<table>
<thead>
<tr>
<th>Clinical Setting</th>
<th>Likely Pathogens</th>
<th>Empiric Therapy</th>
<th>Usual Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community-Acquired Pneumonia (CAP)</td>
<td><em>S. pneumoniae, H. influenzae, M. catarrhalis, atypicals</em> (Legionella spp., Mycoplasma pneumoniae, Chlamydia pneumoniae)</td>
<td>First line: ceftriaxone + azithromycin Alternatives: moxifloxacin</td>
<td>5-7 days c</td>
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<tr>
<td>Inpatient non-ICU care</td>
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<tr>
<td>Community-Acquired Pneumonia ICU care</td>
<td></td>
<td>First line: ceftriaxone + (azithromycin or moxifloxacin) ± vancomycin d</td>
<td>5-7 days c</td>
</tr>
<tr>
<td>Healthcare-Associated Pneumonia (HCAP)</td>
<td>See algorithm on next page</td>
<td></td>
<td>7 days e</td>
</tr>
<tr>
<td>Hospital-Acquired Pneumonia (HAP)</td>
<td><em>S. pneumoniae, H. influenzae, S. aureus (including MRSA), Enterobacteriaceae</em></td>
<td>First line: ceftriaxone ± vancomycin f,g Alternatives: moxifloxacin ± vancomycin f,g</td>
<td>7 days e</td>
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<tr>
<td>Early onset (&lt;5 days)</td>
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<tr>
<td>Hospital-Acquired Pneumonia Late onset</td>
<td><em>P. aeruginosa, Acinetobacter spp., S. aureus (including MRSA), Enterobacteriaceae</em></td>
<td>First line: piperacillin-tazobactam + vancomycin 1 1/2 7 days e ± tobramycin</td>
<td>7 days e</td>
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<tr>
<td>(&gt;5 days)</td>
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<tr>
<td>Ventilator-Associated Pneumonia (VAP)</td>
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<td>&gt;48 hours after intubation</td>
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<tr>
<td>Aspiration Pneumonia</td>
<td>Oropharyngeal flora</td>
<td>First line: ampicillin-sulbactam</td>
<td>7 days e</td>
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<tr>
<td></td>
<td></td>
<td>Alternatives: moxifloxacin</td>
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</tbody>
</table>

*Antibiotic therapy should be tailored based on susceptibility results. If respiratory cultures negative, consider discontinuing antibiotics or deescalating to CAP therapy.

If the patient had a documented multidrug resistant organism in the last 90 days, consider previous isolate susceptibility results when selecting empiric therapy.

Five days for patients who defervesce within 72 hours and no more than one CAP-associated sign of clinical instability before discontinuation. CAP-associated signs of clinical stability (if different from baseline): Temp ≤ 37.8°C, HR ≤ 100 beats/min, RR ≤ 24 breaths/min, SBP ≥ 90 mmHg, Arterial O2 sat ≥ 90% or pO2 ≤ 60 mmHg on room air

Consider adding anti-MRSA coverage if post-influenza pneumonia

If no prompt resolution of symptoms (defined as improved PaO2/FIO2 ratio by 3-5 days of therapy), consider prolonging therapy to 10-14 days.

Consider linezolid if MRSA pneumonia highly suspected (e.g. necrotizing pneumonia, previous MRSA pneumonia)

If respiratory cultures negative for MRSA, consider discontinuing vancomycin or linezolid at 48-72 hours.

References

Revised: 3/19/2015
EMPIRIC TREATMENT OF BACTERIAL PNEUMONIA

EMPIRIC TREATMENT ALGORITHM FOR HEALTHCARE-ASSOCIATED PNEUMONIA
BASED ON STRATIFICATION OF RISK FACTORS AND SEVERITY

Please see previous page for additional details on antibiotic selections.

**Healthcare-Associated Pneumonia (HCAP)**
Pneumonia and presence of one of the following:
- Hospitalization ≥ 48 hours in past 90 days
- Residence in nursing home or long-term care facility
- Attendance at hospital or hemodialysis clinic in past 30 days
- Home infusion therapy (including antibiotics)
- Home wound care
- Exposure to a family member infection with an MDR pathogen

**Severe pneumonia?**
- Need for mechanical ventilation
- ICU admission

### Risk factors for MDR pathogens

<table>
<thead>
<tr>
<th>0-1 MDR risk factors</th>
<th>≥2 MDR risk factors</th>
<th>0 MDR risk factors</th>
<th>≥1 MDR risk factors</th>
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<td>Treat for common CAP pathogens</td>
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<tr>
<td>Ceftriaxone + Azithromycin</td>
<td>Antipseudomonal beta-lactam (e.g. piperacillin-tazobactam, ceftepime) + Vancomycin ± Tobramycin</td>
<td>Ceftriaxone (Azithromycin or moxifloxacin)</td>
<td>Antipseudomonal beta-lactam (e.g. piperacillin-tazobactam, ceftepime) + Vancomycin ± Tobramycin</td>
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</tbody>
</table>

Empiric therapy should be tailored based on culture results and susceptibility

If respiratory cultures negative for MRSA, consider discontinuing vancomycin or linezolid at 48-72 hours.

If respiratory cultures negative, consider discontinuing antibiotics or deescalating to CAP therapy.

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+ Immunosuppression defined as any of the following:
  - ANC <1000
  - Congenital immunodeficiency
  - Splenectomy
  - HIV infection
  - Hematologic malignancy
  - Immunosuppressant therapy
  - Systemic steroid therapy (>10 mg prednisolone equivalent per day for 2+ weeks)

# Poor functional status defined as dependence on others to perform any 3 of the following:
- Feed (includes tube feeds)
- Bathe
- Get dressed
- Use toilet or cleaning self after use
- Transfer from bed to chair and back
- Partially or completely incontinent

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