Barbara Rinehart

JOURNAL SUPPLEMENT

INFECTIOUS DISEASE: SINUSITIS

My responsibilities were:

- Worked with authors, agency, and pharmaceutical sponsor to develop outline
- Researched disease state (130 references) and antimicrobial treatment
- Wrote 20-page supplement for author review

CFTL

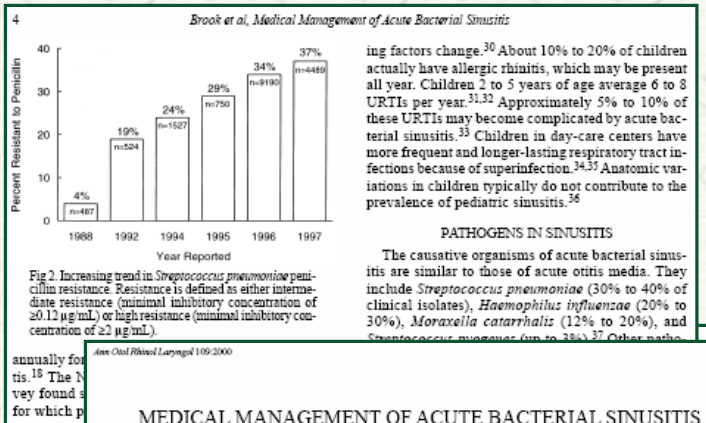

Fig 2. Increasing trend in *Streptococcus pneumoniae* penicillin resistance. Resistance is defined as either intermediate resistance (minimal inhibitory concentration of ≥0.12 µg/mL) or high resistance (minimal inhibitory concentration of ≥2 µg/mL).

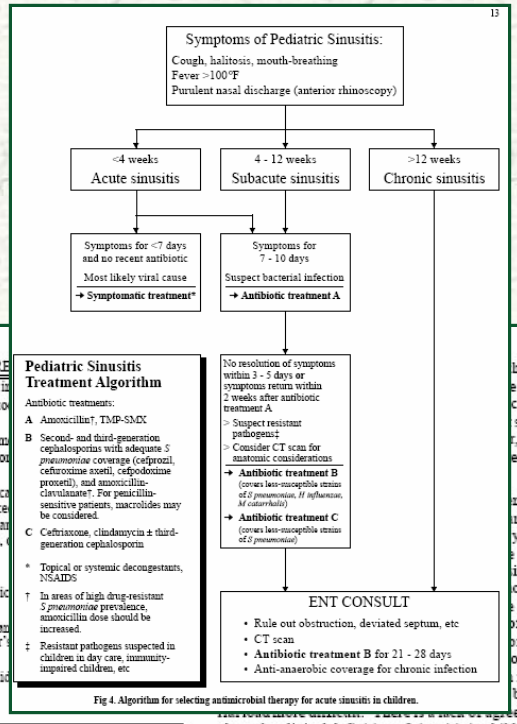

Fig 4. Algorithm for selecting antimicrobial therapy for acute sinusitis in children.

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MEDICAL MANAGEMENT OF ACUTE BACTERIAL SINUSITIS

RECOMMENDATIONS OF A CLINICAL ADVISORY COMMITTEE ON PEDIATRIC AND ADULT SINUSITIS

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Acute sinusitis is commonly encountered in clinical practice and treated in the primary care setting. The clinician should recognize the subtle clinical presentation of acute bacterial sinusitis and initiate appropriate, aggressive treatment. Other upper respiratory tract disorders can confound the accurate diagnosis and appropriate treatment of sinusitis. Variable patterns of microbial resistance and antibiotic susceptibility and the dissociation between in vitro findings and clinical efficacy are a treatment challenge. This report is a comprehensive review of the pathophysiology and diagnosis of acute sinusitis, infectious agents, treatment methods, antibiotic resistance patterns, and costs associated with the management of sinusitis. Treatment algorithms are presented for adult and pediatric sinusitis.

KEY WORDS — amoxicillin, amoxicillin-clavulanate, antibiotic resistance, antimicrobials, cephalosporin, fluoroquinolone, *Haemophilus influenzae*, *Moraxella catarrhalis*, sinusitis, *Streptococcus pneumoniae*, trimethoprim-sulfamethoxazole

INTRODUCTION

Sinusitis is a common disorder that affects more than 30 million individuals each year in the United States.[1] About 90% of patients will visit their primary care physician for sinusitis treatment.[2] It is important for primary care physicians to be attentive to this condition because its incidence appears to be on the rise.[2] Prompt, effective therapy is required to reduce lost work time for adults and to permit children to return to school, allowing parents to return to work.[3] Antimicrobial resistance patterns have changed to create increasingly complicated problems with antimicrobial therapy.[4]

There are many pitfalls in accurately diagnosing acute bacterial sinusitis, one being overlaps with other upper respiratory tract diagnoses (allergies, viral infections, idiopathic rhinitis, fungal disease, neoplastic processes). The diagnosis of sinusitis is often presumptive and treatment is empirical, which presents further challenges to clinicians. The emergence of resistance and variable antibiotic susceptibilities of causative bacteria poses a greater challenge to antibiotic selection. Because sinusitis significantly impacts quality of life, clinicians should be aware of the trends in diagnosis and treatment of the acute condition.[5]

DEFINITION AND PATHOPHYSIOLOGY

Sinusitis encompasses a spectrum of acute and chronic, neutrophilic and eosinophilic, nonallergic and allergic inflammatory processes.[6] Bacterial sinusitis is an inflammation of the paranasal sinus mucosa caused by bacterial overgrowth in a closed cavity. This disorder is also called rhinosinusitis, because the nasal epithelium is continuous with the mucosa that lines the paranasal sinuses and the disease can affect both sites.[7] Viral or allergic rhinitis typically precedes sinusitis, and sinusitis without rhinitis is rare.[4,8] Many factors may predispose an individual to sinusitis (Table 1). Recent evidence shows that viral upper respiratory tract infections (URTIs) and pharyngeal colonization with group A streptococci predispose children to acute bacterial sinusitis.[9] It may be appropriate to select antibiotics that are also effective against group A streptococci, because *Streptococcus pyogenes* may be a concurrent infection in 15% to 20% of children.[9]

The maxillary, frontal, ethmoid, and sphenoid sinuses all drain into the nasal cavity through the ostia, which are approximately 1 to 3 mm in diameter (Fig 1). Obstruction of this narrow space may set up an environment for bacterial pathogens to colonize. Antibiotic use for acute obstruction is generally not indicated; however, if the obstruction persists for 7 to 10 days, secondary bacterial infection is likely. In acute bacterial sinusitis, a single bacterial species is responsible for the infection; however, multiple bacterial isolates were cultured in 26% and 30% of cases

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EPIDEMIOLOGY, PREVALENCE, AND ECONOMICS OF SINUSITIS

Each year, approximately 16% of adults in the United States receive diagnoses of sinusitis. The incidence of sinusitis is higher in the Midwest and South, compared with the Northeastern and Western regions of the United States.[4] Rates of sinusitis are higher in the fall, winter, and spring months.[16] A National Center for Health Statistics annual survey estimated that 1 in 5 Americans has symptoms related to sinus disease and nasal allergies but does not seek medical attention.[17] Because many individuals do not seek medical help for this condition, the actual number of individuals affected may be much higher. Those who seek treatment account for an estimated 16 million office visits per year.[6,18] More than $2 billion is spent