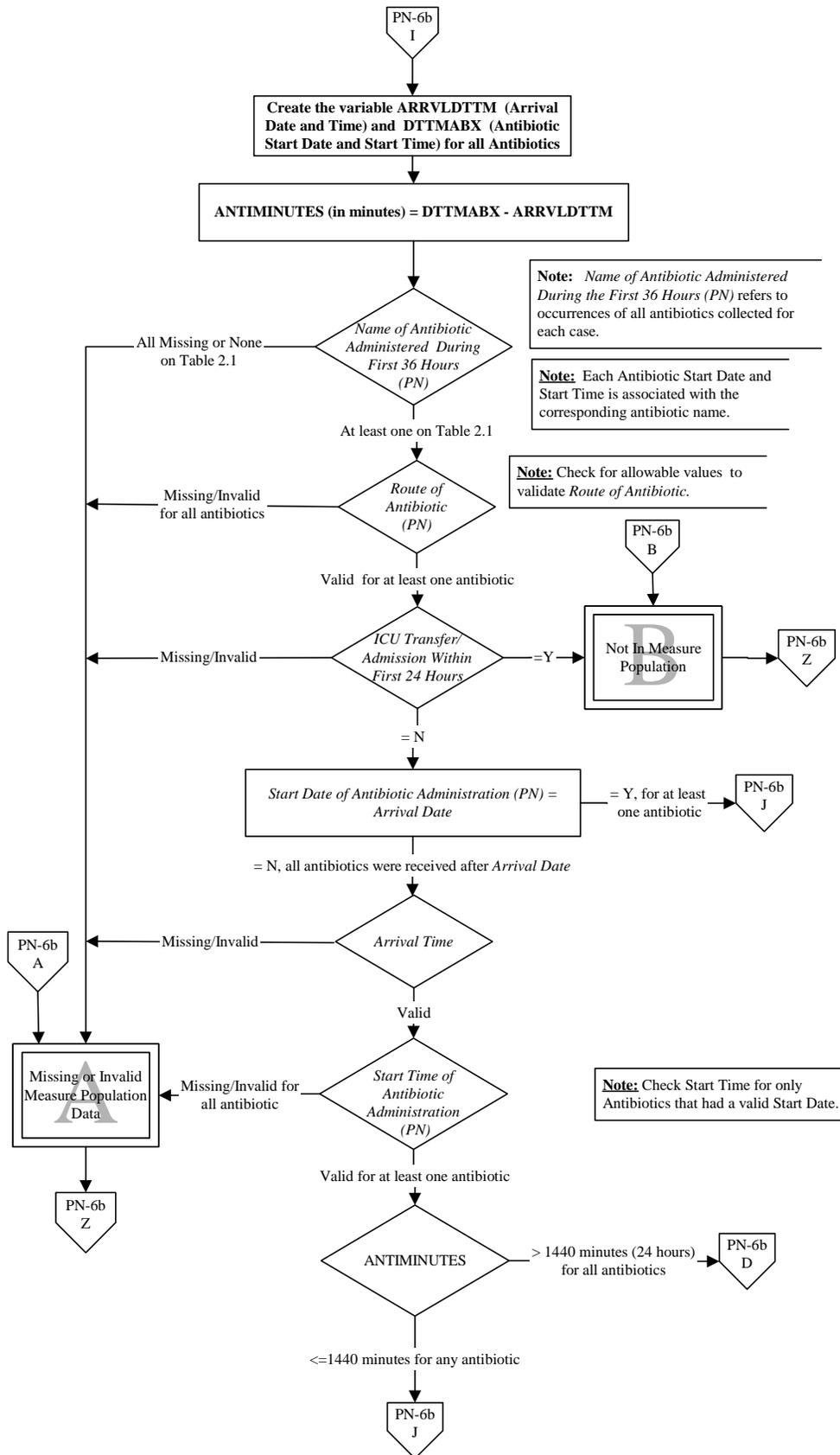
14450: (PN-6b) Initial Antibiotic Selection for Community-Acquired Pneumonia (CAP) in Immunocompetent patients - Non-ICU patients

Numerator: Non-ICU pneumonia inpatients who received an initial antibiotic regimen consistent with current guidelines during the first 24 hours of their hospitalization.

Denominator: Non-ICU patients 18 years of age and older with a principal diagnosis code of pneumonia, or a principal diagnosis code of septicemia or respiratory failure and an other diagnosis code of pneumonia.







Note: To make it here the case must have at least one antibiotic with name, route and date. Otherwise it should have been excluded in previous steps.

Note: Cases with all antibiotics given after 36 hours have been excluded in a previous step. Cases with all antibiotics given after 24 hours but within 36 hours have been assigned to 'D'

Note: When checking for route of antibiotic, check ONLY for the corresponding antibiotic. For example if an antibiotic on Table 2.9 was received by the patient check if route was appropriate for that antibiotic only.

Note: When going through the process of checking for consistency with current guidelines, ONLY check antibiotics that were given on the day of arrival and/or within 24 hours of arrival according to ANTIMINUTES, and have valid name and route.

