**The table below provides general recommendations for pneumonia treatment, evaluation, and antibiotic de-escalation. The patient’s clinical picture must always be considered and **providers must be contacted** before therapy changes are made, as this is not a pharmacy protocol. Due to extenuating circumstances your patient may need alternative treatment or prolonged treatment duration.**

**CHI Franciscan Health Pneumonia Evaluation & Treatment Summary**

<table>
<thead>
<tr>
<th>Empiric Antibiotic Selection</th>
<th>Refer to pneumonia algorithm with risk stratification</th>
</tr>
</thead>
</table>
| Streamlining Antibiotics    | • Narrow to appropriate abx ASAP if/when **cultures/sensitivities final**.  
                                 • Regardless of culture results, anaerobic coverage is likely warranted throughout the treatment course for aspiration, empyema, and abscesses because **anaerobes are notoriously difficult and slow growers**.  
                                 • Further abx may not be needed if the patient dramatically improves (defer to provider’s assessment) over **48hrs** and cultures are negative or not available.  
                                 • **After 72 hrs of empiric therapy with negative or no cultures**, many patients can be streamlined to one abx if: clinical improvement (improved CXR (CXR improvement may lag behind clinical improvement), WBC trending down, afebrile, RR < 24, P02 > 92, HR < 100, always defer to providers discretion) and hemodynamically stable  
                                 ○ **CAP and HCAP with 0-1 MDR risk factors**: May drop doxy or azithromycin from regimen for non-icu patients (i.e. continue with only ceftriaxone or levofloxacin) and may drop ceftriaxone for icu patients (continue with just levofloxacin).  
                                 ○ **HCAP with 2+ risk factors**: If patient meets same criteria as above, may drop cefepime/zosyn or ceftriaxone and continue with just levofloxacin. |
| Non-responders               | • Regardless of cultures, patients who have not responded to therapy after 48-72hrs (see above description of clinical improvement) may require abx escalation until other complications and/or sources of infection can be ruled out.  
                                 ○ Initially treated as CAP or HCAP with 0-1 MDR risk factors: escalate therapy to HCAP with 2+ MDR risk factors  
                                 ○ Initially treated as HCAP with 2+ risk MDR risk factors: escalate cefepime/zosyn to meropenem |
| IV to PO                    | • Many patients can be converted to oral therapy when abx are... |

Approved by ASP Committee  
Last Updated January 2014
Conversion  
streamlined (i.e. clinical improvement) and the patient is tolerating oral medications with a functional GI tract.  
- MRSA, pseudomonas, and MDRO pneumonia should be treated with IV abx for the duration of the hospital stay.  
- **Bactrim is not** considered adequate treatment for pneumonia.  
- **Suggested conversions** (unless precluded by cultures):  
  - Ceftriaxone ($1.26): Augmentin ($1.80) (Vantin ($9.11) is alternative for PCN allergy, but is 5x more costly than Augmentin)  
  - Ancef ($1.20): Keflex ($0.34)  
  - Levofoxacin ($6.16): Levofoxacin ($0.45)  
  - Unasyn ($10.68) (or regimen with flagyl): Augmentin ($1.80) (Clinda ($1.08) OR Vantin plus PO Flagyl ($0.66) could be used for true PCN allergy)  

Duration of Therapy  
- **Aspiration:** 7-10 days  
- **CAP:**  
  - afebrile x 48-72 hrs *and* clinically stable: 5-7 days  
  - S. aureus: 14-28 days  
  - Legionella, Chlamydia pneumoniae 10-21 days  
  - Empyema, lung abscess, or necrotizing pneumonia: 2-4+ weeks  
- **HCAP with 0 – 2+ MDR risk factors:**  
  - Initial abx selection correct *and* good clinical response: 7-8 days  
  - Nonfermentative Gram neg bacilli (**Pseudomonas, Acinetobacter**): 14-15 days  

Procalcitonin (cont. on next page)  

**LRTI Initial Antibiotic Use Algorithm**

<table>
<thead>
<tr>
<th>PCT Value</th>
<th>Antibiotic Use Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.1 μg/L</td>
<td>Strongly Discouraged</td>
</tr>
<tr>
<td>0.1-0.24 μg/L</td>
<td>Discouraged</td>
</tr>
<tr>
<td>≥ 0.25-0.5 μg/L</td>
<td>Encouraged</td>
</tr>
<tr>
<td>&gt;0.5 μg/L</td>
<td>Strongly Encouraged</td>
</tr>
</tbody>
</table>

- Consider alternative diagnosis  
- Repeat PCT in 6-12 hours if antibiotics not begun and no clinical improvement  
- If clinically unstable, immunosuppressed or high risk consider overruling (PSI Class IV-V, CURB-65, GOLD III or IV)  

Initial (admission) Draw

Repeat every 2-3 days to consider early antibiotic cessation  
See Algorithm 2

Approved by ASP Committee  
Last Updated January 2014
Follow up PCT Drawn Every 2-3 Days

LRTI PCT Follow up Algorithm

- PCT Value
  - <0.1 µg/L or drop by >50%: Cessation Strongly Encouraged
  - 0.1 - 0.24 µg/L or drop by >50%: Cessation Encouraged
  - ≥0.25 - 0.5 µg/L: Cessation Discouraged
  - >0.5 µg/L: Cessation Strongly Discouraged

Consider continuing if clinically unstable

If PCT rising or not adequately decreasing consider possible treatment failure and evaluate for need for expanding antibiotic coverage or further diagnostic evaluation