Antibiotics for Treatment of Acute Respiratory Tract Infections: Decreasing Benefit, Increasing Risk, and the Irrelevance of Antimicrobial Resistance

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THIS AUTHOR NOTES:

“Despite little microbiological reason indicating that it would be helpful, antibiotic prescribing for treatment of predominantly viral acute respiratory tract infections remains nearly as popular as ever.”

As an example, for acute bronchitis in adults “the right antibiotic prescribing rate should be close to 0%,” yet in the US “physicians prescribed antibiotics to 77% of adults with acute bronchitis in 1995, to 59% of adults in 2000, and to 67% of adults in 2005.”

Acute respiratory tract infections “account for 50% of antibiotic prescribing to adults and 75% of antibiotic prescribing to children.”

“Systematic reviews from the Cochrane Collaboration have found marginal to no benefit of antibiotics for treatment of the common cold, acute otitis media in children, maxillary sinusitis, sore throat, and acute bronchitis.”

There is “no symptomatic benefit of antibiotics for treatment of acute bronchitis or sinusitis.”

“For most acute respiratory tract infections, antibiotics appear to have little benefit.”

“Evidence of the risks associated with antibiotics continues to increase:”

1) 5%-25% of patients will develop antibiotic-associated diarrhea.
2) Clostridium difficile infection is associated with antibiotic treatment, especially with clindamycin, cephalosporins, and fluoroquinolones.
3) 2% of patients given antibiotics develop a skin reaction.
4) 1 of 5000 patients will have an anaphylactic reaction.
5) “Penicillins are one of the most common causes of drug-related adverse events in ambulatory practice.”
6) “Antibiotics are the second most common cause of drug-related adverse drug events in elderly patients.”
7) Adverse events attributable to antibiotics often lead to hospital admission.
8) “Antibiotics are one of the most common classes of medication associated with malpractice claims.”

9) New evidence [Shehab N, Patel PR, Srinivasan A, Budnitz DS. Emergency department visits for antibiotic-associated adverse events. Clin Infect Dis; Sept 15, 2008; 47:735–43.] shows that “antibiotics were responsible for nearly 20% of emergency department visits for drug-related adverse events,” and this is a low estimate, perhaps only representing 45% of the actual problem. “By focusing on only emergency department visits, Shehab et al. detected the tip of the iceberg. Many more patients have mild drug-related adverse events that lead them to seek nonemergency ambulatory care or to simply stop use of the antibiotic.”

“Antibiotic-associated adverse events occur when antibiotics are taken as prescribed and as intended.”

“Treating a viral illness with antibiotics does not make sense microbiologically.”

“Antibiotic therapy is associated with greater risk than was previously appreciated.”

“Physicians should be comfortable with making the following statement to most of their patients with acute respiratory tract infections: ‘For your infection, there is an 1 in 4,000 chance that an antibiotic will prevent a serious complication, a 5%–25% chance that it will cause diarrhea, and an 1 in 1,000 chance that you will require a visit to the emergency department because of a bad reaction to the antibiotic.’”

KEY POINTS FROM DAN MURPHY

1) “Despite little microbiological reason indicating that it would be helpful, antibiotic prescribing for treatment of predominantly viral acute respiratory tract infections remains nearly as popular as ever.”

2) For acute bronchitis in adults “the right antibiotic prescribing rate should be close to 0%,” yet in the US “physicians prescribed antibiotics to 77% of adults with acute bronchitis in 1995, to 59% of adults in 2000, and to 67% of adults in 2005.”

3) Acute respiratory tract infections “account for 50% of antibiotic prescribing to adults and 75% of antibiotic prescribing to children.”

4) There is “marginal to no benefit of antibiotics for treatment of the common cold, acute otitis media in children, maxillary sinusitis, sore throat, and acute bronchitis.”

5) There is “no symptomatic benefit of antibiotics for treatment of acute bronchitis or sinusitis.”
6) “For most acute respiratory tract infections, antibiotics appear to have little benefit.”

7) “Evidence of the risks associated with antibiotics continues to increase.”

8) 5%-25% of patients will develop antibiotic-associated diarrhea.

9) Clostridium difficile infection is associated with antibiotic treatment, especially with clindamycin, cephalosporins, and fluoroquinolones.

10) 2% of patients given antibiotics develop a skin reaction.

11) 1 of 5000 patients will have an anaphylactic reaction.

12) “Penicillins are one of the most common causes of drug-related adverse events in ambulatory practice.”

13) “Antibiotics are the second most common cause of drug-related adverse drug events in elderly patients.”

14) Adverse events attributable to antibiotics often lead to hospital admission.

15) “Antibiotics are one of the most common classes of medication associated with malpractice claims.”

16) New evidence [Shehab N, Patel PR, Srinivasan A, Budnitz DS. Emergency department visits for antibiotic-associated adverse events. Clin Infect Dis; Sept 15, 2008; 47:735–43.] shows that “antibiotics were responsible for nearly 20% of emergency department visits for drug-related adverse events,” and this is a low estimate, perhaps only representing 45% of the actual problem. “By focusing on only emergency department visits, Shehab et al. detected the tip of the iceberg. Many more patients have mild drug-related adverse events that lead them to seek nonemergency ambulatory care or to simply stop use of the antibiotic.”

17) “Antibiotic-associated adverse events occur when antibiotics are taken as prescribed and as intended.”

18) “Treating a viral illness with antibiotics does not make sense microbiologically.”

19) “Antibiotic therapy is associated with greater risk than was previously appreciated.”

20) “Physicians should be comfortable with making the following statement to most of their patients with acute respiratory tract infections: ‘For your infection, there is an 1 in 4,000 chance that an antibiotic will prevent a serious complication, a 5%-25% chance that it will cause diarrhea, and an 1 in 1,000 chance that you will require a visit to the emergency department because of a bad reaction to the antibiotic.’”