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Clinical Practice Pathway: Acute Bacterial Rhinosinusitis (ABRS)

Background/Rationale and Purpose

Broad-spectrum antibiotics have not demonstrated improved clinical or patient-centered outcomes compared to narrow-spectrum antibiotics in treating children with acute respiratory tract infections. Broad-spectrum antibiotics are associated with a higher incidence of adverse events. This guideline provides evidence-based recommendations for managing children with uncomplicated Acute Bacterial Rhinosinusitis (ABRS), emphasizing narrow-spectrum antibiotic use to reduce adverse effects and ensure effective treatment.

Guideline Eligibility

Inclusion Criteria:

- **Children aged 6 months to 12 years** with ABRS in the **ambulatory setting**.

Exclusion Criteria:

- **Toxic-appearing children or severe symptoms**
 - **Anatomic facial anomalies or facial trauma**
 - **Immunocompromised children**
 - **Impaired airway clearance**, including cystic fibrosis or primary ciliary dyskinesia
 - **Preseptal/orbital cellulitis** or suspected **suppurative complications**
 - **Chronic sinusitis**
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Recommendations

Diagnosis Criteria for ABRS

ABRS should be diagnosed in children with an acute upper respiratory tract infection (URI) and **one or more** of the following:

- **Persistent Illness:**
 - Nasal discharge (of any quality) **or** daytime cough **or both**, lasting **more than 10 days without improvement**.
- **Worsening Course:**

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- **New onset or worsening** nasal discharge, daytime cough, or fever **after initial improvement**.
 - **Abrupt Onset:**
 - **Concurrent fever ($\geq 39^{\circ}\text{C}/102.2^{\circ}\text{F}$) and purulent nasal discharge** for at least **three consecutive days**.
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Antibiotic Therapy

- **Target Pathogens:**
 - *Streptococcus pneumoniae*
 - *Haemophilus influenzae* (non-typeable)
 - *Moraxella catarrhalis*
 - **First-Line Therapy:**
 - Use **Amoxicillin** for empiric initial treatment in children with non-severe ABRS who haven't received recent antibiotics in the past 30 days.
 - Use **Amoxicillin-clavulanate** for empiric initial treatment of moderate illness or recent antibiotic exposure in the past 30 days.
 - **Penicillin Allergies:**
 - **Non-severe (Non-Type I) Allergy:**
 - **Third-generation oral cephalosporin** (e.g., cefdinir or cefpodoxime)
 - Consider addition of clindamycin for moderate illness
 - **Severe (Type I) Hypersensitivity:**
 - Use **respiratory fluoroquinolone** (e.g., levofloxacin).
 - Azithromycin has poor activity against *Streptococcus pneumoniae* and *Haemophilus influenzae*, so is not recommended for treatment of ABRS
 - Severe penicillin allergy includes anaphylaxis, angioedema, cardiac arrest, respiratory distress, severe cutaneous reaction (e.g., Stevens-Johnson syndrome, erythema multiforme, DRESS and TEN).
 - **Treatment Duration:**
 - **Standard Course: 10 days** is recommended.
 - **Shorter Course:** Consider **5-7 days** for **milder cases**.
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Management of Non-Responding Cases

- **Treatment Failure:**
 - Consider **resistant pathogens** if:
 - Symptoms **worsen after 48–72 hours** of initial empiric therapy **or**
 - **No improvement after 3-5 days** of initial empiric therapy.

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- **Specialist Referral:**
 - Consider prompt **ENT consultation** for culture collection and/or **contrast-enhanced CT of the sinuses** if symptoms persist despite treatment changes.
- **Recurrent ABRS:**
 - **Refer to a specialist** (e.g., otolaryngologist or allergist) for evaluation and further management.

Goals and Metrics

- Rates of broad-spectrum antibiotics as a proportion of all antibiotics prescribed for ABRS $\leq 10\%$

	Narrow Spectrum	Broad Spectrum
Acute Bacterial Sinusitis	Amoxicillin	Amoxicillin-Clavulanate, Azithromycin, Cefdinir, Cefprozil, Cefuroxime, Axetil, Levofloxacin

Patient and family education:

- PCORI Choosing an Antibiotic for Your Child’s Ear, Nose, or Throat Infection: <https://www.pcori.org/sites/default/files/PCORI-Evidence-Update-for-Parents-Narrow-Broad-Antibiotics.pdf>
- EPIC patient education links:
 - Sinus Infection, Pediatric

Abbreviations

ABRS, acute bacterial rhinosinusitis

URI, upper respiratory tract infection

Related resources

- URI PEDS SMARTSET
- Related ICD-10 codes: J01.00-J01.91

Basis for Recommendations

1. Anthony W. Chow, Michael S. Benninger, Itzhak Brook et al., Executive Summary: IDSA Clinical Practice Guideline for Acute Bacterial Rhinosinusitis in Children and Adults, *Clinical Infectious Diseases*, Volume 54, Issue 8, 15 April 2012, Pages 1041–1045, <https://doi.org/10.1093/cid/cir1043>
2. Ellen R. Wald, Kimberly E. Applegate, Clay Bordley, et al; Clinical Practice Guideline for the Diagnosis and Management of Acute Bacterial Sinusitis in Children Aged 1 to 18 Years. *Pediatrics* July 2013; 132 (1): e262–e280. 10.1542/peds.2013-1071

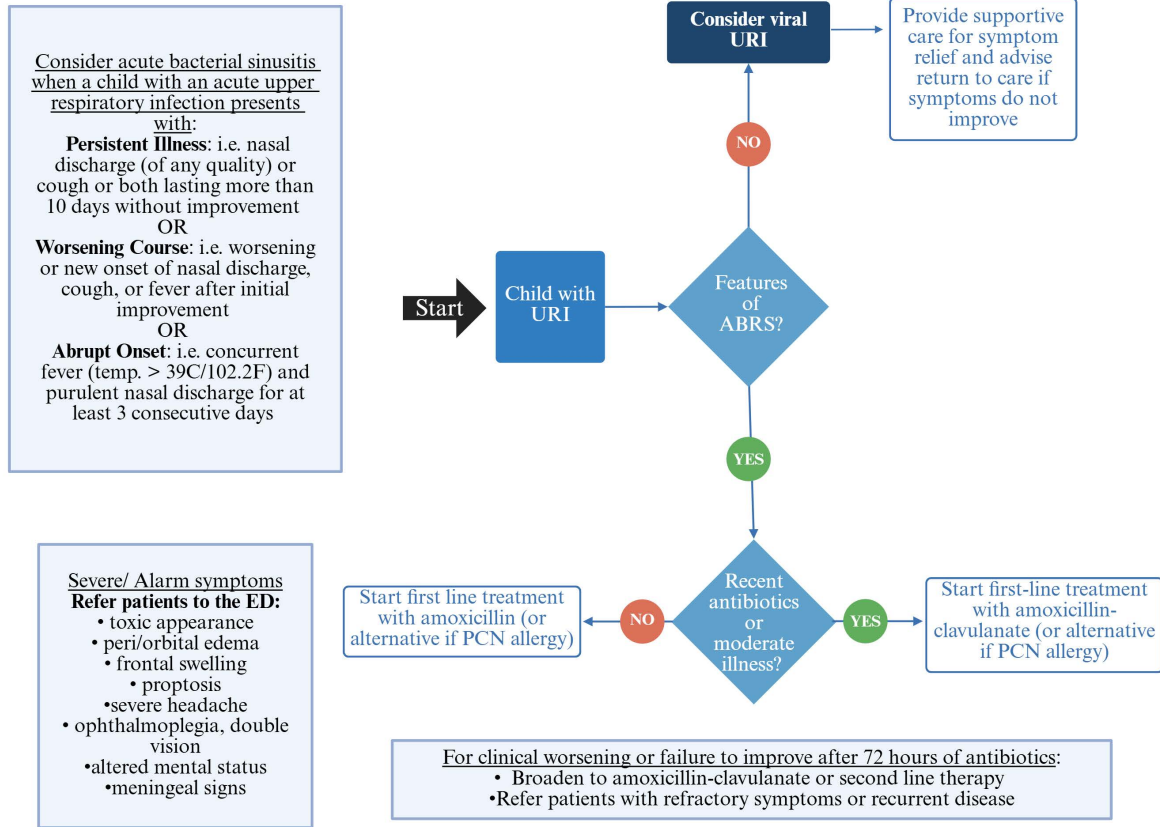
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3. Gerber JS, Ross RK, Bryan M, Localio AR, Szymczak JE, Wasserman R, Barkman D, Odeniyi F, Conaboy K, Bell L, Zaoutis TE, Fiks AG. Association of Broad- vs Narrow-Spectrum Antibiotics With Treatment Failure, Adverse Events, and Quality of Life in Children With Acute Respiratory Tract Infections. JAMA. 2017 Dec 19;318(23):2325-2336. doi: 10.1001/jama.2017.18715. PMID: 29260224; PMCID: PMC5820700
4. Red Book: 2024–2027 Report of the Committee on Infectious Diseases By: Committee on Infectious Diseases, American Academy of Pediatrics. Edited by: David W. Kimberlin, MD, FAAP, Ritu Banerjee, MD, PhD, FAAP, Elizabeth D. Barnett, MD, FAAP, Ruth Lynfield, MD, FAAP, Mark H. Sawyer, MD, FAAP, <https://doi.org/10.1542/9781610027373>
5. CDC Antibiotic Prescribing and Use for Pediatric Outpatients: <https://www.cdc.gov/antibiotic-use/hcp/clinical-care/pediatric-outpatient.html>

Version	Date	Author(s)	Reviewer(s)	Revisions
1.0		Debbie-Ann Shirley, MD	Maria Kelly, MD Rachel Reise, pharmD Matthew Garber, MD Kalen Manasco, pharmD	-

Please note this information reflects the best information as of the revised date above and is provided as a general guide for our patient care. Clinical judgment and critical thinking regarding a particular patient remains with the patient’s provider.

APPENDIX C: TREATMENT OF ACUTE BACTERIAL RHINOSINUSITIS (ABRS) IN CHILDREN



First-line treatment of non-severe ARBS	Alternative therapy for Beta-lactam allergy**:
Amoxicillin, PO 90 mg/kg/day divided twice daily (max 2,000 mg/day) x 5-10 days*	NON-SEVERE PENICILLIN ALLERGY Cefdinir, PO 14 mg/kg/day in one or two divided doses (max 600 mg/day) x 5-10 days*, OR
Moderate illness, recently treated with an antimicrobial or failure to improve: Amoxicillin-clavulanate [14:1]#, PO 90 mg/kg (max 2000 mg/dose) per day in 2 divided doses x 5-10 days* (max 4g/day)	Cefpodoxime, PO 10 mg/kg/day PO in two divided doses (max 400 mg/day) x 5-10 days*
Vomiting or unable to tolerate oral medication: Ceftriaxone, IM/ IV 50 mg/kg x 5-7 days (max 4 g/day) can be used and then can be switched to oral antibiotics once improving	For moderate illness, consider combination therapy with a third-generation cephalosporin (as above) plus clindamycin: Clindamycin, PO 30 mg/kg/day PO in three divided doses x 10 days*
	SEVERE PENICILLIN ALLERGY Levofloxacin, PO 10-20 mg/kg/day (max 500 mg/day) in one or two divided doses x 10 days*

*Optimal treatment duration not established; some may treat 5-7 days for milder infections; ** Alternative agents may not cover resistant pathogens as well as first-line agents; cefpodoxime has superior bioavailability to cefdinir; # For the appropriate clavulanate ratio, use the ES suspension for high-dose: 600 mg amoxicillin-42.9 mg/5 mL suspension; or 1000 mg extended-release tablet (if weight >40kg)