

Pediatric Care

Outpatient Treatment Recommendations for Common Infections: Summary of Guidelines¹

The quick initiation of antibiotics to treat infections has been proven to save lives; however, antibiotics can have serious side effects, including adverse drug reactions and *Clostridium difficile* infection. Unnecessarily prescribed antibiotics place patients at-risk for serious adverse events and provide patients with no clinical benefit. The misuse of antibiotics has also contributed to an increase in antibiotic resistance, which has become one of the most serious threats in public health. The Centers for Disease Control and Prevention estimates more than two million people are infected with antibiotic-resistant organisms, resulting in approximately 23,000 deaths annually.



BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

Acute rhinosinusitis²⁻³

90-98% of cases are viral.

Antibiotics may NOT help even if cause is bacterial.

Diagnosis

Symptoms of acute bacterial rhinosinusitis are:

- Severe (>3-4 days), such as a fever $\geq 39^{\circ}\text{C}$ (102.2°F) and purulent nasal discharge or facial pain;
- Persistent without improvement, such as nasal discharge or daytime cough, headache for at least 10 days beyond the onset of viral upper respiratory symptoms; or
- “Double worsening”, such as worsening or new onset fever, daytime cough, headache, or nasal discharge within 10 days after initial improvement of a viral URI

Halitosis, fatigue, headache, decreased appetite, but most physical exam findings are non-specific and do NOT distinguish bacterial from viral causes.

Imaging tests are no longer recommended for uncomplicated cases.

Management

If bacterial, consider watchful waiting for up to 3 days if NOT severe or worsening and with reliable follow up.

If mild/moderate and no risk factors for resistance:

- amoxicillin/clavulanate 45 mg/kg/day PO of the amoxicillin component in 2 divided doses (max 1.75 g/day) x 10-14 days. (Some experts recommend amoxicillin.)

If severe or risk factors for resistance (age <2yo, daycare, antibiotics within 30 days, recent hosp, under immunized with PCV, $\geq 10\%$ penicillin non-susceptible *S. pneumoniae*, immunocompromised):

- amoxicillin/clavulanate 90 mg/kg/day PO of the amoxicillin component in 2 divided doses (max 4g/day) x 10-14 days.

Type 1 penicillin allergy:

- levofloxacin 10-20mg/kg/day oral q 12-24 hours

Non-type I penicillin allergy:

- clindamycin 30-40 mg/kg/day PO in 3 divided doses plus (cefixime 8 mg/kg/day PO in 2 divided doses or cefpodoxime 10 mg/kg/day PO in 2 divided doses) x 10-14 days.

Macrolides (such as azithromycin) are NOT recommended due to high levels of *S. pneumoniae* antibiotic resistance (~40%).

Acute otitis media (AOM)^{4,5}

4-10% of children with AOM treated with antibiotics experience adverse effects.

Diagnosis

Definitive diagnosis requires either:

- Moderate or severe bulging of tympanic membrane (TM) or new onset otorrhea NOT due to otitis externa.
- Mild bulging of the TM AND recent (<48h) onset of otalgia (holding, tugging, rubbing of the ear in a nonverbal child) or intense erythema of the TM.

AOM should NOT be diagnosed in children without middle ear effusion (based on pneumatic otoscopy and/or tympanometry).

Severe AOM: moderate or severe otalgia or otalgia for ≥ 48 hours, or temperature $\geq 39^{\circ}\text{C}$ (102.2°F).

Management

Treat with antibiotics:

- AOM in <6 mo
- Age 6-23 mo with bilateral AOM
- Severe AOM, regardless of age

Consider watchful waiting (if reliable follow-up):

- Age 6-23 mo with unilateral AOM
- ≥ 2 yo with unilateral or bilateral AOM

If mild/moderate and no risk factors for resistance:

- amoxicillin 80-90 mg/kg/day PO in 2 divided doses (max 2 g/dose)

If severe or risk factors for resistance (recent beta-lactam therapy, purulent conjunctivitis, or history of recurrent AOM unresponsive to amoxicillin):

- amoxicillin/clavulanate 80-90 mg/kg/day and 6.4 mg/kg/day PO, in 2 divided doses (max 2 g/dose)

Non-type I penicillin allergy:

- cefdinir 14 mg/kg/day IM daily or in 2 divided doses
- cefuroxime 30 mg/kg/day PO in 2 divided doses
- cefpodoxime 10 mg/kg/day PO in 2 divided dose

Duration of treatment:

<2 yo or severe symptoms: 10 days

2-5 yo, mild-moderate symptoms: 7 days

≥ 6 yo, mild-moderate symptoms: 5-7 days

Resources

Antimicrobial stewardship is based on the “three Ds”, the right drug, the right dose and the right duration. To learn more about the 7 core elements of antimicrobial stewardship, visit <http://www.health.ri.gov/healthcare/about/antimicrobialstewardship/>

For more information, call RIDOH's Center for Acute Infectious Disease Epidemiology at 401-222-2577. To learn more about RIDOH's Antimicrobial Stewardship and Environmental Cleaning Task Force, visit <http://www.health.ri.gov/partners/taskforces/antimicrobialstewardship/>

For more information and to download free patient education resources from RIDOH, visit <http://health.ri.gov/antibiotics>

For more information and to download free patient education resources from CDC, visit <https://www.cdc.gov/antibiotic-use/>

To order free patient resources from CDC, visit <https://www.cdc.gov/pubs/CDCInfoOnDemand.aspx> and select “Antibiotic Use”

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Pharyngitis (sore throat)^{6,7}

Only children with symptoms/findings of sore throat, fever, lymphadenopathy, tonsillar exudates should be tested.

During winter and spring, up to 20% of asymptomatic children can be colonized with GAS, leading to false positives from rapid-testing and increases in unnecessary antibiotic exposure. Streptococcal pharyngitis is primarily a disease of children 5-15 yo and is rare in preschool children.

Diagnosis

Clinical features alone do NOT distinguish between GAS and viral pharyngitis.

Children with sore throat plus 2 or more of the following features should undergo a rapid test:

1. Lack of cough
2. Tonsillar exudates
3. History of fever
4. Swollen and tender anterior cervical lymphadenopathy
5. Age younger than 15 yo

Testing should generally NOT be performed in children younger than 3 yo in whom GAS rarely causes pharyngitis and rheumatic fever is uncommon.

In children and adolescents, negative rapid antigen tests should be confirmed with a throat culture or PCR; positives do NOT require a follow up culture. If using rapid PCR test, then backup is not required for negative test.

Management

First-line therapy:

- amoxicillin 50 mg/kg/day PO (max 1 g/day) daily or in 2 divided doses x 10 days
- penicillin V 250 mg PO 2-3x/day (adolescents and adults: 250 mg 4x/day or 500 mg 2x/day) x 10 days

Non-type I penicillin allergy:

- cephalexin 40 mg/kg/day PO (max 1 g) in 2 divided doses x 10 days
- cefadroxil 30 mg/kg/day PO (max 1 g) daily x 10 days
- clindamycin 21 mg/kg/day PO (max 900 mg) in 3 divided doses x 10 days
- azithromycin 12 mg/kg/day PO (max 500 mg) daily x 5 days
- clarithromycin 15 mg/kg/day PO (max 500 mg) in 2 divided doses x 10 days

Immediate type I penicillin allergy:

- clindamycin, clarithromycin, or azithromycin dosed as above

See references for more details, additional treatment options, and other important information.

Common cold or non-specific upper respiratory tract infection^{6,8}

Colds usually last around 10 days.

Diagnosis

Usually nasal discharge begins as clear and changes throughout the course of the illness.

Fever, if present, occurs early in the illness.

Management

Antibiotics are NOT helpful and should NOT be used. Focus on symptomatic relief.

OTC cough and cold medications are NOT recommended for use in children younger than 6 yo. These substances are among the top 20 substances leading to death in children <5 yo.

Low-dose inhaled corticosteroids and oral prednisolone do NOT improve outcomes in non-asthmatic children.

See references for more details, additional treatment options, and other important information.

Bronchiolitis⁹

Diagnosis

Routine laboratory tests and radiologic studies are NOT recommended, but a chest x-ray may be warranted in atypical disease (absence of viral symptoms, severe distress, frequent recurrences, lack of improvement).

Management

Antibiotics are NOT helpful and should NOT be used.

Usually patients worsen between 3-5 days, followed by improvement. Nasal suctioning is mainstay of therapy.

Unless hospitalized, neither albuterol nor nebulized racemic epinephrine should be administered to infants and children with bronchiolitis.

There is no role for corticosteroids, ribavirin, or chest physiotherapy in the management of bronchiolitis.

Urinary tract infections (UTIs)^{10,11}

Diagnosis

In infants, fever and or strong-smelling urine are common. A definitive diagnosis requires both a urinalysis suggestive of infection and at least 50,000 CFUs/mL of a single uropathogen from urine obtained through catheterization or suprapubic aspiration. Diagnosis cannot be made from urine collected in a bag.

Urine testing for all children 2-24 mo with unexplained fever is no longer recommended.

Urinalysis is suggestive of infection with the presence of pyuria (leukocyte esterase or ≥ 5 WBCs per high powered field), bacteriuria, or nitrites.

Nitrites are NOT a sensitive measure for UTI in children and cannot be used to rule out UTIs.

Management

Initial antibiotic treatment should be based on local antimicrobial susceptibility patterns.

Suggested agents:

- TMP/SMX 6-12 mg/kg/day of TMP component PO in 2 divided doses
- amoxicillin/clavulanate 20-40 mg/kg/day PO of amoxicillin component in 3 divided doses
- cefixime 8 mg/kg/day PO daily
- cefpodoxime 10 mg/kg/day PO in 2 divided doses
- cefprozil 30 mg/kg/day PO in 2 divided doses
- cephalexin 50-100 mg/kg/day PO in 4 divided doses

Duration of treatment: 7-14 days

Antibiotic treatment of asymptomatic bacteriuria in children is NOT recommended.

Antibiotic prophylaxis to prevent recurrent UTIs is NOT recommended.

Pediatric Outpatient References

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