

DRUG UPDATE

Therapy for Acute Bacterial Sinusitis

Acute bacterial sinusitis is usually preceded by a viral infection of the upper respiratory tract. Because experts agree that the indiscriminate use of antibiotics for sinusitis has contributed to the emergence of resistant organisms, antibiotic therapy should be reserved for patients who have clear and severe symptoms of bacterial disease.

Signs and symptoms suggestive of bacterial sinusitis include disease that worsens after 5-7 days or persists for 7 days or more; others are nasal drainage or congestion, facial pressure or pain (especially when unilateral and focused over a sinus), hyposmia or anosmia, fever, cough, fatigue, maxillary dental pain, and ear pressure or fullness.

Studies have shown that most cases of acute bacterial sinusitis will resolve spontaneously and that, on average, antibiotic therapy will reduce the duration of symptoms by only 1 day. Nevertheless, two sets of guidelines published over the past 3 years justify the use of antibiotic therapy in some patients with severe or persistent symptoms.

These two sets of guidelines differ in important respects: The guidelines issued by the American College of Physicians in 2001 mention only three antibiotics—amoxicillin, doxycycline, and trimethoprim-sulfamethoxazole (TMP-SMX)—because these are the only three drugs that have been studied in well-con-

trolled clinical trials in sinusitis (Ann. Intern. Med. 2001;134:495-7).

The other guidelines were issued by the Sinus and Allergy Health Partnership, a group sponsored by the American Academy of Otolaryngic Allergy, the American Academy of Otolaryngology–Head and Neck Surgery, and the American Rhinologic Society, in consultation with the Centers for Disease Control and Prevention, the Food and Drug Administration, and experts in infectious disease and other pertinent fields. The guidelines evaluated 19 antibiotics based on a theoretic analysis that incorporated pharmacokinetic and pharmacodynamic data from clinical trials, pathogen distribution, and in vitro activity of the various agents against the three predominant pathogens: *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis* (Otolaryngol. Head Neck Surg. 2004;130 [suppl. 1]:1-45).

These guidelines include separate recommendations for people who have had recent antibiotic exposure (and thus are likely to harbor resistant organisms) and for people who are allergic to penicillin. Furthermore, the guidelines suggest both initial therapies and those best reserved for more severe disease or for patients who have failed first-line treatment.

Most experts agree that it's usually better to start with the simpler, less expensive antibiotics with which clin-

icians are likely to have the most familiarity, such as amoxicillin, amoxicillin/clavulanate, or TMP-SMX, reserving fluoroquinolones and cephalosporins for more severe or resistant disease. The macrolides have a relatively poor side effect profile and are predicted to have only a 77% clinical efficacy, and so are omitted from the list below.

Primary care physicians may consider referring patients to an otolaryngologist if symptoms persist for longer than 72 hours after the initiation of antibiotic therapy.

Amoxicillin, amoxicillin/clavulanate, and the cephalosporins are safe at any time during pregnancy or while nursing. The fluoroquinolones, rifampin plus clindamycin, and TMP-SMX are safe during nursing (avoid TMP-SMX if the infant is premature or jaundiced or has glucose-6-phosphate dehydrogenase [G6PD] deficiency), but should be avoided during the first trimester of pregnancy, although the TMP-SMX risk can be lowered with a daily multivitamin containing 1 mg folic acid. Doxycycline is contraindicated during the second and third trimesters but is safe during nursing.

More information on the diagnosis and treatment of acute bacterial sinusitis can be found in a recent review of the topic (N. Engl. J. Med. 2004;351:902-10).

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Drug	Dosage	Cost/Day*	Comment**
amoxicillin	1.5-4 g/day in divided doses, usually 500 mg t.i.d. or 2 g b.i.d.	\$0.38 (500 mg t.i.d.)	Available in generic formulations only. Top choice for mild disease if no penicillin allergy and no recent antibiotic use.
amoxicillin/ clavulanate [Augmentin]	1.75-4 g/250 mg in divided doses, usually b.i.d.	\$9.80 (875 mg/125 mg b.i.d.) [\$11.20]	Available in generic and trade formulations. Better than amoxicillin alone for moderate disease and resistant organisms. Diarrhea a common side effect, especially at higher doses.
trimethoprim/ sulfamethoxazole [Bactrim]	160 mg/800 mg b.i.d.	\$0.32/day (160 mg/800 mg b.i.d.) [\$4.30]	Available in generic and trade formulations. Top choice for mild disease if patient is penicillin allergic and has had no recent antibiotic use. Avoid in patients hypersensitive to sulfonamides. Rare, severe reactions, resulting in Stevens-Johnson syndrome, toxic epidermal necrolysis can be fatal.
doxycycline [Vibra-Tabs]	50-100 mg b.i.d.	\$0.26 (100 mg b.i.d.) [\$9.71]	Available in generic and trade formulations. Second choice for penicillin-allergic patients with mild disease. Can cause photosensitivity, neutropenia.
cefepodoxime [Vantin]	200 mg b.i.d.	no generic available [\$11.85]	Available in trade formulation only. Cephalosporin. Might be used as a second choice for mild disease if no penicillin allergy and no recent antibiotic use. The other cephalosporins—cefuroxime, cefprozil, and cefdinir—at equivalent doses may do just as well. Choice depends on preference and formulary.
gatifloxacin [Tequin]	400 mg/day	no generic available [\$9.57]	Available in trade formulation only. Fluoroquinolone. Good first choice for moderate disease or mild disease with resistant organisms. Good switch therapy for patients who have failed to respond to amoxicillin. Other fluoroquinolones—levofloxacin (Levaquin) and moxifloxacin (Avelox)—may do just as well. Choice depends on physician preference and formulary. Can prolong QTc interval and has many drug interactions.
clindamycin plus rifampin [Cleocin plus Rifadin]	150-300 mg t.i.d. or q8h (clindamycin) and 600 mg/day given as a single dose or divided into two doses (rifampin)	\$2.75 (150 mg t.i.d. clindamycin) plus \$3.80 (300 mg b.i.d. rifampin) [\$8.37 plus \$4.61]	Available in generic and trade formulations. Use as switch therapy for penicillin-allergic patients who have failed to respond to other therapies or as first-line therapy in those who have moderate disease or mild disease with resistant organisms. Some experts consider this only in certain cases when microbiology indicates clindamycin may be helpful; clindamycin can cause severe GI side effects.

*Cost/day for most generic formulations is based on the federal upper limit for Medicaid reimbursement in the 2004 Red Book. Cost/day for trade formulations is based on the average wholesale price for a 100-unit container, or closest size, in the 2004 Red Book.

**Comments reflect the opinions and expertise of the following sources:

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