



The Typical Atypicals

Community acquired pneumonia (CAP) is the leading infectious cause of hospital admission and death in the United States.¹ *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis* are common typical bacterial causing CAP.² However, atypical bacteria can also cause CAP. Which atypical bacteria are common in CAP? What antibiotics are used to treat them?

What are Atypical Bacteria?

Atypical bacteria are a group of bacteria that are difficult to culture and do not appear on Gram stain. They can be difficult to identify and treat because they are primarily intracellular pathogens. The 2019 Infectious Diseases Society of America (IDSA) CAP guidelines identify common atypical bacteria in CAP as *Mycoplasma pneumoniae*, *Legionella* species, and *Chlamydia pneumoniae*.² These three atypical organisms are estimated to be the causative agent in 6% to 20% of cases of pneumonia from the community setting.³

How to Treat Atypical Bacteria in CAP

| Antibiotic | Advantages | Disadvantages |
|--|--|--|
| Macrolide (e.g. azithromycin) | Once daily dosing Intravenous or oral route Short duration of 3 to 5 days | QTc prolongation Gastrointestinal side effects High <i>S. pneumoniae</i> resistance rates interferes with use as monotherapy |
| Fluoroquinolone (e.g. levofloxacin) | Once daily dosing Intravenous or oral route Provides coverage of typical CAP bacterial pathogens* | High risk for <i>Clostridioides difficile</i> Tendonitis and tendon rupture Peripheral neuropathy Central nervous system effects QTc prolongation Aortic aneurism rupture |
| Tetracycline (e.g. doxycycline) | Intravenous or oral route Minimal side effects or drug interactions Provides coverage of typical CAP bacterial pathogens | Less clinical data to support use in severe CAP Permanent dental discoloration in pediatric patients (< 8 years old) |

*Respiratory quinolones only. Ciprofloxacin does not have reliable activity against *S. pneumoniae*

Key Takeaway: Atypical bacteria are difficult to identify and can be a cause of CAP. IDSA guidelines recommend empiric regimens for CAP include coverage for atypical bacteria and therefore should include a macrolide such as azithromycin, a respiratory fluoroquinolone such as levofloxacin, or doxycycline.

References:

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3. Blasi, F. "Atypical pathogens and respiratory tract infections." *The European respiratory journal* vol. 24,1 (2004): 171-81. doi:10.1183/09031936.04.00135703