### Pneumonia Antibiotic Consensus Recommendations

<table>
<thead>
<tr>
<th>Non-ICU Patient</th>
<th>ICU Patient</th>
<th>Pseudomonal Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>β-lactam (IV or IM)</strong> Table 2.3 + <strong>Macrolide (IV or oral)</strong> Table 2.5</td>
<td><strong>β-lactam (IV)</strong> Table 2.16 + <strong>Macrolide (IV)</strong> Table 2.6</td>
<td>These antibiotics would also be acceptable for ICU and Non-ICU patients with Pseudomonal Risk</td>
</tr>
<tr>
<td>Or <strong>Antipneumococcal Quinolone monotherapy (IV or oral)</strong> Table 2.9</td>
<td>Or <strong>β-lactam (IV)</strong> Table 2.16 + <strong>Antipneumococcal Quinolone (IV)</strong> Table 2.14</td>
<td><strong>Antipseudomonal β-lactam (IV)</strong> Table 2.4 + <strong>Antipseudomonal Quinolone (IV)</strong> Table 2.8 (PO Quinolone is allowed for Non-ICU only)</td>
</tr>
<tr>
<td>Or <strong>β-lactam (IV or IM)</strong> Table 2.3 + <strong>Doxycycline (IV or oral)</strong> Table 2.10</td>
<td>Or <strong>If documented β-lactam allergy:</strong> <strong>Antipneumococcal Quinolone (IV)</strong> Table 2.14 + <strong>Aztreonam (IV)</strong> Table 2.7</td>
<td><strong>Antipseudomonal β-lactam (IV)</strong> Table 2.4 + <strong>Aminoglycoside (IV)</strong> Table 2.11 + either <strong>Antipneumococcal Quinolone (IV)</strong> Table 2.14 Or <strong>Macrolide (IV)</strong> Table 2.6 (PO Quinolone is allowed for Non-ICU only Table 2.9)</td>
</tr>
<tr>
<td>Or <strong>If less than 65 with no Risk Factors for Drug-Resistant Pneumococcus</strong> (see data element)</td>
<td></td>
<td>Or <strong>If documented β-lactam allergy:</strong> <strong>Aztreonam (IV)</strong> Table 2.7 + <strong>Antipseudomonal Quinolone (IV)</strong> Table 2.14 + <strong>Aminoglycoside (IV)</strong> Table 2.11 (PO Quinolone is allowed for Non-ICU only Table 2.9)</td>
</tr>
<tr>
<td><strong>β-lactam = Ceftriaxone, Cefotaxime, Ampicillin/Sulbactam, Ertapenem</strong></td>
<td><strong>Macrolide = Erythromycin, Azithromycin</strong></td>
<td>*<strong>Aztreonam (IV) Table 2.7 + <strong>Levofloxacin</strong> (IV or oral)</strong> Table 2.17</td>
</tr>
<tr>
<td><strong>Macrolide = Erythromycin, Clarithromycin, Azithromycin</strong></td>
<td><strong>Antipneumococcal Quinolones = Levofloxacin</strong>, Moxifloxacin</td>
<td><strong>Antipseudomonal Quinolone = Ciprofloxacin, Levofloxacin</strong></td>
</tr>
<tr>
<td><strong>Antipneumococcal Quinolones = Levofloxacin</strong>, Moxifloxacin, Gemifloxacin</td>
<td></td>
<td><strong>Antipseudomonal β-lactam = Cefepime, Imipenem, Meropenem, Piperacillin/Tazobactam</strong></td>
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<tr>
<td></td>
<td></td>
<td><strong>Aminoglycoside = Gentamicin, Tobramycin, Amikacin</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Antipneumococcal Quinolone = Levofloxacin</strong>, Moxifloxacin</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Macrolide = Azithromycin, Erythromycin</strong></td>
</tr>
</tbody>
</table>

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.

**Levofloxacin should be used in 750mg dosage when used in the management of patients with pneumonia.**

***For patients with renal insufficiency***

Note: The dosage listed is specified to reflect clinical expert recommendations. We do not collect dosage information for the purposes of the Pneumonia Project.
PN-6b: Initial Antibiotic Selection For Community-Acquired Pneumonia (CAP) 
In Immunocompetent Patients - Non Intensive Care Unit Patients

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

Denominator: Non-ICU pneumonia patients 18 years of age and older.

Variable Key:
- Patient Age
- Duration of Stay
- Antibiotic Days
- Abxday flag
- ANTIMINUTES
- Regimen1
- Regimen2
- Regimen3
- Regimen4
- Regimen5
- Regimen6
- Regimen7

Run cases that are included in the PN Initial Patient Population and pass the edits defined in the Data Processing Flow through this measure.
Specifications Manual for National Hospital Inpatient Quality Measures

PN-6, 6ab-28

Discharges 10-01-08 (4Q08) through 03-31-09 (1Q09)
For each case, include for further processing only those antibiotic doses that are on Table 2.1 and whose associated route = 1, 2, or 3.
Antibiotic Administration Date

Antibiotic Days = Antibiotic Administration Date - Arrival Date (in days)
Calculate Antibiotic Days for each antibiotic dose that has a non-UTD date.
Proceed only with antibiotic doses that have non-UTD Antibiotic Administration Dates.

Antibiotic Administration Date

< 0 for ALL antibiotic doses
Antibiotic Days = 0 for ALL antibiotic doses

> 0 for ANY antibiotic dose

Non-UTD Value for at least one antibiotic dose

ANTIMINUTES = Antibiotic Administration Date and Antibiotic Administration Time - Arrival Date and Arrival Time (in minutes)
Calculate ANTIMINUTES for each antibiotic dose that has a non-UTD date and time combination.
Proceed with antibiotic doses that have ANTIMINUTES calculated, OR Abxday flag = Yes.

< 1440 minutes (24 hours) for all antibiotic doses with non-UTD date and time. Proceed with antibiotic doses that have ANTIMINUTES calculated, OR Abxday flag = Yes.

> 1440 minutes (24 hours) for all antibiotic doses with non-UTD date and time. Proceed with antibiotic doses that have ANTIMINUTES calculated, OR Abxday flag = Yes.

For each case, proceed ONLY with those antibiotic doses that satisfy at least one of the following conditions:
Abxday flag = Y
ANTIMINUTES ≤ 1440

Initialize Abxday flag = "No" for each antibiotic dose.
Set Abxday flag = "Yes" for each antibiotic dose where Antibiotic Days = 0.

Missing

Non-UTD Value for at least one antibiotic dose.

Antibiotic Administration Date

= UTD for all antibiotic doses

Antibiotic Administration Time

= UTD for all antibiotic doses

Abxday flag = Yes for ANY dose. Proceed with doses where Abxday flag=Yes.

Abxday flag = No for all doses

Abxday flag = Yes for ANY dose. Proceed with doses where Abxday flag=Yes.
The Patient Age is calculated from Admission Date – Birthdate as part of the ICD Population logic.

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.

Regimen 1: All non-ICU patients
Regimen 2: non-ICU patients without Drug Resistant Pneumococcus Risk
Regimen 3: All non-ICU patients
Note: This section of the logic should be reached only if no recommended regimen was administered.

PN-6b

= M

= Y

Antibiotic Days

= 0 for at least one antibiotic dose

PN-6b

= B

<= 0 for any antibiotic doses

PN-6b

= = 1440

ANTIMINUTES

<= 1440 for at least one antibiotic dose

PN-6b

= B

Missing

= X

= N

PN-6b

= N

None is <= 1440

Specifications Manual for National Hospital Inpatient Quality Measures

Discharges 10-01-08 (4Q08) through 03-31-09 (1Q09)
Stop

- PN-6b B: Not In Measure Population
- PN-6b D: In Measure Population
- PN-6b E: In Numerator Population
- PN-6b X: Case Will Be Rejected