

In 2009, direct antibiotic prescription costs totaled \$10.7 billion; 62% of these costs (\$6.5 billion) were attributed to antibiotic prescribing in the community setting, followed by \$3.6 billion in hospitals and \$527 million in nursing homes and long-term care facilities (6). An estimated 50% of antibiotic prescriptions may be unnecessary or inappropriate in the outpatient setting (7) (Unpublished data. Centers for Disease Control and Prevention), which equates to more than \$3 billion in excess costs. Over the past decade, antibiotic prescriptions have decreased by 18% among persons aged 5 years or older in the United States; however, prescriptions for broad-spectrum antibiotics (fluoroquinolones and macrolides) have increased by at least 4-fold (8). Reducing inappropriate antibiotic prescribing in the ambulatory setting is a public health priority.

This article by the American College of Physicians (ACP) and the Centers for Disease Control and Prevention presents available evidence on the appropriate prescribing of antibiotics for adult patients with ARTI. The high-value care advice is intended to amplify rather than replace messages from recent clinical guidelines on appropriate antibiotic prescribing (9–19) and serves as an update of the 2001 *Principles of Appropriate Antibiotic Use for Treatment of Acute Respiratory Tract Infections in Adults* (9) and a complement to the pediatric principles published in 2013 (20). The target audience for this article is all clinicians providing care to adults seeking ambulatory care for ARTI.

METHODS

We conducted a narrative review of evidence about appropriate antibiotic use for treatment of patients with ARTI syndromes, including acute uncomplicated bronchitis, pharyngitis, rhinosinusitis, and the common cold. We included current clinical guidelines from leading professional societies, such as the Infectious Diseases Society of America (IDSA). Clinical guideline recommendations were augmented with evidence-based meta-analyses, systematic reviews, and randomized clinical trials. To identify these evidence-based articles, we conducted literature searches in the Cochrane Library, PubMed, MEDLINE, and EMBASE through September 2015. We included only English-language articles and used the following Medical Subject Headings terms: “acute bronchitis,” “respiratory tract infection,” “pharyngitis,” “rhinosinusitis,” and “the common cold”. The focus of the article was limited to healthy adults without chronic lung disease (such as cystic fibrosis, bronchiectasis, and chronic obstructive pulmonary disease) or immunocompromising conditions (congenital or acquired immunodeficiencies, HIV infection, chronic renal failure, nephrotic syndrome, leukemia, lymphoma, Hodgkin disease, generalized cancer, multiple myeloma, iatrogenic immunosuppression, or a history of solid organ transplantation). We present our findings for 4 ARTI syndromes and present a framework for antibiotic prescribing strategies for each (Table).

This article was reviewed and approved by the Centers for Disease Control and Prevention and by the ACP High Value Care Task Force, whose members are physicians trained in internal medicine and its subspecialties and which includes experts in evidence synthesis. The Task Force developed the high-value care advice statements, which are summarized in the Figure, based on the narrative review of the literature. At each conference call, all members of the High Value Care Task Force declared all financial and nonfinancial interests.

ACUTE UNCOMPLICATED BRONCHITIS

Acute uncomplicated bronchitis is defined as a self-limited inflammation of the large airways (bronchi) with a cough lasting up to 6 weeks. The cough may or may not be productive (24) and is often accompanied by mild constitutional symptoms. Acute bronchitis is among the most common adult outpatient diagnoses, with about 100 million (10%) ambulatory care visits in the United States per year (8), more than 70% of which result in a prescription for antibiotics (25, 26). Acute bronchitis leads to more inappropriate antibiotic prescribing than any other ARTI syndrome in adults (8).

Determining the Likelihood of a Bacterial Infection

More than 90% of otherwise healthy patients presenting to their outpatient providers with an acute cough have a syndrome caused by a virus (Table) (10, 21, 22). Nonviral pathogens, such as *Mycoplasma pneumoniae* and *Chlamydophila pneumoniae*, are occasionally identified in patients with acute bronchitis (10), and *Bordetella pertussis* may be considered in situations where transmission in the community has been reported. However, determining whether a patient has a viral or nonviral cause can be difficult. The presence of purulent sputum or a change in its color (for example, green or yellow) does not signify bacterial infection; purulence is due to the presence of inflammatory cells or sloughed mucosal epithelial cells. Acute bronchitis must be distinguished from pneumonia. For healthy immunocompetent adults younger than 70 years, pneumonia is unlikely in the absence of all of the following clinical criteria: tachycardia (heart rate >100 beats/min), tachypnea (respiratory rate >24 breaths/min), fever (oral temperature >38 °C), and abnormal findings on a chest examination (rales, egophony, or tactile fremitus) (10, 27).

Appropriate Management Strategies

The most recent clinical guidelines for management of acute uncomplicated bronchitis recommended against routine antibiotic treatment in the absence of pneumonia (11). A systematic review of 15 randomized, controlled trials found limited evidence to support the use of antibiotics for acute bronchitis and a trend toward increased adverse events in patients treated with antibiotics (28). A randomized, placebo-controlled trial (not included in the Cochrane review) comparing ibuprofen, amoxicillin-clavulanic acid, and placebo