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## September Introduction

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**Case:** A 52-year-old man with a history of hypertension presents with 4 days of cough and fever. Vitals: heart rate 112 beats per minute, temperature 102, blood pressure 142/90 mmHg, saturation 97%. The exam shows a well-appearing man with no respiratory distress. Lung auscultation reveals trace crackles that seem to be more prominent in the left upper lung field. A presumptive diagnosis of community-acquired pneumonia is made.

- Chest x-ray (CXR) Performance
  - Sensitivity of CXR for pneumonia typically falls in the mid-70% range.
  - Clearly it is not a perfect test and will often be negative when the patient has pneumonia.
  - If there is a high pretest probability for pneumonia, a negative CXR shouldn't markedly change the diagnosis.
- Lung Ultrasound
  - Numerous studies show that point-of-care ultrasound (POCUS) performs better than CXR in diagnosing pneumonia.
  - Lung ultrasound (US) findings in pneumonia:
    - Subpleural consolidations
    - Focal or unilateral B-lines (B-lines represent fluid in the alveoli)
    - Parapneumonic effusions
  - As with all diagnostic tests, ultrasound is user-dependent: additional training may be necessary to become comfortable with this diagnostic approach.
    - Perform lung ultrasound on "normal" lungs to know what normal lung architecture looks like.
    - Perform lung ultrasound on patients who have an x-ray showing pneumonia to learn what abnormal lung tissue looks like.
- Outpatient Antibiotic Treatment
  - Empiric therapy must adequately cover the most common organism: *Streptococcus pneumoniae*.

- **Azithromycin, while often prescribed, is inadequate monotherapy due to high rates of *S. pneumoniae* resistance (>25%) in all regions of the United States.**
- Doxycycline: *S. pneumoniae* resistance is more variable and may be an appropriate monotherapy depending on the region.
- Fluoroquinolones
  - Low *S. pneumoniae* resistance
  - Covers atypicals
  - Side effect profile may be worse than other options
- Amoxicillin + azithromycin
  - This treatment adequately covers both *S. pneumoniae* and atypicals.
  - In patients with more comorbid diseases, amoxicillin/clavulanic acid can be substituted for amoxicillin.

### References

EMRAP HD: [Blue Protocol](#)

[EM:RAP 2019 April Antibiotics and Pneumonia](#)

*CorePendium*: [Streptococcus pneumoniae](#)

[Lung ultrasound in the diagnosis and follow-up of community acquired pneumonia: a prospective, multicenter, diagnostic accuracy study](#)

[Reissig A, Copetti R, Mathis G, et al. Chest. 2012;142\(4\):965-972. PMID: 22700780](#)

[Lung ultrasound is an accurate diagnostic tool for the diagnosis of pneumonia in the emergency department](#)

[Cortellaro F, Colombo S, Coen D, et al. Emerg Med J. 2012;29:19-23. PMID: 21030550](#)

[Evaluation of lung ultrasound for the diagnosis of pneumonia in the ED](#)

[Parlamento S, Copetti R, Di Bartolomeo S. Am J Emerg Med. 2009;27:379-384. PMID: 19555605](#)

[Macrolide resistance in cases of community-acquired bacterial pneumonia in the emergency department](#)

[Haran JP, Volturo GA. J Emerg Med. 2018;55\(3\):347-353. PMID: 29789175](#)