### Adult Community Acquired Pneumonia (CAP)-Outpatient Treatment

**Reviewed:** 9/2008

- **Physician Office**
- **ER Evaluation**
- **Urgent Care**

#### DIAGNOSIS

**INCLUSION CRITERIA:**
- 18-84 years of age
- Probable or definite diagnosis of CAP

**CRITERIA:**
- Radiographic evidence of infiltrate compatible with acute infection
- At least two of the following Clinical Findings: Check all that apply
  - Oral temperature ≥ 38 °C or rectal temperature ≥ 39 °C
  - Cough
  - Chest pain
  - Tachypnea (> 30 breaths per minute)
  - Crackles on auscultation
- Document actual values as available

#### EXCLUSION CRITERIA:
- HIV/AIDS
- Chronically immunosuppressed
- Known IV drug use
- Hospitalization within 10 days
- Homeless or no phone
- Pregnant
- Unable to use oral medication
- Severe psychosocial problems
- Known pregnancy
- Current nursing home resident
- Severe neuromuscular disease
- O₂ Sat < 90% or PO₂ < 60 or room air, or chronically O₂ dependent.

*If any of above do not use this tool*

#### Pneumonia Severity Index

**Score Evaluation**

- ≤ 90, Low Risk Patient: No difference in 30-day mortality rate between inpatient and outpatient therapy.
- > 90, Patient probably requires hospital admission.

Although the pneumonia severity index is accurate over large populations, it may not apply to certain patients in particular clinical settings. This guide is not intended to replace clinical judgment.

#### Risk Assessment

**Pneumonia Severity Index (PSI) Points**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td># Points = to patients age</td>
</tr>
<tr>
<td>Gender</td>
<td>If Female –10 Nursing home resident +10</td>
</tr>
<tr>
<td>Known Heart Failure</td>
<td>If Yes, +10</td>
</tr>
<tr>
<td>Known Liver Disease</td>
<td>If Yes +20</td>
</tr>
<tr>
<td>Known Active Cancer</td>
<td>If Yes, +30</td>
</tr>
<tr>
<td>Known Chronic Renal Insufficiency</td>
<td>If Yes, +10</td>
</tr>
<tr>
<td>Known Cerebrovascular Disease</td>
<td>If Yes, +10</td>
</tr>
<tr>
<td>Systolic Blood Pressure (mmHg)</td>
<td>If &lt; 90, +20</td>
</tr>
<tr>
<td>Heart Rate (l/min)</td>
<td>If ≥125, +10</td>
</tr>
<tr>
<td>Respiratory Rate (l/min)</td>
<td>If ≥30, +20</td>
</tr>
<tr>
<td>Oral Temperature (F)</td>
<td>If &lt; 95, +15, If ≥104, +15</td>
</tr>
<tr>
<td>Altered Mental State</td>
<td>If Yes, +20</td>
</tr>
<tr>
<td>LABORATORY DATA</td>
<td>Assign 0 points if not done</td>
</tr>
<tr>
<td>Hematocrit (%)</td>
<td>If &lt; 30, +10</td>
</tr>
<tr>
<td>Glucose (mg/dl)</td>
<td>If ≥ 250</td>
</tr>
<tr>
<td>Sodium (mg/dl)</td>
<td>If &lt; 130, +20</td>
</tr>
<tr>
<td>BUN (mg/dl)</td>
<td>If &gt; 30, +20</td>
</tr>
<tr>
<td>Arterial pH</td>
<td>If &lt; 7.35, +30</td>
</tr>
<tr>
<td>Pleural Effusion on Chest X-ray</td>
<td>If Yes, +10</td>
</tr>
<tr>
<td>Arterial pO₂ or O₂ saturation</td>
<td>If arterial pO₂ &lt; 60 mmHg or O₂ sat &lt; 90% +10</td>
</tr>
</tbody>
</table>

#### TOTAL

**Disposition**

- **≤ 90** Treat as outpatient
- **> 90** Admit to hospital

See reverse side for antibiotic selection algorithm

Please fill out the hospital community acquired pneumonia standard orders.

#### Antibiotic recommendations for outpatient treatment*

<table>
<thead>
<tr>
<th>Dx: Pneumonia</th>
<th>Known Drug Allergies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doxycycline 100mg</td>
<td></td>
</tr>
<tr>
<td>Sig: 1 capsule twice daily</td>
<td></td>
</tr>
<tr>
<td>Azithromycin 250mg</td>
<td></td>
</tr>
<tr>
<td>Sig: 2 tablets on day 1, then 1 tablet daily on days 2 through 5</td>
<td></td>
</tr>
<tr>
<td>Amox/Clav ER 1000-62.5mg</td>
<td></td>
</tr>
<tr>
<td>Sig: 2 tablets twice a day</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
</tbody>
</table>

*NOTE: Dose should be adjusted accordingly for significant renal or hepatic impairment; refer to prescribing information for each product.*

*Patients should be treated for a minimum of 5 days, should be afebrile for 48–72 h, and clinically stable before discontinuation of therapy. Extended duration is warranted if initial therapy is not effective, if there are complications due to extrapulmonary infection.*
Community Acquired Pneumonia (CAP) – Antibiotic Selection Algorithm

**LOW RISK**

**Patient Characteristics:**
- <50 years old
- Healthy, no chronic /co-morbid illnesses
- No antibiotic treatment in last 3 months
- No risk factors for drug-resistant *S. pneumoniae*

**Most common pathogens:**
- *S. pneumoniae*
- *H. influenzae*
- *M. catarrhalis*
- *C. pneumoniae*
- *M. pneumoniae*
- Viruses

**Initiate empiric treatment with one of the following**:  
- Azithromycin 500mg on day one, then 250mg once a day for 4 days
- Clarithromycin 250-500mg twice a day for 7-14 days
- Clarithromycin XL 1000mg daily for 7 days
- Doxycycline 100mg twice a day for 7-14 days

**Higher risk with: Pneumonia Severity Index Score <90**

**Patient Characteristics:**
- ≥50 years of age
- ≥40 year old smoker
- COPD, diabetes, chronic heart, liver lung or renal disease
- Malignancy
- ETOH abuse / malnutrition
- Hospitalized in last 12 months
- Post-splenectomy
- Use of antimicrobials in the last 3 months
- Immunosuppressive conditions or use of immunosuppressive drugs

**Most common pathogens:**
SAME AS “LOW RISK” PLUS:  
- Drug-resistant *S. pneumoniae*
- Gram negatives
- *S. aureus*

**Empiric Treatment Regimens**:  
- Amoxicillin 1gm three times a day for 7-14 days
- Augmentin XR (1000mg/62.5mg) 2gm twice a day for 7-10 days  
Alternative:  
- Cefpodoxime 200mg twice a day for 14 days
- Cefuroxime 500mg twice a day for 7-14 days  
**Plus**
- Clarithromycin 250-500mg twice a day for 7-14 days
- Clarithromycin XL 1000mg a day for 7 days  
Alternative:  
- Doxycycline 100mg twice daily for 7-14 days  
**OR**
- Levofoxacin 750mg a day for 5 days
- Moxifloxacin 400mg a day for 7-14 days

*Patients should be treated for a minimum of 5 days, should be afebrile for 48–72 h, and clinically stable before discontinuation of therapy; Extended duration is warranted if initial therapy is not effective or if there are complications due to extrapulmonary infection.

**Treatment considerations:**
- History of drug allergies
- History of adverse drug events or previous antibiotic treatment failures
- Regional resistance patterns
- Potential for patient compliance
- Health plan coverage
- Cost of treatment for self-pay patients

**NOTE:**
*Antibiotic doses may need to be adjusted downward in the presence of significant renal or hepatic impairment

**Patient instructions and follow-up:**
- Have patient call Primary Care Physician office if no improvement or worsening over next 48-72 hours
- Have patient call Primary Care Physician for adverse drug reactions (e.g.: severe diarrhea, rash, etc.)
- Have patient schedule a follow-up with their Primary Care Physician in 2 weeks
- Pneumococcal and influenza vaccine (if applicable) in 6-8 weeks
- If patient is ≥50 years or a smoker, give the patient an order for chest x-ray in 8 weeks to ensure radiographic clearing
APPROVAL:

[Signature]

SPA/SMF Medical Director

March 9, 2011

Date

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Approval/Revision Summary:

SMF QM/UM Committee  Date: 03-09-2011

SPA Steering Committee  Date: FYI Only