MedStar Health

Diagnosis and Management of Acute Sinusitis in Children Aged 1 to 18 Years

Clinical Practice Guideline
MedStar Health
Antibiotic Stewardship

"These guidelines are provided to assist physicians and other clinicians in making decisions regarding the care of their patients. They are not a substitute for individual judgment brought to each clinical situation by the patient's primary care provider in collaboration with the patient. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but should be used with the clear understanding that continued research may result in new knowledge and recommendations."

MedStar Pediatrics and MedStar Family Choice accept and endorse the clinical guidelines set forth by the American Academy of Pediatrics published in July 2013.

The online version of this article is available at:
http://pediatrics.aappublications.org/content/132/1/e262

The following selected Key Points are extracted from the guideline for Pediatric patients aged 1 to 18 years:

1. Clinicians should make a presumptive diagnosis of acute bacterial sinusitis when a child with an acute upper respiratory infection (URI) presents with the following:
   - **Persistent illness**, ie, nasal discharge (of any quality) or daytime cough or both lasting more than 10 days without improvement;
     OR
   - **Worsening course**, ie, worsening or new onset of nasal discharge, daytime, cough, or fever after initial improvement;
     OR
   - **Severe onset**, ie, concurrent fever (temperature ≥ 39°C/102.2°F) and purulent nasal discharge for at least 3 consecutive days.
2. Consider differentiating prolonged viral upper respiratory infections (URIs) that can last up to 14 days from bacterial sinusitis prior to initiating antibiotics if the patient is not persistently febrile or ill appearing.
3. Recurrent URIs that may occur causing prolonged symptoms. This is characterized by an improvement followed by a recurrence of symptoms with the subsequent URI.
4. Clinicians should not obtain imaging studies (plain films, contrast-enhanced computed tomography (CT), MRI, or ultrasonography) to distinguish acute bacterial sinusitis from viral URI.
5. Clinicians should obtain a contrast-enhanced CT scan of the paranasal sinuses and/or an MRI with contrast whenever a child is suspected of having orbital or central nervous system complications of acute bacterial sinusitis.
6. "**Severe onset and worsening course**" acute bacterial sinusitis. The clinician should prescribe antibiotic therapy for acute bacterial sinusitis in children with severe onset or worsening course (signs, symptoms, or both).

7. "**Persistent illness**." The clinician should either prescribe antibiotic therapy **OR** offer additional outpatient observation for 3 days to children with persistent illness (nasal discharge of any quality or cough or both for at least 10 days without evidence of improvement).

8. Clinicians should prescribe **amoxicillin** with or without **clavulanate** as first-line treatment when a decision has been made to initiate antibiotic treatment of acute bacterial sinusitis.

    (1) Amoxicillin remains the antimicrobial agent of choice for first-line treatment of uncomplicated acute bacterial sinusitis in situations in which antimicrobial resistance is not suspected.

    (2) For children age ≥ 2 years with mild uncomplicated acute bacterial sinusitis, not in daycare and not treated with an antibiotic with last 4 weeks **amoxicillin** is recommended at a standard dose of 45 mg/kg per day in 2 divided doses

    (3) In communities with a high prevalence of nonsusceptible S pneumonia (> 10%, including intermediate- and high level resistance), **amoxicillin** treatment may be initiated at 80 – 90mg/kg per day in 2 divided doses (maximum of 2 gm/dose).

    (4) Patients presenting with moderate to severe illness as well as those younger than 2 years, attending child care, or who have recently been treated with an antimicrobial may receive high dose **amoxicillin- clavulanate** at a dose of 80 – 90mg/kg per day gm/dose **amoxicillin** with 6.4 mg/kg per day **clavulanate** in 2 divided doses (maximum of 2 gm/dose).

    (5) Children who are vomiting, unable to tolerate oral medication, or unlikely to be adherent to the initial doses of antibiotic may be given a single dose of **ceftriaxone** at 50mg/kg dose IM or IV. If clinical improvement is observed in 24 hours, an oral antibiotic can be substituted to complete the course of therapy. Children who are still significantly febrile or symptomatic at 24 hours may require additional parenteral doses before switching to oral therapy.

    (6) The treatment of patients with presumed allergy to penicillin has been controversial. However, recent publications indicate that the risk of a serious allergic reaction to second- and third-generation cephalosporins in patients with penicillin or amoxicillin allergy appears to be almost nil and no greater than the risk among patients without such allergy. Thus, patients allergic to amoxicillin with a non-type 1 (late or delayed, > 72 hours) hypersensitivity reaction can be safely treated with cefdinir or cefuroxime. Patients with a history of a serious type 1 immediate or accelerated (anaphylactoid) reaction to amoxicillin can also safely be treated with **cefdinir** or **cefuroxime**. In both circumstances, clinicians may wish to determine individual tolerance by referral to an allergist for penicillin and/or cephalosporin skin testing before initiation of therapy.
    Cefdinir 14 mg/kg per day orally divided in 1 or 2 doses (maximum 600 mg/day), or Cefuroxime 30 mg/kg/day divided in 2 doses (maximum 500 – 1000 mg/day).

    (7) In young children (< 2 years) with a serious type I hypersensitivity to penicillin and moderate or more severe sinusitis, it may be prudent to use a combination of **clindamycin** 30 – 40

mg/kg/day every 8 hours and a third-generation cephalosporin (cefixime) to achieve the most comprehensive coverage against resistant S pneumonia and H Influenza.

(8) Trimethoprim-sulfamethoxazole and azithromycin are not recommended for treatment of acute bacterial sinusitis due to Pneumococcal and H Influenza resistance.

9. Clinicians should reassess initial management if there is either a caregiver report of worsening (progression of initial signs/symptoms or appearance of new signs/symptoms) **OR** failure to improve (lack of reduction in all presenting signs/symptoms) within 72 hours of initial management.

10. If the diagnosis of acute bacterial sinusitis is confirmed in a child with worsening symptoms or failure to improve in 72 hours, then clinicians may change the antibiotic therapy for the child initially managed with antibiotic **OR** initiate antibiotic treatment of the child initially managed with observation.

DURATION OF TREATMENT

In children with acute bacterial rhinosinusitis, treatment duration of 10-14 days is still recommended.[5]

PATIENT EDUCATION

Choosing wisely: http://www.choosingwisely.org/patient-resources/treating-sinus-problems-aaaai/

DEFINITIONS

Antimicrobial stewardship refers to coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration. Antimicrobial stewards seek to achieve optimal clinical outcomes related to antimicrobial use, minimize toxicity and other adverse events, reduce the costs of health care for infections, and limit the selection for antimicrobial resistant strains. - See more at: https://www.idsociety.org/policy--advocacy/antimicrobial-resistance/antimicrobial-stewardship/

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