Pediatric Acute Sinusitis
Empiric Treatment Algorithm
Ages 1 to 18 years

Kentucky ANTIBIOTIC Awareness

Concern for Acute Sinusitis

Findings consistent with bacterial infection?
- *Persistent symptoms*: nasal discharge or daytime cough > 10 days
- *Worsening symptoms:* worsening cough or new onset fever, daytime cough, nasal discharge after initial improvement of a viral URI
- *Severe symptoms:* fever >38°C, purulent nasal discharge for at least 3 consecutive days

No → Consider viral or alternative diagnosis. Antibiotic therapy is *not* warranted

Yes

Mild Symptoms?

Yes → Consider **watchful waiting** for up to 3 days with follow-up for severe or worsening disease

No

Antibiotic therapy recommended

Refer to page 2 for dosing recommendations

First-line
Amoxicillin

Second-line
Amoxicillin-clavulanate
- History of amoxicillin use within 30d
- Other reason to suspect antibiotic resistance (see p.2)
- Consider a single dose of IM ceftriaxone prior to PO therapy in children unable to tolerate oral intake

Alternatives for Allergy
Levofloxacin
Clindamycin + Cefixime

Additional Information
- Refer to page 2
- AAP and IDSA Guidelines for Acute Bacterial Sinusitis[1,2]
- AAP Red Book Systems-Based Treatment Table[3]

Treatment Duration[3]
5 - 7 days
10d for severe symptoms

Pediatric Acute Sinusitis Clinical Pearls

Treatment Considerations

- Sinusitis is rare in children under 12 months and antibiotic therapy is not routinely indicated
- **Risk factors for antibiotic resistance:** age < 2y and daycare, prior antibiotics in the past month, prior hospitalization, comorbidities, immunocompromised
- **Cefdinir** is ***not*** preferred for treatment of pediatric bacterial infections due to (1) poor pharmacokinetic (PK) characteristics; (2) high rates of resistance; and (3) broad but mismatched spectrum of coverage[4,5,6]
- **Amoxicillin-clavulanate products are not interchangeable.** Incorrect ratios could lead to subtherapeutic concentrations or severe diarrhea. High-dose, BID regimens should use 14:1 or 16:1 formulations: 600mg/42.9mg per 5 mL (ES) or 1000mg/62.5mg (Extended Release) tablet
- Up to 90% of **penicillin allergies** are misdiagnosed. Always clarify history of allergy and de-label if appropriate (e.g. family history without patient history). For a full allergy assessment and testing, consider referral to outpatient allergy.

Common AOM Bacterial Pathogens

- *Streptococcus pneumoniae*
- *Haemophilus influenzae*
- Less common: *Moraxella catarrhalis, Streptococcus pyogenes, Staphylococcus aureus,* gram-negative bacilli, anaerobes

Treatment Failure

- See Table 4. of AAP guidelines[2] for more information
- If symptoms worsen after 48-72h of therapy or fail to improve after 3-5 days
- Broaden coverage or switch to different antimicrobial class
- After second-line or alternative therapy, consider: (1) CT or MRI to investigate noninfectious causes or suppurative complications; (2) sinus or meatal cultures for pathogen-specific therapy

Sinusitis Antibiotic Dosing

- **Amoxicillin** 80-90 mg/kg oral BID (max 4,000 mg/day)
- **Amoxicillin-clavulanate** 90 mg/kg per day oral in 2 divided doses (max 4,000 mg amoxicillin/day)
  - Using ES-600 suspension or 1000 mg/62.5 mg ER tablet
- **Levofloxacin** 10-20 mg/kg per day oral every 12-24h (max 500 mg/day)
- **Clindamycin** 10 mg/kg oral TID (max 1,800 mg/day) *plus* **cefixime** 4 mg/kg BID (max 400 mg/day)

References

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3. Committee on Infectious Diseases, System-based treatment table editors: Kimberlin DW, Barnett ED, Lynfield R, Sawyer MH, eds*. Red Book 2021-2024 Report of the Committee on Infectious Diseases. 32 ed.*Itasca, IL: American Academy of Pediatrics; 2021:990-1003.
4. Wattles B, Vidwan N, Ghosal S, Feygin Y, Creel L, Myers J, Woods C, Smith M. Cefdinir use in the Kentucky Medicaid population: a priority for outpatient antimicrobial stewardship. Journal of the Pediatric Infectious Diseases Society. 2021 Feb;10(2):157-60.
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6. Harrison CJ, Woods C, Stout G,*et al*. Susceptibilities of*Haemophilus influenzae*,*Streptococcus pneumoniae*, including serotype 19A, and*Moraxella catarrhalis*paediatric isolates from 2005 to 2007 to commonly used antibiotics. J Antimicrob Chemother 2009; 63:511–9.

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