### Summary of Pneumonia Guidelines – Empiric Therapy: Adults

<table>
<thead>
<tr>
<th>General</th>
<th>TOP (Adult):</th>
<th>CHR²</th>
<th>Ontario 2005:</th>
<th>Canada 2000 (Mandell et al)⁴</th>
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<td>- Ensure adequate hydration. Many patients with pneumonia are dehydrated due to increased insensible water loss. - Adequate analgesics/antipyretics for pain and fever. - Coughs suppressants are not routinely recommended. - For patients who may require admission, calculation of PSI score is recommended to guide determination of site of care. - Significant pleural effusion (&gt;10 mm on lateral decubitus) should be drained. - Empyema should be drained. - Oxygen therapy is indicated for hypoxemia. - Due to morbidity and mortality of bacterial pneumonia and limitations of microbial diagnosis, empiric therapy is recommended for all patients with physical findings of pneumonia and new infiltrate on chest x-ray. - The choice of empiric therapy is based on severity of illness, patient age, comorbidities, treatment setting (outpatient or inpatient), local susceptibility patterns where available, and patient’s recent (3 month) antibiotic history.</td>
<td>- Prudent to obtain patients antibiotic history. If there has been significant exposure to a particular class of agent, then consider selecting an alternate class of antibiotic.</td>
<td>- Conflicting guidelines exist with respect to the use of the newer FQs in CAP. Some guidelines recommend their use as 1st line agents (BTS 2004; Heffelfinger 2000). Others do not advocate their use as 1st line agents due to their broad spectrum of activity and concerns over the rapid emergence of FQ resistance in pneumococci. - Physicians are encouraged to be aware of local antimicrobial susceptibility patterns to facilitate antibiotic selection. - Prudent to obtain a patient’s antibiotic history. Review antibiotics prescribed for any type of infection in the previous 3 months. If there has been significant exposure to a particular class of agents, then consider selecting an alternate class of antibiotic agent. - Duration of therapy depends on various factors (e.g. clinical presentation, comorbidities, age, etc.) and varies from 10-14 days unless otherwise specified.</td>
<td>- Unfortunately, there has never been an appropriately designed randomized controlled trial to specifically determine the duration of antibiotic therapy for CAP. Most physicians, including members of this committee, recommend treatment for 1-2 weeks, depending upon response of the patient. - General measures should be implemented. Adequate hydration will help clear secretions. Cough suppressants may be beneficial for patients with severe paroxysms or coughing that produce respiratory fatigue or pleuritic and chest wall pain. - Oxygen therapy may be indicated for hypoxemia. - Significant pleural effusion or pleural empyema should be drained.</td>
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| Outpatient (NO comorbid factors) | Azithromycin 500 mg PO x 1 day then 250 mg PO daily (5 days)  
Or Clarithromycin 250 to 500 mg PO BID (10 days)  
Or Erythromycin 500 mg PO QID (10 days)  
Or Doxycycline 200 mg PO x 1 day then 100 mg PO daily (10 days) | Macrolide (azithromycin, clarithromycin, or erythromycin)  
OR Doxycycline  
Note: CHR outpatient prescription form includes:  
Clarithromycin (500 mg po BID x 10 days)  
Azithromycin (500 mg po x 1 day then 250 mg po QD x 4 days)  
Levofloxacin (500 mg po QD x 10 days)  
Doxycycline 200 mg po x 1 then 100 mg po x 9 days  
[Physician to tick off choice of antibiotic for patient] | First Line  
Erythromycin 500 mg PO QID  
Or Clarithromycin 500 mg PO BID or 1000 mg (ER) QD  
Or Azithromycin 500 mg PO on first day then 250 mg PO QD x 4 days  
Second Line  
Doxycycline*  
100 mg BID first day then 100 mg daily  
Or Telithromycin**  
800 mg daily x 10 days  
Note: A respiratory FQ alone or an advanced macrolide PLUS high dose amoxicillin or high dose amoxi-clav are options if the patient has had antibiotics within the past 3 months.  
* Approximately 10% of pneumococci are resistant to tetracyclines  
** Telithromycin may have a role in individuals with treatment failures or where drug-resistant pneumococci (penicillin or macrolide) are a problem or suspected. | First Choice  
Macrolide (erythromycin, azithromycin, or clarithromycin)  
Second choice  
Doxycycline  
Comments  
- For outpatients who do not have modifying factors such as COPD or macroaspiration, treatment with a macrolide or doxycycline should suffice to cover pneumococci, Mycoplasma pneumonia, and Chlamydia pneumonia (the most likely pathogens in this setting).  
- For the present, macrolides remain effective for patients with mild to moderately severe CAP on the basis of their pneumonia-specific severity of illness score. |
| Outpatient with comorbid factors  
For CHR guidelines, recommendations are also for Failure of Therapy | Azithromycin 500 mg PO x 1 day then 250 mg PO daily (5 days)  
Or Clarithromycin 250 to 500 mg PO BID (10 days)  
Or Doxycycline 200 mg PO x 1 day then 100 mg PO daily (10 days) | Azithromycin  
OR Clarithromycin  
OR Doxycycline  
OR Respiratory FQ (gatifloxacin, levofloxacin, or moxifloxacin) | NO recent antibiotics within past 3 months  
First Line  
Clarithromycin 500 mg PO BID or 1000 mg (ER) PO QD  
Or Azithromycin 500 mg PO daily on first day then 250 mg daily x 4 days  
Second Line  
Telithromycin  
800 mg daily x 10 days | NO recent antibiotics or PO steroids within past 3 months*  
First Choice  
Newer macrolide (azithromycin or clarithromycin)  
Second Choice  
Doxycycline |
### Recent antibiotics within past 3 months

**First Line**
- **Amoxi/clavulanate** 500 mg PO TID or 875 mg PO BID
- **Cefuroxime** 500 mg PO BID
- **Cefprozil** 500 mg PO BID

**PLUS one of the following:**
- **Clarithromycin** 500 mg PO BID or 1000 mg (ER) PO QD
- **Azithromycin** 500 mg PO daily on first day then 250 mg daily x 4 days
- **Telithromycin** 800 mg PO QD x 10 days

**OR any ONE of the following ALONE:**
- **Gatifloxacin** 400 mg PO QD
- **Levofloxacin** 500 mg PO QD (x 10 days) or 750 mg PO QD (x 5 days)
- **Moxifloxacin** 400 mg PO QD

### Recent antibiotics or PO steroids within past 3 months (*H. influenzae* and enteric gram –ve rods implicated)

**First Choice**
- **Respiratory FQ** (Levofloxacin**, gatifloxacin, or moxifloxacin)

**Second Choice**
- **Amoxi/clav + macrolide**
- **2-G cephalosporin + macrolide**

* Treat the same as patients without modifying factors with the only caveat that the newer macrolides be used to insure adequate coverage of *H. influenzae*

**Among the currently available respiratory FQs, levofloxacin has a record of safety and effectiveness for the treatment of CAP in a large number of patients and it has demonstrated substantial cost savings when included in a critical pathway for the treatment of CAP.

### Failure of First Line Agents

- **Gatifloxacin**
  - 400 mg PO daily (10 days)
  - Or
- **Levofloxacin**
  - 500 mg PO daily (10 days)
  - Or
- **Moxifloxacin**
  - 400 mg PO daily (10 days)
  - Or
- **Cefuroxime** 500 mg PO BID

**PLUS Erythromycin** 500 mg PO QID (10 days)
BTS = British Thoracic Society; CAP = community acquired pneumonia; FQ = fluoroquinolone
Comorbid Factors:

1) TOP Guidelines: asthma, lung cancer, COPD, diabetes, alcoholism, chronic renal or liver failure, CHF, chronic corticosteroid use, malnutrition or acute weight loss (>5%), hospitalized within past 3 months, HIV, smoking.
2) CHR Guidelines: asthma, COPD, diabetes, alcoholism, chronic renal or hepatic failure, CHF, chronic corticosteroid use, malnutrition or acute weight loss >5%, hospitalization within last 3 months, HIV, lung cancer, smoking.
3) Ontario 2005: COPD, diabetes, malignancy, renal or congestive heart failure (Mandell, 2003). Others (Alberta) have listed alcoholism, malnutrition, chronic steroid use, and recent hospitalization.
4) Canadian Guidelines (CIDS and CTS): chronic obstructive lung disease

Failure of therapy defined as: hemodynamic compromise, or clinical deterioration after 72 hours of antibiotic therapy or no improvement after completion of antibiotic therapy. Failure of therapy consider: host related factors (immunosuppressed, noninfectious pulmonary pathology); pathogen related factors (antibiotic resistance, non bacterial etiology such as virus, fungi, mycobacterium spp); drug related factors (compliance, malabsorption, drug drug interactions, drug fever)

References