IDSA Clinical Practice Guideline for Acute Bacterial Rhinosinusitis in Children and Adults

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Evidence-based guidelines for the diagnosis and initial management of suspected acute bacterial rhinosinusitis in adults and children were prepared by a multidisciplinary expert panel of the Infectious Diseases Society of America comprising clinicians and investigators representing internal medicine, pediatrics, emergency medicine, otolaryngology, public health, epidemiology, and adult and pediatric infectious disease specialties. Recommendations for diagnosis, laboratory investigation, and empiric antimicrobial and adjunctive therapy were developed.

EXECUTIVE SUMMARY

This guideline addresses several issues in the management of acute bacterial rhinosinusitis (ABRS), including (1) inability of existing clinical criteria to accurately differentiate bacterial from viral acute rhinosinusitis, leading to excessive and inappropriate antimicrobial therapy; (2) gaps in knowledge and quality evidence regarding empiric antimicrobial therapy for ABRS due to imprecise patient selection criteria; (3) changing prevalence and antimicrobial susceptibility profiles of bacterial isolates associated with ABRS; and (4) impact of the use of conjugated vaccines for *Streptococcus pneumoniae* on the emergence of nonvaccine serotypes associated with ABRS. An algorithm for subsequent management based on risk assessment for antimicrobial resistance and evolution of clinical responses is offered (Figure 1). This guideline is intended for use by all primary care physicians involved in direct patient care, with particular applicability to patients managed in community or emergency department settings. Continued monitoring of the epidemiology and rigorous investigation of the efficacy and cost-benefit of empiric antimicrobial therapy for suspected ABRS are urgently needed in both children and adults.

Summarized below are the recommendations made in the new guideline for ABRS in children and adults. The panel followed a process used in the development of other Infectious Diseases Society of America (IDSA) guidelines that includes a systematic weighting of the strength of recommendation (eg, "high, moderate, low, very low") and quality of evidence (eg, "strong, weak") using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) system [1–6] (Table 1). A detailed description of the methods, background, and evidence summaries that support each of the recommendations can be found in the full text of this guideline.

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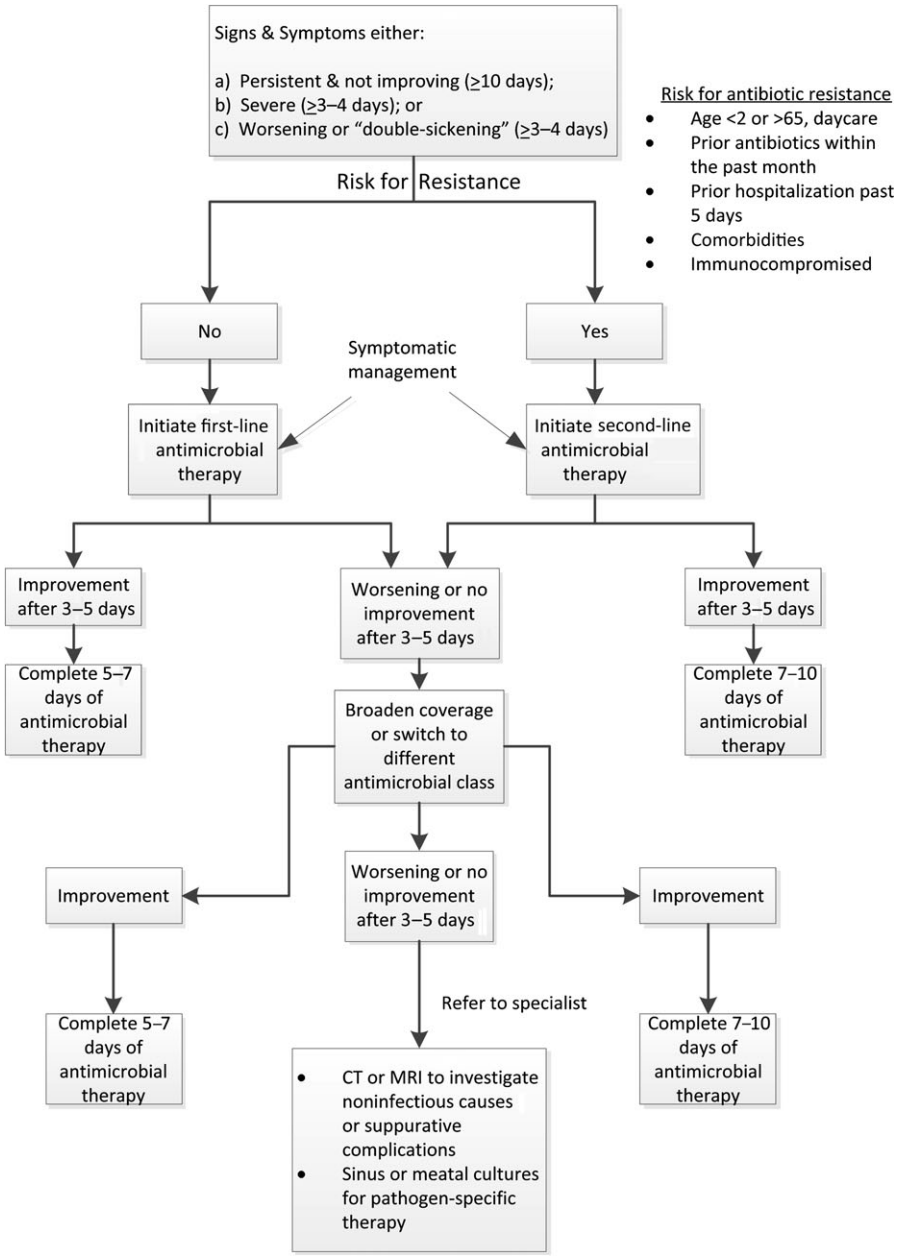

Figure 1. Algorithm for the management of acute bacterial rhinosinusitis. Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging.

RECOMMENDATIONS

INITIAL TREATMENT

I. Which Clinical Presentations Best Identify Patients With Acute Bacterial Versus Viral Rhinosinusitis?

Recommendations. 1. The following clinical presentations (any of 3) are recommended for identifying patients with acute bacterial vs viral rhinosinusitis:

i. Onset with *persistent* symptoms or signs compatible with acute rhinosinusitis, lasting for ≥10 days without any evidence of clinical improvement (strong, low-moderate);

ii. Onset with *severe* symptoms or signs of high fever (≥39°C [102°F]) and purulent nasal discharge or facial pain lasting for at least 3–4 consecutive days at the beginning of illness (strong, low-moderate); or

iii. Onset with *worsening* symptoms or signs characterized by the new onset of fever, headache, or increase in nasal discharge following a typical viral upper respiratory infection (URI) that lasted 5–6 days and were initially improving (''double-sickening'') (strong, low-moderate).

Table 1. Strength of Recommendations and Quality of the Evidence[a]

Strength of Recommendation and Quality of Evidence	Clarity of Balance Between Desirable and Undesirable Effects	Methodological Quality of Supporting Evidence (Examples)	Implications
Strong recommendation, high-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased observational studies	Recommendation can apply to most patients in most circumstances. Further research is unlikely to change our confidence in the estimate of effect.
Strong recommendation, moderate-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence from RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Recommendation can apply to most patients in most circumstances. Further research (if performed) is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Strong recommendation, low-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws or indirect evidence	Recommendation may change when higher-quality evidence becomes available. Further research (if performed) is likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Strong recommendation, very low-quality evidence (very rarely applicable)	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence	Recommendation may change when higher-quality evidence becomes available; any estimate of effect for at least 1 critical outcome is very uncertain.
Weak recommendation, high-quality evidence	Desirable effects closely balanced with undesirable effects	Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased observational studies	The best action may differ depending on circumstances or patients or societal values. Further research is unlikely to change our confidence in the estimate of effect.
Weak recommendation, moderate-quality evidence	Desirable effects closely balanced with undesirable effects	Evidence from RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Alternative approaches likely to be better for some patients under some circumstances. Further research (if performed) is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Weak recommendation, low-quality evidence	Uncertainty in the estimates of Desirable effects, harms, and burden; desirable effects, harms, and burden may be closely balanced	Evidence for at least 1 critical outcome from observational studies, from RCTs with serious flaws or indirect evidence	Other alternatives may be equally reasonable Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Weak recommendation, very low-quality evidence	Major uncertainty in the estimates of desirable effects, harms, and burden; desirable effects may or may not be balanced with undesirable effects	Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence	Other alternatives may be equally reasonable. Any estimate of effect, for at least 1 critical outcome, is very uncertain.

Abbreviation: RCT, randomized controlled trial.

[a] Based on the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system [1–6].

II. When Should Empiric Antimicrobial Therapy Be Initiated in Patients With Signs and Symptoms Suggestive of ABRS?

Recommendation. 2. It is recommended that empiric antimicrobial therapy be initiated as soon as the clinical diagnosis of ABRS is established as defined in recommendation 1 (strong, moderate).

III. Should Amoxicillin Versus Amoxicillin-Clavulanate Be Used for Initial Empiric Antimicrobial Therapy of ABRS in Children?

Recommendation. 3. Amoxicillin-clavulanate rather than amoxicillin alone is recommended as empiric antimicrobial therapy for ABRS in children (strong, moderate).

IV. Should Amoxicillin Versus Amoxicillin-Clavulanate Be Used for Initial Empiric Antimicrobial Therapy of ABRS in Adults?

Recommendation. 4. Amoxicillin-clavulanate rather than amoxicillin alone is recommended as empiric antimicrobial therapy for ABRS in adults (weak, low).

V. When Is High-Dose Amoxicillin-Clavulanate Recommended During Initial Empiric Antimicrobial Therapy for ABRS in Children or Adults?

Recommendation. 5. ''High-dose'' (2 g orally twice daily or 90 mg/kg/day orally twice daily) amoxicillin-clavulanate

is recommended for children and adults with ABRS from geographic regions with high endemic rates (≥10%) of invasive penicillin-nonsusceptible (PNS) *S. pneumoniae*, those with severe infection (eg, evidence of systemic toxicity with fever of 39°C [102°F] or higher, and threat of suppurative complications), attendance at daycare, age <2 or >65 years, recent hospitalization, antibiotic use within the past month, or who are immunocompromised (weak, moderate).

VI. Should a Respiratory Fluoroquinolone Versus a β-Lactam Agent Be Used as First-line Agents for the Initial Empiric Antimicrobial Therapy of ABRS?

Recommendation. 6. A β-lactam agent (amoxicillin-clavulanate) rather than a respiratory fluoroquinolone is recommended for initial empiric antimicrobial therapy of ABRS (weak, moderate).

VII. Besides a Respiratory Fluoroquinolone, Should a Macrolide, Trimethoprim-Sulfamethoxazole, Doxycycline, or a Second- or Third-Generation Oral Cephalosporin Be Used as Second-line Therapy for ABRS in Children or Adults?

Recommendations. 7. Macrolides (clarithromycin and azithromycin) are not recommended for empiric therapy due to high rates of resistance among *S. pneumoniae* (~30%) (strong, moderate).

8. Trimethoprim-sulfamethoxazole (TMP/SMX) is not recommended for empiric therapy because of high rates of resistance among both *S. pneumoniae* and *Haemophilus influenzae* (~30%–40%) (strong, moderate).

9. Doxycycline may be used as an alternative regimen to amoxicillin-clavulanate for initial empiric antimicrobial therapy of ABRS in adults because it remains highly active against respiratory pathogens and has excellent pharmacokinetic/pharmacodynamic (PK/PD) properties (weak, low).

10. Second-and third-generation oral cephalosporins are no longer recommended for empiric monotherapy of ABRS due to variable rates of resistance among *S. pneumoniae*. Combination therapy with a third-generation oral cephalosporin (cefixime or-cefpodoxime) plus clindamycin may be used as second-line therapy for children with non–type I penicillin allergy or from geographic regions with high endemic rates of PNS *S. pneumoniae* (weak, moderate).

VIII. Which Antimicrobial Regimens Are Recommended for the Empiric Treatment of ABRS in Adults and Children With a History of Penicillin Allergy?

Recommendations. 11. Either doxycycline (not suitable for children) or a respiratory fluoroquinolone (levofloxacin or moxifloxacin) is recommended as an alternative agent for empiric antimicrobial therapy in adults who are allergic to penicillin (strong, moderate).

12. Levofloxacin is recommended for children with a history of type I hypersensitivity to penicillin; combination therapy with clindamycin plus a third-generation oral cephalosporin (cefixime or cefpodoxime) is recommended in children with a history of non–type I hypersensitivity to penicillin (weak, low).

IX. Should Coverage for* Staphylococcus aureus *(Especially Methicillin-Resistant S. aureus) Be Provided Routinely During Initial Empiric Therapy of ABRS?

Recommendation. 13. Although *S. aureus* (including methicillin-resistant *S. aureus* [MRSA]) is a potential pathogen in ABRS, on the basis of current data, routine antimicrobial coverage for *S. aureus* or MRSA during initial empiric therapy of ABRS is not recommended (strong, moderate).

X. Should Empiric Antimicrobial Therapy for ABRS Be Administered for 5–7 Days Versus 10–14 Days?

Recommendations. 14. The recommended duration of therapy for uncomplicated ABRS in adults is 5–7 days (weak, low-moderate).

15. In children with ABRS, the longer treatment duration of 10–14 days is still recommended (weak, low-moderate).

XI. Is Saline Irrigation of the Nasal Sinuses of Benefit as Adjunctive Therapy in Patients With ABRS?

Recommendation. 16. Intranasal saline irrigation with either physiologic or hypertonic saline is recommended as an adjunctive treatment in adults with ABRS (weak, low-moderate).

XII. Are Intranasal Corticosteroids Recommended as an Adjunct to Antimicrobial Therapy in Patients With ABRS?

Recommendation. 17. Intranasal corticosteroids (INCSs) are recommended as an adjunct to antibiotics in the empiric treatment of ABRS, primarily in patients with a history of allergic rhinitis (weak, moderate).

XIII. Should Topical or Oral Decongestants or Antihistamines Be Used as Adjunctive Therapy in Patients With ABRS?

Recommendation. 18. Neither topical nor oral decongestants and/or antihistamines are recommended as adjunctive treatment in patients with ABRS (strong, low-moderate).

NONRESPONSIVE PATIENT

XIV. How Long Should Initial Empiric Antimicrobial Therapy in the Absence of Clinical Improvement Be Continued Before Considering Alternative Management Strategies?

Recommendation. 19. An alternative management strategy is recommended if symptoms worsen after 48–72 hours of initial empiric antimicrobial therapy or fail to improve despite 3–5 days of initial empiric antimicrobial therapy (strong, moderate).

XV. What Is the Recommended Management Strategy in Patients Who Clinically Worsen Despite 72 Hours or Fail to Improve After 3–5 Days of Initial Empiric Antimicrobial Therapy With a First-line Regimen?

Recommendation. 20. An algorithm for managing patients who fail to respond to initial empiric antimicrobial therapy

is shown in Figure 1. Patients who clinically worsen despite 72 hours or fail to improve after 3–5 days of empiric antimicrobial therapy with a first-line agent should be evaluated for the possibility of resistant pathogens, a noninfectious etiology, structural abnormality, or other causes for treatment failure (strong, low).

XVI. In Managing the Patient With ABRS Who Has Failed to Respond to Empiric Treatment With Both First-line and Second-line Agents, It Is Important to Obtain Cultures to Document Whether There Is Persistent Bacterial Infection and Whether Resistant Pathogens Are Present. In Such Patients, Should Cultures Be Obtained by Sinus Puncture or Endoscopy, or Are Cultures of Nasopharyngeal Swabs Sufficient?

Recommendations. 21. It is recommended that cultures be obtained by direct sinus aspiration rather than by nasopharyngeal swab in patients with suspected sinus infection who have failed to respond to empiric antimicrobial therapy (strong, moderate).

22. Endoscopically guided cultures of the middle meatus may be considered as an alternative in adults, but their reliability in children has not been established (weak, moderate).

23. Nasopharyngeal cultures are unreliable and are not recommended for the microbiologic diagnosis of ABRS (strong, high).

XVII. Which Imaging Technique Is Most Useful for Patients With Severe ABRS Who Are Suspected to Have Suppurative Complications Such as Orbital or Intracranial Extension of Infection?

Recommendation. 24. In patients with ABRS suspected to have suppurative complications, axial and coronal views of contrast-enhanced computed tomography (CT) rather than magnetic resonance imaging (MRI) is recommended to localize the infection and to guide further treatment (weak, low).

XVIII. When Is Referral to a Specialist Indicated in a Patient With Presumed ABRS?

Recommendation. 25. Patients who are seriously ill and immunocompromised, continue to deteriorate clinically despite extended courses of antimicrobial therapy, or have recurrent bouts of acute rhinosinusitis with clearing between episodes should be referred to a specialist (such as an otolaryngologist, infectious disease specialist, or allergist) for consultation. As this is a ''good clinical practice'' statement rather than a recommendation, it is not further graded.

Note

Disclaimer. Guidelines cannot always account for individual variation among patients. They are not intended to supplant physician judgment with respect to particular patients or special clinical situations. The Infectious Diseases Society of America considers adherence to this guideline to be voluntary, with the ultimate determination regarding their application to be made by the physician in light of each patient's individual circumstances.

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