

Introduction

MICHAEL E. PICHICHERO, M.D.

Pediatric respiratory infections are the most frequently encountered and, often, the most difficult illnesses confronting physicians. The management of these infections was revolutionized in 1928 with the discovery of penicillin, and, after World War II, antibiotic treatment quickly became the mainstay of therapy. Less than two decades after the introduction of penicillin, the first detection of penicillin-resistant staphylococci did little to temper the explosion in antibiotic prescribing that accompanied the continuous introduction of new antibiotics.

Today nearly 75% of outpatient antibiotic prescriptions are written for treatment of upper respiratory tract infections including acute otitis media, tonsillopharyngitis and sinusitis.¹ Many of these prescriptions are necessary for curbing spread of infection and preventing development of harmful sequelae. However, the widespread inappropriate prescription of antimicrobials for nonbacterial respiratory illnesses ranging from the common cold to viral pneumonia is well-documented and has been a focus of efforts to curtail unnecessary antibiotic use.²

This supplement addresses issues in the judicious use of antibiotics in common pediatric respiratory infections including acute otitis media, tonsillopharyngitis, sinusitis, the common cold and pneumonia. The articles are based on presentations given by the authors at the National Pediatric Infectious Disease Seminars held in New Orleans, LA, from April 26 through April 29, 2000.

Although the judicious use of antibiotics entails withholding them when they are unnecessary, it also entails prescribing them when they are necessary. The latter necessity perhaps is in danger of being overlooked in the context of extensive, well-publicized efforts by many organizations to curtail antibiotic use. Accordingly, whereas the supplement articles reinforce the theme of the importance of curbing inappropriate antibiotic use and suggest strategies for doing so, they also demonstrate the importance of using antibiotics to preempt the development of complications and progres-

sion to chronic disease as well as to improve the patient's well-being and functional ability. The issues involved in judiciously using antibiotics in community-acquired pneumonia, a topic addressed by McCracken in the supplement article titled "Diagnosis and management of pneumonia in children," aptly illustrate the challenges in knowing when to prescribe and when not to prescribe.

The need to practice judicious use of antibiotics will necessitate changing the treatment paradigms for some common pediatric respiratory infections. For example, the supplement article "Penicillin failure in streptococcal tonsillopharyngitis: causes and remedies" addresses challenges in the management of streptococcal tonsillopharyngitis in children. Penicillin administered for 10 days has been the treatment of choice since the 1950s. Although 10 days of penicillin therapy is effective in the management of group A beta-hemolytic streptococcal tonsillopharyngitis for many patients, multiple factors may cause treatment failure, which now occurs in approximately 30% of cases.^{3–5} A number of antibiotics, particularly the cephalosporins, have been demonstrably superior to penicillin at eradicating group A beta-hemolytic *Streptococcus*. The data reviewed in the supplement article suggest that 10 days of penicillin therapy may not be the best choice for all pediatric patients. Other antibiotics, shortened courses of the cephalosporins in particular, may better fulfill some patients' needs.

The need to change the treatment paradigm for some pediatric respiratory infections is also addressed in the supplement article, "Short-course antibiotic therapy for respiratory infections: a review of the evidence." The recognition that the traditional 10-day or greater duration of therapy for the common respiratory infections acute otitis media, tonsillopharyngitis and sinusitis does not derive from a strong scientific or medical rationale (with the exception of penicillin therapy for tonsillopharyngitis) and the increasing awareness of the adverse sequelae of long duration antibiotic therapy have led experts to recommend shortening the duration of antibiotic therapy in some respiratory infections. The data reviewed in the supplement article demonstrate particularly strong justification for shortening the duration of therapy from the standard 10 days to 5 days in acute otitis media. A growing body of evidence indicates that tonsillopharyngitis, too, can be

From the Elmwood Pediatric Group, University of Rochester, Rochester, NY.

Address for reprints: Michael E. Pichichero, M.D., Elmwood Pediatric Group, University of Rochester, 601 Elmwood Avenue, Box 672, Rochester, NY 14642. Fax 716-273-1289; E-mail mepo@uhura.cc.rochester.edu.

effectively treated with non-penicillin antibiotics given for fewer than 10 days. Although sinusitis data are less plentiful than those for acute otitis media and tonsillopharyngitis, the results available to date are encouraging in suggesting that shortened courses of therapy may also be appropriate for acute maxillary sinusitis.

Shortened courses of antibiotic treatment in acute otitis media, tonsillopharyngitis and sinusitis should reduce the risk of development of bacterial resistance by providing less opportunity than longer courses of therapy for resistant organisms to be selected and proliferate. Likewise the avoidance of overdiagnosis and consequent overtreatment of recurrent and persistent acute otitis media, a topic addressed in the supplement article titled "Recurrent and persistent otitis media," should aid in efforts to reduce the spread of antibiotic resistance.

Members of the Centers for Disease Control and Prevention and the American Academy of Pediatrics (AAP) published in 1998 principles for the judicious use of antibiotics in common pediatric respiratory infections including the common cold,⁶ otitis media,⁷ sinusitis⁸ and tonsillopharyngitis.⁹ Jacobs' supplement article, "Judicious use of antibiotics for common pediatric respiratory infections," reviews the CDC/AAP principles for management of these illnesses and describes results of clinical practice studies in which efforts to improve the judicious use of antibiotics were undertaken.

The success of these principles in containing the increase in antimicrobial resistance depends on their being practiced. Widespread educational and behavior modification efforts are necessary to reduce unnecessary prescription of antibiotics and curtail the growing problem of bacterial resistance. It has become evident that, to be effective, educational efforts should be directed not only at physicians but also at parents and patients. This need is illustrated by the fact that although most physicians are aware of the CDC/AAP principles for management of respiratory infections, they may nevertheless continue to prescribe unnecessary antibiotics. Parental pressure is one of the most

frequently cited reasons for physicians to prescribe antibiotics to children. Jacobs reviews data showing that efforts to educate parents about reasons for judicious use of antibiotics can indeed positively impact parental attitudes and physician prescribing.

The articles in this supplement are intended to present practical approaches to implementing the CDC/AAP principles and to further the efforts of these two organizations and others (including the World Health Organization, the American Academy of Family Physicians, the American Society for Microbiology and now the United States Congress) to curb the spread of antibiotic resistance. These organizations' endorsement and dissemination of information on judicious use of antibiotics are important components of an effective effort, only just begun, to ensure that antibiotics are prescribed to patients needing them and not prescribed to patients who do not.

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