Management of Community-Acquired Pneumonia in Adults

Diagnose community-acquired pneumonia. Consider alternate diagnoses. (CHF, PE, and others)

Risk stratify using clinical judgment

CRB-65
Assign 1 point each for:
- Confusion (MMSE < 9 or new disorientation to person, place or time)
- RR ≥ 30 breaths/min
- SBP < 90mmHg or DBP < 60mmHg
- Age ≥ 65 years

Risk Level
- 0 points and SP02 > 92% on room air
  Low Risk
  Thirty day mortality: 2.4%

- 1-2 points
  Intermediate Risk
  Thirty day mortality: 13.3%

- 3-4 points
  High Risk
  Thirty day mortality: 34.3%

If patient is at risk for antimicrobial-resistant organisms (e.g. recent antimicrobial therapy or structural lung disease), consider modifications and/or expert advice.

Outpatient*
- amoxicillin 1 gm po bid
  x 5-7 days
  (Some experts recommend a longer duration for patients with structural lung disease.)

- if β-lactam allergic: levofloxacin 750mg or moxifloxacin 400mg po daily x 5 days

Inpatient-Ward*
- amoxicillin-clavulanic acid 875/125mg po bid*
  X 5-7 days

- or

- cefotaxime 1g q8h iv or ceftriaxone 1g q24h iv*
  X 5-7 days

- if β-lactam allergic: levofloxacin 750mg po/iv daily or moxifloxacin 400mg po/iv daily

ICU or Step-down/Step-up*
- If patient is septic: Manage as per local sepsis protocols. Blood cultures before antibiotics.
- cefotaxime 1g q8h or ceftriaxone 1g q24h iv

- and

- azithromycin 500mg iv daily

- if β-lactam allergic: levofloxacin 750mg or moxifloxacin 400mg iv daily

- MRSA colonization known/suspected:
  Add vancomycin 15-20mg/kg iv q12h
  (or dose according to institutional guidelines)

*Routine coverage of atypical bacteria has not been proven to be of benefit in this setting.

In Ontario the highest risk period for Legionella is June to October; during this period consider adding azithromycin 500 mg po or iv. Please see FAQ’s for explanation.

Last revised: October 2016

§ In most circumstances, these guidelines apply equally to patients residing in long-term care institutions (e.g. Nursing Homes).
**Management of Community-Acquired Pneumonia: Additional Tools**

This algorithm is NOT for patients with significant immunocompromise that might alter the choice of empiric antimicrobial therapy.

This includes (but is not limited to) patients with:
- Recent or current use of immunomodulating drugs (e.g. high-dose corticosteroids, cyclosporine, infliximab, etanercept, etc.)
- HIV with low (known or suspected) CD4 count
- Solid organ transplantation
- Stem cell transplantation
- Chemotherapy-associated neutropenia

### Approximate Antimicrobial Costs*  

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Cost / Day</th>
<th>Limited Use Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>amoxicillin 1000 po mg bid</td>
<td>$2.66</td>
<td>N/A</td>
</tr>
<tr>
<td>amoxicillin-clavulanate 875/125mg po bid</td>
<td>$2.78</td>
<td>N/A</td>
</tr>
</tbody>
</table>
| levofloxacin 750mg po daily       | $8.61      | 337 (co-morbidity), 339 (step-down),  
                                  |            | or 977 (allergy to alternatives).  
                                  |            | 750mg tabs is not an ODB benefit. Dispense  
                                  |            | 500mg tabs. Take 1 and 1/2 tabs daily.  
| moxifloxacin 400mg po daily       | $5.66      | 337 (co-morbidity), 339 (step-down),  
                                  |            | or 977 (allergy to alternatives).  
| ceftriaxone 1g iv daily           | $5         |                             |
| cefotaxime 1g iv q8h              | $20        |                             |
| azithromycin 500mg po daily       | $1.50      |                             |
| azithromycin 500mg iv daily       | $8         |                             |
| levofloxacin 750mg iv or moxifloxacin 400mg iv daily | $24  |

* Costs can only be provided as estimates as of October 2016, and may vary for both inpatient and outpatient pharmacies.

### Streptococcus pneumoniae resistance†

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Resistance in Pneumococcal Isolates</th>
</tr>
</thead>
<tbody>
<tr>
<td>penicillin G (non-meningitis)</td>
<td>0.2%</td>
</tr>
<tr>
<td>ceftriaxone</td>
<td>1.3%</td>
</tr>
<tr>
<td>moxifloxacin</td>
<td>0.4%</td>
</tr>
<tr>
<td>levofloxacin</td>
<td>0.4%</td>
</tr>
<tr>
<td>amoxicillin</td>
<td>1.7%</td>
</tr>
<tr>
<td>cefuroxime</td>
<td>10%</td>
</tr>
<tr>
<td>doxycycline</td>
<td>15%</td>
</tr>
<tr>
<td>azithromycin clarithromycin</td>
<td>36%</td>
</tr>
</tbody>
</table>

†Adult respiratory specimens from Ontario laboratories participating in the Canadian Bacterial Surveillance Network/Toronto Invasive Bacterial Diseases Network, 2015. Data courtesy Dr. Allison McGeer.

### Haemophilus influenzae resistance to amoxicillin‡

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Resistance to amoxicillin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33%</td>
</tr>
</tbody>
</table>

‡Specimens submitted to UHN/MSH shared microbiology service in 2016. Data courtesy of Dr. Tony Mazzulli.