

Practice Parameters for Diagnosis and Management of Sinusitis

This practice parameter is based upon current clinical practice and extensive review of the clinical literature and has been developed by the Joint Task Force on Practice Parameters of the American College of Allergy, Asthma & Immunology (ACAAI), the American Academy of Allergy, Asthma and Immunology (AAAAI), and the Joint Council of Allergy, Asthma & Immunology (JCAAI).

Sinusitis is defined as inflammation of one or more of the paranasal sinuses. It is commonly classified as acute, chronic or

- **Acute sinusitis** — symptoms for 3–4 weeks consisting of any or all of: persistent URI symptoms, purulent rhinorrhea, post-nasal drainage, anosmia, nasal congestion, facial pain, headache, fever, cough and purulent mucus discharge.
- **Chronic sinusitis** — same symptoms as acute sinusitis, of varying severity, for 4–8 weeks or longer. Abnormal findings may be demonstrated on CT or MRI
- **Recurrent sinusitis** — three or more episodes of acute sinusitis in a year. Different infectious pathogens may be found at different times.

Initial Evaluation of a Patient with Symptoms

Diagnosis of sinusitis is based upon a correlation of clinical history with physical examination, nasal cytology, and/or imaging studies.

- **Predisposing factors** include allergic or occupational rhinitis, vasomotor rhinitis, nasal polyps, rhinitis medicamentosa, recent resolved or unresolved common cold, recent dental procedures, immunodeficiency, and nasal structural abnormalities.
- **Clinical signs** may include tenderness overlying the sinuses, nasal erythema or purulent secretions, increased posterior pharyngeal secretions, fetid breath, and periorbital edema.
- **Nasal examination** should include assessment of mucosal abnormalities, quantity and quality of secretions, and polyps; in adults, properly performed transillumination of maxillary sinuses may be useful when findings are correlated with signs and symptoms.
- **Ear examination** may reveal middle ear abnormalities and eustachian tube dysfunction.
- **Chest examination** (auscultation and PFT) should be performed to rule out or confirm suspected asthma; bronchial hyperresponsiveness can be confirmed by methacholine challenge.
- **Complications** of sinusitis may indicate need for immediate consultation and referral — e.g., facial swelling/erythema over an involved sinus, visual changes, abnormal extraocular movements, proptosis, periorbital inflammation/edema, intracranial or CNS involvement.
- **Tests for immunodeficiency** are indicated if congenital or acquired immunodeficiency is suspected because of frequent or long-lasting episodes of sinusitis and/or demonstration of unusual pathogens on sinus culture.
- **Qualitative sweat chloride testing** is indicated for children with nasal polyps and/or *Pseudomonas cepacia* colonization of nose and sinuses as a consideration for the diagnosis of cystic fibrosis.

- **Radiologic studies** are usually not necessary to diagnose uncomplicated acute sinusitis; imaging studies may be helpful to support a diagnosis or identify the degree of mucosal involvement in sinuses (>6 mm mucosal thickening in the maxillary sinuses, >33% loss of air space volume within the maxillary sinuses, opacification/fluid levels in any paranasal sinus).
- **Standard radiographs** (e.g., Waters views) are still frequently used to diagnose sinusitis, but are inferior to CT scans and of limited value in chronic, unremitting sinusitis.
- **Computed tomography** is the gold standard for radiographic diagnosis and for pre-surgery studies; *magnetic resonance imaging* can be helpful in soft tissue evaluations; axial sinus CT is indicated in suspected orbital involvement.

Is It Acute Sinusitis?

In most instances the diagnosis is made presumptively on the basis of history, physical examination, and ancillary evaluations such as nasal cytology and radiographic studies.

Should Another Diagnosis Be Considered?

Differential diagnoses include:

- allergic and nonallergic rhinitis
- upper respiratory infection
- nasal septal deviation
- nasal polyps
- nasopharyngeal tumor, granulomata, especially Wegener's granulomatosis
- dental problem (referred pain)

Initial Treatment of Acute Sinusitis

Antibiotics are the primary therapy for bacterial sinusitis. Initial antibacterial treatment is usually empiric, based upon knowledge of local/regional patterns of antibiotic resistance to commonly identified sinusitis pathogens — e.g., *S. pneumoniae*, *H. influenzae*, *M. catarrhalis*. Antral puncture identification of bacterial species is usually not necessary, unless an infection threatens to become overwhelming or fails to respond to empiric therapy.

- Acute sinusitis usually responds to 10–14 days of antibiotic treatment with amoxicillin or trimethoprim/sulfamethoxazole (TMP/SMX), or alternatively (because of penicillin or TMP/SMX allergy or bacterial resistance) a macrolide, cephalosporin or in unusual cases, a quinolone.
- Failure of symptomatic improvement after 5–7 days suggests the need to try other broad-spectrum antibiotics — e.g., cefuroxime, axetil, amoxicillin/clavulanate, clarithromycin, azithromycin, etc.
- Nasal glucocorticosteroids may reduce underlying rhinitis.
- Saline spray or irrigation may liquefy secretions.

- Alpha-adrenergic decongestants may enhance drainage from sinuses; topical decongestants used for >2-5 days may promote rebound congestion.
- Ancillary therapy — rest, adequate hydration, analgesics as needed, warm facial packs, sleeping with head elevated, avoidance of aero-irritants (cigarette smoke, etc.).
- Patient must report any worsening of condition, or failure of improvement after 5-7 days of treatment.

Treatment Successful?

Complete Response — improved symptomatically to near normal.

Partial Response — symptomatically improved but not completely recovered after 10 days of antibiotic therapy.

Poor Response — little or no symptomatic improvement after 10-day course of antibiotics.

Follow-up

For partial or poor response, consider further evaluation of underlying risk factors — e.g., allergic diathesis, immunodeficiency, etc.

Additional Treatment and Evaluation for Acute Sinusitis Poorly Responsive to Initial Therapy

- **Partial response to initial therapy** — strongly consider other antibiotics — e.g., amoxicillin/clavulanate, cefuroxime, cefpodoxime, cefprozil, cefixime, cefibuten, loracarbef, azithromycin, clarithromycin, or continue antibiotic treatment for another 10-14 days.
- **Poor response to initial therapy** — continue treatment with alternative antibiotics for another 21-28 days, and in adults also consider newer quinolones other than trovafloxacin.

- Failure of treatment after 21-28 days may indicate resistant pathogens, nasal polyps, or noncompliance; also consider anaerobic coverage with clindamycin or metronidazole in addition to broad-spectrum antibiotics.
- Sinus CT is indicated if not previously done.
- Consider consultation with an allergist-immunologist for evaluation and treatment of underlying risk factors, comorbidities, and refractory sinusitis.

Treatment of Refractory, Chronic and/or Recurrent Sinusitis

Patients who fail to respond to two courses of antibiotics may be candidates for referral to an otolaryngologist:

- Ostiomeatal obstruction, nasal septal defect or nasal polyps refractory to oral corticosteroids may be relieved by surgery.
- Coronal sinus CT with extra cuts through the ostiomeatal complex clarifies extent of obstruction and specific locations of obstruction.
- Nasal/sinus biopsy evaluates suspected neoplasia, fungal disease, granulomatous disease, or abnormal ciliary structure/function.

Surgery should be reserved for patients unresponsive to repeated medical treatment of sinusitis and underlying risk factors. Individualized medical therapy should continue after surgery.