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Best Practice Summary of the College of Urgent Care Medicine

Diagnosis and Treatment of Acute Bacterial Rhinosinusitis (ABRS)

Date Reviewed	June 2021
Subject	Acute Bacterial Rhinosinusitis (ABRS)
Patient Population	Children and Adults
Rationale	Many patients are evaluated in the Urgent Care setting with symptoms of acute rhinosinusitis. Most of these patients will NOT require antibiotic therapy. Identifying patients that will benefit from antibiotic treatment is paramount to avoid inappropriate or over prescribing, which contributes to antibiotic resistance and antibiotic-related adverse events.
Introduction	In United States, rhinosinusitis affects one in seven adults, resulting in more than 30 million annual diagnoses. Rhinosinusitis is the fifth most common diagnosis for which antibiotics are prescribed in the United States. Incidence rates among adults are higher for women than men, and adults between 45 and 74 years are most commonly affected. Acute rhinosinusitis is defined as an inflammation of the mucosal lining of the nasal passage and paranasal sinuses lasting up to 4 weeks. It can be caused by various inciting factors. (See Table 1). Antibiotics are prescribed for 82% of children with acute sinusitis in US. Most cases of acute rhinosinusitis are viral, whereas only 2-10% of cases are bacterial.
Evidence based guideline with strength of evidence	Patients are diagnosed with acute bacterial rhinosinusitis when any of the 3 are clinically present: • Onset with *persistent* symptoms or signs compatible with acute rhinosinusitis, lasting for ≥10 days without any evidence of clinical improvement. • Onset with severe symptoms or signs of high fever (≥39°C /102°F) and mucopurulent nasal discharge (thick, opaque, and colored) or facial pain lasting for at least 3–4 consecutive days at the beginning of illness. • 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 that lasted 5–6 days and were initially improving “double-sickening”. IDSA recommends empiric antimicrobial therapy as soon as the clinical diagnosis of ABRS is established. Amoxicillin-clavulanate rather than amoxicillin alone is recommended as empiric antimicrobial therapy for ABRS in children and adults. AAP and *AAO-HNSF* recommend Amoxicillin alone or in combination with clavulanate as the first-line antibiotic choice. If Amoxicillin is selected, it should be under the following circumstances: uncomplicated acute bacterial sinusitis in situations in which antimicrobial resistance is not suspected, no attendance to daycare, age > 2, no recent hospitalization, no antibiotic use within the past month, or who are immunocompetent. Watchful waiting can be offered to patients with mild to moderate uncomplicated ABRS, when diagnosis of bacterial rhinosinusitis is in doubt or not clear, and when there is assurance of follow-up within the next 72 hours.
Discussion	Diagnosis: • It is not recommended to order any blood work or culture for diagnosis. • In consultation with specialists, cultures should be obtained by direct sinus aspiration rather than by nasopharyngeal swab only in patients with suspected bacterial rhinosinusitis infection who have failed to respond to appropriate antimicrobial therapy, immunocompromise patients, and in patients with complications. Imaging: • Plain Radiography is not recommended in the evaluation of acute uncomplicated rhinosinusitis. • Computed Tomography is not recommended for uncomplicated ABRS. CT of the sinuses is recommended for patients with recurrent acute or chronic rhinosinusitis, should be performed only after completing maximal medical therapy and in consultation with specialist.

	• Contrast-enhanced computed tomography of the paranasal sinuses or magnetic resonance imaging with contrast media should be performed in children with suspected orbital or central nervous system complications. Antibiotic Treatment: • A High-dose (2 g orally twice daily or 90 mg/kg/day orally twice daily) Amoxicillin-clavulanate is only recommended for children and adults with ABRS from geographic regions with high endemic rates (≥10%) of invasive penicillin-no susceptible *Streptococcus pneumoniae*, those with severe infection (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. • If Amoxicillin is selected for children 2 years or older, a standard dose of 45 mg/kg per day in 2 divided doses should be prescribed. In communities with a high prevalence of non-susceptible *S pneumoniae* (>10%, including intermediate- and high-level resistance), treatment may be initiated at 80 to 90 mg/kg per day in 2 divided doses, with a maximum of 2 g per dose. • Either doxycycline or a respiratory fluoroquinolone (levofloxacin or moxifloxacin) is recommended as an alternative agent for empiric antimicrobial therapy in adults who are allergic to penicillin. • IDSA recommends levofloxacin for children with a history of type I hypersensitivity to penicillin; combination therapy with clindamycin plus a third-generation oral cephalosporin (cefixime or cefpodoxime) for children with a history of non–type I hypersensitivity to penicillin or from geographic regions with high endemic rates of penicillin-resistant *Streptococcus pneumoniae.* • In contrast, AAP recommends that patients with a history of a serious type I immediate or accelerated (anaphylactoid) reaction to amoxicillin can safely be treated with cefdinir, cefuroxime, or cefpodoxime. • If a patient presents with worsening symptoms or failure to improve in 72 hours, then antibiotic therapy

	may be changed, or antibiotic treatment may be started for patients initially managed with observation. Length of Treatment: • The recommended duration of therapy for uncomplicated ABRS in adults is 5–7 days. • In children with ABRS, the longer treatment duration of 10–14 days is recommended. • Adjunctive Therapy: • Intranasal saline irrigation with either physiologic or hypertonic saline is recommended as an adjunctive treatment in adults with ABRS. • Intranasal corticosteroids are recommended as an adjunct to antibiotics in the empiric treatment of ABRS, primarily in patients with a history of allergic rhinitis based on an individualized decision (not recommended for non-allergic rhinosinusitis or common upper respiratory viral infection). • Neither topical nor oral decongestants and/or antihistamines are recommended as adjunctive treatment in patients with ABRS. Referral to Specialist: • Patients who are seriously ill, immunocompromised, continue to deteriorate clinically despite extended courses of antimicrobial therapy, nosocomial infection, complications of sinusitis are present 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. Immediate Ophthalmological or neurosurgical consultation should be obtained when either orbital or intracranial complications develop.
Summary	ABRS is a very common diagnosis in Urgent Care. Testing or imaging is not required for diagnosis. Only patients who fit specific criteria for clinical diagnoses should receive empiric antibiotic treatment to eradicate infection, decrease the severity and duration of symptoms, and prevent complications. Watchful waiting option should be considered under certain circumstances, encouraging shared medical decision with patients and parents, and when follow up is assured. Referral to specialist might be needed under certain circumstances.

References	Aring AM, Chan MM. Current Concepts in Adult Acute Rhinosinusitis. American Family Physician. https://www.aafp.org/afp/2016/0715/p97.html. Published July 15, 2016. Accessed May 4, 2021. Anthony W. Chow, Michael S. Benninger, Itzhak Brook, Jan L. Brozek, Ellie J. C. Goldstein, Lauri A. Hicks, George A. Pankey, Mitchel Seleznick, Gregory Volturo, Ellen R. Wald, Thomas M. File, Jr, IDSA Clinical Practice Guideline for Acute Bacterial Rhinosinusitis in Children and Adults, *Clinical Infectious Diseases*, Volume 54, Issue 8, 15 April 2012, Pages e72–e112, https://doi.org/10.1093/cid/cis370 Wald ER, Applegate KE, Bordley C, et al. Clinical Practice Guideline for the Diagnosis and Management of Acute Bacterial Sinusitis in Children Aged 1 to 18 Years. American Academy of Pediatrics. https://pediatrics.aappublications.org/content/132/1/e262.full. Published July 1, 2013. Accessed May 5, 2021.
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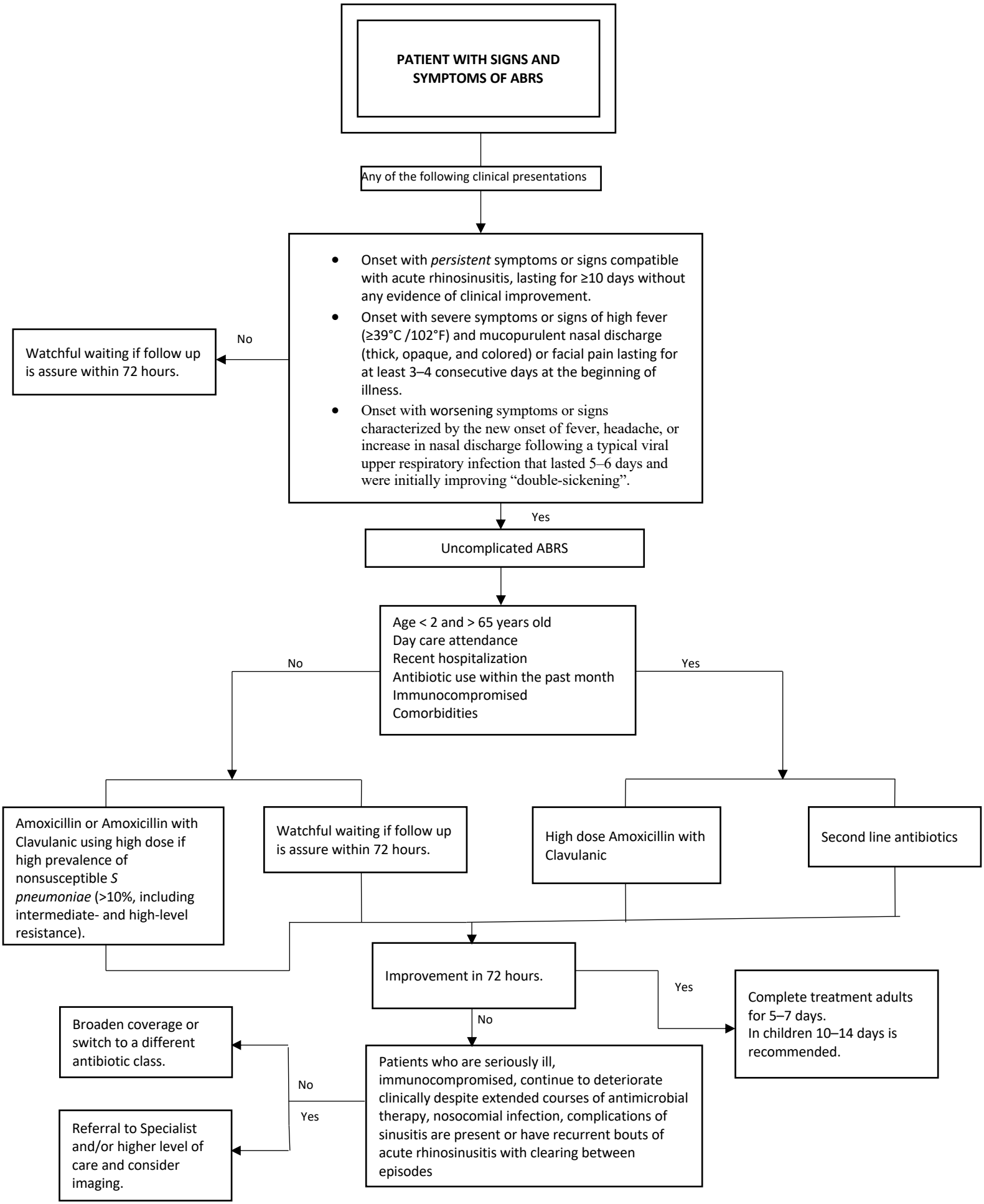
Attachments (flow charts, graphics, tables, etc.)	Table 1 (Risk Factors) Flowchart (Diagnosis and Management)

AAO-HNS: American Academy of Otolaryngology–Head and Neck Surgery
AAP: American Academy of Pediatrics
IDSA: Infectious Diseases Society of America

Table 1: Predisposing Factors for Acute Bacterial Rhinosinusitis

- Dental Infection and Procedures
- Iatrogenic causes: sinus surgery, nasogastric tubes, nasal packing, mechanical ventilation
- Immunodeficiency status
- Impaired ciliary motility: smoking, cystic fibrosis, Kartagener Syndrome, immotile cilia syndrome
- Mechanical obstruction: deviated nasal septum, nasal polyps, hypertrophic middle turbinates, tumor, trauma, foreign body, Wegener granulomatosis
- Mucosal edema: preceding viral upper respiratory infection, allergic rhinitis, vasomotor rhinitis.


PATIENT WITH SIGNS AND SYMPTOMS OF ABRS
Any of the following clinical presentations
Onset with *persistent* symptoms or signs compatible with acute rhinosinusitis, lasting for ≥10 days without any evidence of clinical improvement.
Onset with severe symptoms or signs of high fever (≥39°C /102°F) and mucopurulent nasal discharge (thick, opaque, and colored) or facial pain lasting for at least 3–4 consecutive days at the beginning of illness.
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 that lasted 5–6 days and were initially improving "double-sickening".
No
Watchful waiting if follow up is assure within 72 hours.
Yes
Uncomplicated ABRS
Age < 2 and > 65 years old
Day care attendance
Recent hospitalization
Antibiotic use within the past month
Immunocompromised
Comorbidities
No
Yes
Amoxicillin or Amoxicillin with Clavulanic using high dose if high prevalence of nonsusceptible *S pneumoniae* (>10%, including intermediate- and high-level resistance).
Watchful waiting if follow up is assure within 72 hours.
High dose Amoxicillin with Clavulanic
Second line antibiotics
Improvement in 72 hours.
Yes
Complete treatment adults for 5–7 days.
In children 10–14 days is recommended.
No
Broaden coverage or switch to a different antibiotic class.
No
Yes
Referral to Specialist and/or higher level of care and consider imaging.
Patients who are seriously ill, immunocompromised, continue to deteriorate clinically despite extended courses of antimicrobial therapy, nosocomial infection, complications of sinusitis are present or have recurrent bouts of acute rhinosinusitis with clearing between episodes