New Clinical Practice Guidelines for Sinusitis

David M. Poetker, MD, MA, Associate Professor; Division of Rhinology and Sinus Surgery, Department of Otolaryngology and Communication Sciences, Medical College of Wisconsin, Milwaukee

**Differential diagnosis:** symptoms of acute rhinosinusitis (ARS) — purulent nasal drainage with nasal obstruction, or pain, pressure, or fullness in face, lasting ≥10 days without improvement or worsening within 10 days after initial improvement (grade B evidence); diagnostic criteria — new guidelines focus on 3 cardinal features; purulent nasal drainage predictive of bacteria on culture; facial or dental pain predicts acute bacterial rhinosinusitis (ABRS); nasal obstruction correlates with objective measures of nasal airflow; other signs — specificity of fever only 50%; imaging not indicated unless complication present or another diagnosis suspected (grade B)

**Conservative management:** analgesics, topical intranasal steroids (INS), and irrigation with nasal saline may be used for symptomatic viral rhinosinusitis (VRS; option supported by grades B and C evidence); analgesics, topical INS, and irrigation with nasal saline may be prescribed for symptomatic relief of ABRS (based on grade A evidence)

**Treatment with antibiotics:** watchful waiting or initial antibiotic therapy appropriate for ABRS; watchful waiting permissible if patient reliable and health care personnel available to conduct follow-up (grade A); based on systematic reviews, watchful waiting elevated from option to recommendation; although patients treated with antibiotics improve more quickly, clinical benefit small, number needed to treat high, and no correlation found between treatment and duration of pain or illness; adverse events more common in treated group but complications similar among groups

**Choice of antibiotic:** amoxicillin — first-line treatment, with or without clavulanate; 5- to 10-day course indicated (grade A); high-dose amoxicillin with clavulanic acid may be used when resistant organisms suspected; other antibiotics — doxycycline or fluoroquinolone may be considered for patients allergic to penicillin; macrolides and trimethoprim not recommended because of resistance; 6- to 10-day course no better than 3- to 7-day course

**Treatment failure:** for patients who worsen or do not respond in 7 days, clinician should confirm ABRS, exclude other diagnoses, look for complications, and start antibiotic (if patient being observed) or change antibiotic (grade B); culture may be taken with direct sinus aspirate or endoscopic middle meatal culture; patients who do not respond to amoxicillin should be treated with high-dose amoxicillin plus clavulanic acid, doxycycline, fluoroquinolone, or clindamycin, plus third-generation cephalosporin

**Chronic rhinosinusitis:** ARS should be distinguished from chronic rhinosinusitis (CRS) and other disorders; CRS should be confirmed with anterior rhinoscopy, nasal endoscopy, or computed tomography (CT; strong recommendation); CT most sensitive method but exposes patient to radiation

**Modifying factors:** in patients with CRS or recurrent acute rhinosinusitis (RARS), clinician should look for conditions such as asthma, cystic fibrosis, and ciliary dyskinesia; testing for allergy and immune function in such patients optional; polyps should be sought in patients with CRS because their presence may affect management

**Topical intranasal therapy:** saline nasal irrigation, topical INS, or both should be used for symptomatic relief of CRS

**Antifungal therapy:** not indicated for CRS because evidence lacking and complications of therapy possible

Suggested Reading


Practice Guidelines and Clinical Consensus on Pediatric Sinusitis

Robert H. Chun, MD, Associate Professor; Division of Pediatric Otolaryngology, Department of Otolaryngology and Communication Sciences, Medical College of Wisconsin, Milwaukee

**Overview:** pediatric chronic rhinosinusitis (pCRS) associated with large expenditures; <10% of children have symptoms for >10 days; 5% to 13% of children with VRS progress to ABRS

**Definitions:** ABRS — signs include acute fever (>102°F for 3 days), symptoms for >10 days, and worsening of upper respiratory infection after initial improvement; RARS — characterized by 3 infections in 6 mo lasting <30 days and separated

Educational Objectives

The goal of this program is to improve diagnosis and treatment of rhinologic disorders. After hearing and assimilating this program, the clinician will be better able to:

1. Distinguish acute rhinosinusitis from viral sinusitis and chronic rhinosinusitis.
2. List the highlights of recent guidelines for diagnosis and treatment of sinusitis.
3. Review the guidelines for medical and surgical management of pediatric chronic rhinosinusitis.
4. Evaluate a patient with suspected nasal valve compromise.
5. Recommend monotherapy and combination therapies for patients with allergic rhinitis.

Faculty Disclosure

In adherence to ACCME Standards for Commercial Support, Audio Digest requires all faculty and members of the planning committee to disclose relevant financial relationships within the past 12 months that might create any personal conflicts of interest. Any identified conflicts were resolved to ensure that this educational activity promotes quality in health care and not a proprietary business or commercial interest. For this program, members of the faculty and planning committee reported nothing to disclose. In his lecture (“‘New Clinical Practice Guidelines for Sinusitis”), Dr. Poetker presents information related to the off-label or investigational use of a therapy, product, or device. In his lecture (“Clinical Practice Guidelines on Allergic Rhinitis”), Dr. Poetker presents information related to the off-label or investigational use of a therapy, product, or device.
Clinical Consensus Statements

Basis: review of literature, conferences, and surveys; management of pCRS differs by age group (≤12 yr of age vs ≥13 yr of age)

Comorbidities: consensus states that allergic rhinitis (AR) important part of pCRS; adenoiditis contributes to pCRS; adenoids of any size may serve as bacterial reservoir for pCRS; children improve after undergoing adenoidectomy for CRS, regardless of size of adenoids

Medical management: daily topical INS and daily nasal irrigation beneficial; study — included 61 children with mean age of 8 yr; although only 28% of parents anticipated that child would tolerate saline irrigation, 86% of children able to do so; symptoms improved in 84%, and 77% continued treatment; study — 6 wk of saline vs saline plus gentamicin; children with saline plus gentamicin improved; findings confirmed on CT; Lund-MacKay score also improved; 20 consecutive days of antibiotic therapy associated with better clinical response than 10 days; compared with empiric therapy, culture-directed therapy may improve outcomes

Gastroesophageal reflux: no consensus reached on contribution to pCRS; data mixed and heterogeneous populations studied; sensitivity and specificity of milk scan and barium swallow low

Topical antibiotics: no consensus reached; topical saline not found superior to saline plus gentamicin

Antral irrigation: no consensus reached; many data derived from cohorts of children who had undergone adenoidectomy

Adenoectomy: initial surgical therapy for children ≤6 yr of age; consensus less strong for children 6 to 12 yr of age; not first-line surgery for children >13 yr of age; tonsillectomy ineffective; biofilm found at adenoidectomy in 95% of children with CRS vs 1.9% of children undergoing adenoidectomy for obstructive symptoms; cultures on CRS compared with adenoids showed middle meatus similar; >50% of 84 children with CRS had drug-resistant bacteria on adenoids; antibiotics improved quality of life (QOL) in 75% of children; in meta-analysis, 69% of studies showed that adenoidectomy for pCRS improves outcomes

Endoscopic sinus surgery: effective when medical management or adenoidectomy inadequate; evidence that surgery associated with impaired facial growth lacking; postoperative debridement not required; QOL improved in children undergoing endoscopic sinus surgery (ESS), based on scores on Sino-Nasal Outcome Questionnaires about patient satisfaction

Turbinooplasty: no consensus reached on indications, potential benefits, optimal candidates, or efficacy of procedure; near-consensus reached on value of reducing or removing concha bullosa of obstructive middle turbinate as component of surgical management of pCRS

Imaging: use of CT should be minimized in children

Suggested Reading


Clinical Consensus Statement on Nasal Valve Compromise

Sachin S. Pawar, MD, Assistant Professor, Division of Facial Plastic and Reconstructive Surgery, Department of Otolaryngology and Communication Sciences, Medical College of Wisconsin, Milwaukee

Nasal valve compromise (NVC): primary cause of symptomatic nasal airway obstruction (NAO); should be distinguished from other structural or inflammatory causes of NAO; when performing septoplasty, NV should be addressed if necessary

Anatomy: internal NV comprises dorsal septum, upper lateral cartilage, and head of inferior turbinate; external NV includes caudal septum, medial crura of alar cartilages, alar rim, and nasal sill; to treat, surgeon may increase cross-sectional area, strengthen lateral walls, or both; per Poiseuille’s law, flow directly proportional to fourth power of radius, so small increases in cross-sectional area increase flow of air; per Bernoulli principle, increased velocity decreases pressure, thereby causing predisposition to collapse

Causes of collapse of alar rim or lateral wall: wide columella; previous surgery leaving saddle-nose deformity; high septal deviation; hypertrophy of inferior turbinates; phtotic nasal tip; caudal septal deviation; septal spur plays role in some cases of NVC

Clinical findings: main symptom subjective decrease in nasal airflow; anterior rhinoscopy helpful for detecting weak or malformed cartilage; findings consistent with NVC include inspiratory collapse of lateral nasal wall or alar rim, increased obstruction on deep inspiration, and audible improvement on Cottle or modified Cottle maneuver; surgeon should note which areas benefit during maneuvers

Case 1: 61-yr-old woman had collapse of upper lateral cartilage, rightward caudal septal deviation, collapse of sidewalls with inspiration, and improvement during Cottle maneuver

Adjunctive tests: no gold standard; nasal endoscopy and photography useful but not routinely required; trial of adult nasal dilator strips (eg, Breathe Clear, Breathe Right, SleepRight) useful in confirming diagnosis; radiography not routinely indicated; no consensus reached on need for photography, nasal endoscopy, imaging, acoustic rhinometry, or rhinomanometry

Outcome measures: include validated Nasal Obstruction Symptom Evaluation (NOSE) and visual analog scale; mean scores 65 before treatment, 23 posttreatment, and 15 in healthy controls; near-consensus reached importance of patient-reported outcomes (at least as important as objective measures of success of intervention); no consensus reached on validity of questionnaires about patient satisfaction

Management: depends on whether problem static or dynamic and whether internal or external NV affected; case 1 managed with external rhinoplasty approach, septoplasty and bilateral spreader, lateral crural strut, and alar rim grafts; NOSE score fell from 80 to 30

Case 2: 37-yr-old man presented with complex septal deformity, deep supra-alar depressions and creases, cephalically positioned lateral crura, and hypertrophy of turbinates

Conservative management: trial of INS not indicated unless symptoms suggest allergy or rhinitis; nasal cones or stents may be used or substituted for nasal dilator strips; nasal dilator strips useful for some patients with NVC

Clinical Practice Guidelines on Allergic Rhinitis Dr. Poetker Diagnosis: guideline on AR applies to adults and children >2 yr of age; AR diagnosed when history and examination consistent with allergic cause and patient has ≥1 symptom (ie, nasal congestion, runny nose, itchy nose, or sneezing [grade C]); conclusive diagnosis cannot be based on history and examination, but empiric therapy may be given before further testing; IgE allergy testing indicated when response to empiric treatment inadequate, diagnosis uncertain, or knowledge of specific allergen needed for targeting of therapy (grade B); imaging should not be routinely performed for AR (grade C recommendation against imaging)

Environmental factors: avoidance of known allergens or environmental controls may be advised; removal of pets, air filtration, washing pets twice weekly, agents that kill dust mites, and covers for bedding decrease load of allergens; however, only removing pets and killing dust mites improve symptoms

Comorbidities: patients with AR should be assessed for asthma, atopic dermatitis, and associated conditions (grade B)

Management: topical steroids — INS should be given when symptoms affect QOL (grade A); oral antihistamines — second-generation oral antihistamines used when primary complaints sneezing and itching (grade A); intranasal antihistamines — may be given for seasonal, perennial, or episodic AR (grade A); leukotriene receptor antagonists (LTRAs) — not first-line therapy for AR (grade A)

Combination therapy: may be offered if response to monotherapy inadequate (grade A option); INS and oral antihistamine — adding antihistamine to INS does not improve symptoms; oral antihistamine plus oral decongestant — controls symptoms better than oral antihistamine alone but may cause insomnia, headache, dry mouth, nervousness, or tolerance to decongestant; oral decongestant not recommended for children <4 yr of age; extended-release formulation not recommended for children <12 yr of age; oral antihistamine and LTRA — not recommended; INS and LTRA — not recommended; INS and intranasal antihistamine — recommended for patients who tolerate either agent alone but have inadequate control of symptoms; combination more effective than either agent alone; INS and intranasal oxymetazoline — can be used short term (<3 days) for severe congestion; more effective than either agent alone but may cause rhinitis medicamentosa

Other treatments: immunotherapy (IT) — sublingual or subcutaneous IT should be offered to patients with AR who have inadequate response to pharmacologic therapy (grade A); IT may change natural history of AR, control asthma and conjunctivitis, improve QOL, and prevent development of asthma in children; reduction of inferior turbinate — may be offered to patients with AR, nasal airway obstruction, and enlarged turbinates who fail medical management (grade C option); acupuncture — may be offered (grade B); several large randomized controlled trials have shown benefit for controlling symptoms and improving QOL; herbal therapy — no recommendation made because of lack of evidence in English-language literature


Acknowledgments Dr. Poetker, Dr. Chun, and Dr. Pawar were recorded at Best Evidence ENT 2015, presented by Medical College of Wisconsin, and held on July 25-28, 2015, in Kohler, WI. For information about upcoming CME conferences from the Medical College of Wisconsin, please visit ocpe.mcw.edu. The Audio Digest Foundation thanks the speakers and Medical College of Wisconsin for their cooperation in the production of this issue.

Accreditation: The Audio Digest Foundation is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

Designation: The Audio Digest Foundation designates this enduring material for a maximum of 2 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The American Academy of Physician Assistants (AAPA) accepts certifies of participation for educational activities designated for AMA PRA Category 1 Credit™ from organizations accredited by ACCME or a recognized state medical society. Physician assistants may receive a maximum of 2 Category 1 CME credits for each Audio Digest activity completed successfully.

Audio Digest Foundation is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission (ANCC) on Accreditation. Audio Digest designates each activity for 2.0 CE contact hours.

Audio Digest Foundation is approved as a provider of nurse practitioner continuing education by the American Academy of Nurse Practitioners (AANP) Approved Provider number 030904). Audio Digest designates each activity for 2.0 CE contact hours, including 0.5 pharmacology CE contact hours.

The California State Board of Registered Nursing (CA BRN) accepts courses provided for AMA PRA Category 1 Credit™ as meeting the continuing education requirements for license renewal.

Expiration: This CME activity qualifies for AMA PRA Category 1 Credit™ for 3 years from the date of publication.

Cultural and linguistic resources: In compliance with California Assembly Bill 1195, Audio Digest Foundation offers selected cultural and linguistic resources on its website. Please visit this site: www.audiodigest.org/CLCresources.

Estimated time to complete the educational process:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review Educational Objectives on page 1</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Take pretest</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Listen to audio program</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Review written summary and suggested readings</td>
<td>35 minutes</td>
</tr>
<tr>
<td>Take posttest</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>
1. Cardinal features of acute rhinosinusitis include all the following, EXCEPT:
   (A) Fever  (C) Purulent drainage
   (B) Dental pain  (D) Airflow obstruction

2. Which of the following are first-line treatments for acute bacterial rhinosinusitis?
   1. Amoxicillin
   2. Amoxicillin with clavulanic acid
   3. Doxycycline
   4. Fluoroquinolones
   5. Macrolides
   6. Trimethoprim
   7. Clindamycin plus third-generation cephalosporin
   (A) 1,2,3,4  (B) 1,3,5,6  (C) 2,5,6  (D) 2,3,4,7

3. Antifungal therapy should be considered for patients with chronic rhinosinusitis.
   (A) True  (B) False

4. Which of the following is indicated for patients with pediatric chronic rhinosinusitis (pCRS)?
   (A) Evaluation for gastroesophageal reflux  (C) Antral irrigation
   (B) Topical gentamicin  (D) Intranasal steroids (INS)

5. Adenoidectomy should NOT be first-line treatment of pCRS in a child who is:
   (A) ≤6 yr of age  (B) 6 to 12 yr of age  (C) >13 yr of age

6. What percentage of children undergoing adenoidectomy for pCRS have biofilm on the adenoid tissue?
   (A) 1.9%  (B) 50%  (C) 69%  (D) 95%

7. Which of the following is a validated measure for use in patients with nasal valve compromise?
   (A) Patient satisfaction questionnaires  (C) Rhinomanometry
   (B) The Nasal Obstruction Symptom Evaluation  (D) Photography

8. Which of the following measures of environmental control has been shown to improve symptoms in patients with allergic rhinitis (AR)?
   1. Removal of pets
   2. Washing pets twice weekly
   3. Covers for bedding
   4. Air filtration
   5. Agents that kill dust mites
   (A) 1,2,4,5  (B) 1,2,3  (C) 1,5  (D) 4,5

9. Which of the following is a recommended combination treatment for AR?
   (A) INS and oral antihistamine
   (B) Oral antihistamine and oral decongestant
   (C) Oral antihistamine and leukotriene receptor antagonist
   (D) Leukotriene antagonist and intranasal oxymetazoline

10. Which of the following therapies is supported by grade A evidence for patients with AR who respond inadequately to pharmacologic therapy?
    (A) Reduction of inferior turbinate  (C) Herbal therapy
    (B) Acupuncture  (D) Sublingual immunotherapy

Answers to Audio Digest Otolaryngology Volume 48, Issue 19: 1-B, 2-D, 3-C, 4-A, 5-A, 6-A, 7-B, 8-D, 9-B, 10-C