Kentucky Antimicrobial Stewardship Innovation Consortium

Educational Pearl

Ciprofloxacin for Pneumonia

Fluoroquinolones which are commonly used to treat systemic infections include ciprofloxacin, levofloxacin, and moxifloxacin. Levofloxacin and moxifloxacin are sometimes referred to as respiratory fluoroquinolones. Why is ciprofloxacin not a respiratory fluoroquinolone and can it be used for respiratory infections?

What makes a fluoroquinolone a respiratory fluoroquinolone?
Fluoroquinolones with reliable activity against *Streptococcus pneumoniae* are considered respiratory fluroquinolones. Both levofloxacin and moxifloxacin demonstrate low minimum inhibitory concentrations (MICs) for *S. pneumoniae* and are options in the treatment of community-acquired pneumonia (CAP) where *S. pneumoniae* is the most common bacterial cause.[1] Ciprofloxacin is not a respiratory fluoroquinolone because it does not have reliable activity against *S. pneumoniae*, NOT because it has poor lung penetration. Ciprofloxacin achieves adequate drug levels in the lungs.

If ciprofloxacin is not a respiratory fluoroquinolone, can it still be used in pneumonia?
Yes, ciprofloxacin can be used to treat pneumonia caused by organisms other than *S. pneumoniae*. For example, ciprofloxacin is a recommended second agent in empiric combination regimens against *Pseudomonas aeruginosa* in hospital-acquired pneumonia or ventilator-associated pneumonia.[2]

Key Takeaway:
Ciprofloxacin is not a respiratory fluoroquinolone because it does not have reliable activity against *Streptococcus pneumoniae*. However, it can still be used for pneumonia caused by other organisms for which it has activity. When used empirically, ciprofloxacin should be paired with an agent with reliable activity against *S. pneumoniae.*

References:

1. Metlay JP, Waterer GW, Long AC, et al. Diagnosis and Treatment of Adults with Community-acquired Pneumonia. An Official Clinical Practice Guideline of the American Thoracic Society and Infectious Diseases Society of America. *Am J Respir Crit Care Med*. 2019;200(7):e45-e67. doi:10.1164/rccm.201908-1581ST
2. Kalil AC, Metersky ML, Klompas M, et al. Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society. *Clin Infect Dis*. 2016;63(5):e61-e111. doi:10.1093/cid/ciw353

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