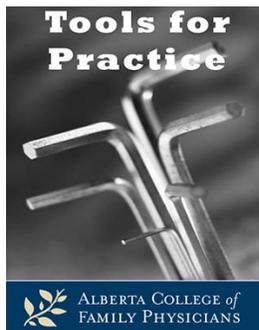


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Amoxicillin, still an A-list Antibiotic for Infections of the Airway

Clinical Question: When needed, are β -lactam antibiotics (i.e. amoxicillin) a reasonable choice in mild to moderate bacterial respiratory tract infections in primary care?

Evidence:

Community Acquired Pneumonia (CAP):

- Systematic Review, 18 Randomized Controlled Trials (RCTs), 6749 patients with mild to moderate CAP.
 - No improvement in clinical outcomes for antibiotics against atypical pathogens (i.e. quinolones or macrolides) over β -lactam antibiotics.
 - Relative Risk 0.97 (95% Confidence Interval (CI) 0.87 - 1.07).¹
- Systematic Review, 28 RCTs, 5939 hospitalized patients with CAP.
 - No benefit in mortality or clinical efficacy with broader coverage for atypicals compared to regimens without atypical coverage (i.e. β -lactam antibiotics).^{2,3}

COPD:

- RCT with 137 mild to moderately symptomatic primary care patients with AECOPD.⁴
 - No difference in clinical cure between amoxicillin versus amoxicillin/clavulanate (90.9% versus 92.8%).
- Systematic Review, 12 RCTs, 2261 patients with chronic bronchitis (not necessarily COPD), compared "first-line" antibiotics (like amoxicillin, doxycycline and others) versus "second-line" antibiotics (i.e. macrolides, quinolones and others) for acute exacerbations:⁵
 - Authors report Odds Ratio 0.51 (95% CI 0.34 to 0.75) but analysis unclear. Actual difference is 85% symptom resolution/improvement for 1st line versus 91% for 2nd line.
 - Studies ranged from 19% worse to 8% better with first-line antibiotics, no heterogeneity testing was reported.
 - No difference in mortality.

Sinusitis:

- 2 RCTs (171⁶ & 188⁷ children) compared amoxicillin to amoxicillin-clavulanate for acute sinusitis and neither found benefit with amoxicillin-clavulanate.

Context:

- Majority of respiratory tract infections are viral and will not require antibiotics
- Macrolide resistance in *Streptococcus pneumoniae* is rapidly increasing (2% in 1993 to 24% in 2009), whereas resistance to amoxicillin is just over 3%.⁸
- Limited data report increasing prevalence of *Haemophilus influenzae* among upper respiratory tract infections after the introduction of the conjugated pneumococcal vaccine,⁹ although clinical impact has not been demonstrated in well-designed RCTs.

Bottom-line: In mild to moderate respiratory tract infections that require antibiotics, there is no evidence of benefit with broader spectrum antibiotics over traditional β -lactam antibiotics (i.e. amoxicillin), particularly in primary care. Broad spectrum treatment may be considered in certain high risk patients.

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