

Antibiotic Stewardship Choosing Wisely



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KEYWORDS

• Antibiotic stewardship • Antibiotic resistance • Sepsis

KEY POINTS

- Most cases of acute otitis media resolve without complications. A period of observation before antibiotic therapy may be beneficial for many patients with acute otitis media.
- Most cases of acute pharyngitis are viral in cause.
- Antibiotics have not demonstrated any consistent benefit in the symptoms or natural history of acute bronchitis.
- Indications for antibiotic therapy in acute rhinobacterial sinusitis include (1) persistent signs or symptoms for ≥ 10 days without evidence of improvement, (2) severe symptoms or signs of fever and purulent nasal discharge or facial pain lasting 3 to 4 consecutive days at the beginning of the illness, or (3) worsening symptoms or signs following an upper respiratory infection that was initially improving.

INTRODUCTION

Emergency department (ED) providers routinely prescribe antibiotics to treat common and life-threatening infections. Whenever antibiotics are used, biologic pressure is placed on bacteria, promoting resistance. Excessive antibiotic use facilitates the emergence, persistence, and transmission of antibiotic-resistant bacteria and increases health care costs.^{1–3} Contemporary research demonstrates that antibiotics are frequently overprescribed in ambulatory settings, including the ED.⁴ In addition to the development of resistance, adverse reactions from antibiotics, particularly in children, are a very common reason for seeking emergency care.^{5,6} Responsible antibiotic use, known as *antimicrobial stewardship*, includes the appropriate use of antimicrobials to improve patient outcomes, reduce microbial resistance, and decrease the spread of multidrug-resistant infections.

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According to the Centers for Disease Control and Prevention (CDC) and the World Health Organization, antibiotic resistance is at crisis levels.^{7,8} Antibiotic-resistant infections affect 2 million people per year and are associated with approximately 23,000 deaths per year in the United States.⁷ The loss of antibiotic efficacy due to resistance makes treatment of common and serious infections more complicated, costly, and in some cases, impossible.

In response to this crisis, the CDC has launched a comprehensive hospital-based program to support antibiotic stewardship, improve patient care, and diminish resistance.⁹ Furthermore, a practical guideline, the *Antibiotic Stewardship Playbook*, was recently developed by a team of experts to reduce antibiotic misuse and overuse.¹⁰ The Centers for Medicare and Medicaid Services and the Joint Commission are both taking steps toward mandated antibiotic stewardship programs in acute care hospitals.^{11,12} This article discusses appropriate initial antibiotic choices and treatment indications for acute otitis media (AOM), pharyngitis, sinusitis, acute bronchitis, and sepsis.

ACUTE OTITIS MEDIA

Diagnosis

AOM is the most common infection requiring medical therapy for children less than 5 years old. The American Academy of Pediatrics (AAP) has recently published updated guidelines for the diagnosis and management of AOM in children.¹³ The diagnosis of AOM should be made in children when there is moderate or severe bulging of the tympanic membrane (TM) or new onset otorrhea without otitis externa. The diagnosis of AOM should additionally be made for children with mild bulging of the TM and recent onset of ear pain or pronounced TM erythema. The peak incidence of AOM is in children between 3 and 18 months of age. *Streptococcus pneumoniae* is the most common bacteria responsible for AOM in children and adults, followed by *Haemophilus influenzae*.

Antibiotic Therapy Versus Observation

Antibiotic treatment of AOM provides statistically significant benefits over placebo in reducing pain at 2 to 3 days, decreasing tympanic membrane perforations and contralateral AOM episodes. However, these benefits come at the expense of increased adverse events from pharmacologic treatment, including rash, diarrhea, or vomiting. Furthermore, most cases of AOM in developed nations resolve spontaneously without complications.¹⁴ Several recent ED studies suggest that a period of observation with follow-up, or a wait-and-see prescription for antibiotics, instead of immediate antibiotic administration reduces antibiotic usage without an increase in complications.^{15–17}

The AAP currently recommends that antibiotics for AOM be prescribed for the following:

- Children older than 6 months who have severe signs or symptoms of AOM.
- Children 6 to 23 months with bilateral AOM.

For all other children, clinicians may either prescribe antibiotics or offer an observation period after jointly deciding this with caregivers when close follow-up can be assured.¹³

Amoxicillin (80–90 mg/kg/d) is recommended for most children as first-line therapy for AOM. If a child has taken amoxicillin in the last 30 days, has concurrent conjunctivitis, or has a history of unresponsiveness to amoxicillin, then amoxicillin-clavulanate

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