ADULT ANTIBIOTIC PRESCRIBING GUIDELINES

Antibiotics are not indicated for treating viral infections, such as SARS-CoV-2 or influenza. Please consult CDC.gov for current viral infection treatment guidelines

Adult Outpatient Treatment Recommendations 2024: Summary of Guidelines[1]

Acute rhinosinusitis[2-4]

90-98% of cases are **viral**.

Antibiotics may NOT help even if cause is bacterial.

Diagnosis	Management
Symptoms of acute **bacterial** rhinosinusitis are: • Severe (>3-4 days), fever ≥39°C (102.2°F) and purulent nasal discharge or facial pain; • Persistent without improvement, such as nasal discharge or daytime cough for at least 10 days beyond the onset of viral upper respiratory symptoms; or • new onset or increase in fever, daytime cough, headache, or nasal discharge within 10 days after initial improvement of a viral URI (double worsening) Sinus radiographs are NOT routinely recommended.	If bacterial, watchful waiting encouraged for uncomplicated infections with reliable follow-up. Evidence-based supportive care: • Saline nasal irrigation • Intranasal glucocorticoids • Oral decongestants when there is Eustachian tube dysfunction • OTC analgesics and antipyretics Macrolides (such as azithromycin) are NOT recommended due to high levels of *S. pneumoniae* antibiotic resistance (~40%). If antibiotics required: If mild/moderate and no risk factors for resistance: • amoxicillin/clavulanate 500/125 mg PO 3x/day or 875/125 mg PO 2x/day x 5-10 days (amoxicillin may be used as an alternative) If severe disease or risk factors for resistance (>65 yo, antibiotics within 30 days, recent hosp, ≥10% penicillin non-susceptible *S. pneumoniae*, immunocompromised): • amoxicillin/clavulanate 2 g/125 mg PO 2x/day x 7-10 days Penicillin-allergic patients: • doxycycline 100 mg PO 2x/day or 200 mg PO 1x/day x5-10 days See references for additional treatment options, including re-treatment after initial treatment failure, and other important information.

Acute uncomplicated bronchitis[5-7]

Viruses cause >90% of acute bronchitis.

Cough typically lasts 5 days to 3 weeks, up to 6 weeks.

Diagnosis	Management
Focus on ruling out pneumonia, which is rare among otherwise healthy adults without abnormal vital signs (heart rate >100 beats/min, respiratory rate >24 breaths/min, or oral temperature >38 °C (100.4°F)) and abnormal lung examination (focal consolidation, egophony, fremitus). Colored sputum does not indicate bacterial infection. For most cases, chest radiography is NOT indicated. For patients with COPD, refer to Gold Guidelines.	Routine treatment of uncomplicated acute bronchitis with antibiotics is NOT recommended, regardless of cough duration. Patients may benefit from symptomatic therapy: • Cough suppressants • Expectorants • First-generation antihistamines • Decongestants Consider pertussis especially with cough paroxysms, post-tussive emesis, or during known outbreaks. Current information about COVID testing and treatment is available at CDC.gov. See references for additional treatment options, and other important information.

Common cold or non-specific upper respiratory tract infection (URI)[8, 9]

Most adults get 2-4 colds annually.

Diagnosis	Management
Common cold symptoms can include low-grade fever, cough, rhinorrhea, nasal congestion, postnasal drip, sore throat, headache, and myalgias. Symptoms usually peak within 2-3 days, and some can last up to 14 days.	Antibiotic treatment is NOT recommended for non-specific URIs. Intranasal ipratropium, OTC analgesics can be given to relieve symptoms. Decongestants alone or combined with a first-generation antihistamine may provide short-term relief of nasal symptoms, there is no evidence they reduce cough. Evidence does NOT support antihistamines (as monotherapy), antitussives, codeine, and intranasal corticosteroids as effective treatments for cold symptom relief. Providers and patients must weigh the benefits and harms of symptomatic therapy. Current information about COVID testing and treatment is available at CDC.gov.

Pharyngitis[7, 10, 11,]

Group A Streptococcus (GAS) is the only common indication for antibiotics.

Only 5-15% cases in adults are caused by GAS.

Diagnosis	Management
Clinical features alone do NOT distinguish between GAS and viral pharyngitis; a rapid antigen detection test is necessary to establish a GAS pharyngitis diagnosis.	Antibiotic treatment is NOT recommended for patients with negative rapid test results. GAS resistance to clindamycin and azithromycin is increasingly common.

Adults with sore throat and 2 (3 if ≥45 yo) or more of the following features should get a rapid test:

1. Lack of cough
2. Tonsillar exudates
3. History of fever
4. Swollen and tender anterior cervical lymphadenopathy

Throat cultures after negative rapid test are NOT routinely recommended for adults.

First-line therapy for GAS:
- penicillin V 250 mg PO 4x/day or 500 mg PO 2x/day x10 days
- amoxicillin 1 g PO 1x/day or 500 mg 2x/day x10 days

Non-type I penicillin allergy:
- cephalexin 500 mg PO 2x/day x10 days
- cefadroxil 1 g PO 1x/day x10 days
- clindamycin 300 mg PO 3x/day x10 days
- azithromycin 500 mg PO 1x/day x5 days
- clarithromycin 250 mg PO 2x/day x10 days

Immediate type I penicillin allergy:
- clindamycin, clarithromycin, or azithromycin as dosed above

See references for additional treatment options and other important information.

Acute uncomplicated cystitis[12-15]

Treatment of asymptomatic bacteriuria significantly contributes to inappropriate antibiotic use.

Diagnosis	Management
Diagnosis of UTI is reliant on clinical assessment of signs and symptoms. Pretest probability of UTI is increased with dysuria, frequency, hematuria, suprapubic pain or tenderness. Back pain and costovertebral angle tenderness, consider upper tract involvement/ pyelonephritis. Foul-smelling urine and cloudy urine are not diagnostic of UTI. Pyuria or bacteriuria on urinalysis should not be used alone to diagnosis UTI, however the absence of pyuria or bacteriuria (>100K cfu) can be used to rule out cystitis. Asymptomatic bacteriuria (which includes pyuria) increases in frequency with age and occurs in 3-9% of post-menopausal women and 40-50% of long-term-care residents. Screening and antibiotic treatment for asymptomatic bacteriuria is NOT recommended for healthy adults. EXCEPT: • pregnant women • before some urological procedures • renal transplant patients	First-line therapy in healthy non-pregnant, premenopausal women: • nitrofurantoin 100 mg PO 2x/day x5 days (nitrofurantoin is NOT recommended if suspicious for early pyelonephritis) • TMP-SMX 160/800 mg PO (one DS tablet) 2x/day x3 days (where local resistance is <20%) • fosfomycin 3g PO x1 dose (Use may be limited by insurance coverage and availability, reserve for resistant organisms) Reserve fluoroquinolones (e.g., ciprofloxacin) for situations in which other agents are NOT appropriate. Therapy may be guided by locally available susceptibility data and patient characteristics. See references for additional treatment options and other important information especially if early pyelonephritis is suspected.

Adult Outpatient References

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PEDIATRIC ANTIBIOTIC PRESCRIBING GUIDELINES

Antibiotics are not indicated for treating viral infections, such as SARS-CoV-2 or influenza. Please consult CDC.gov for current viral infection treatment guidelines.

Pediatric Outpatient Treatment Recommendations 2024: Summary of Guidelines[1]

Acute sinusitis/ rhinosinusitis[2]

90–98% of cases are viral. Less than 7% with an URI develop bacterial sinusitis. Antibiotics may NOT help even if cause is bacterial.

Diagnosis	Management
Halitosis, fatigue, headache, decreased appetite, but most physical exam findings are non-specific and do NOT distinguish bacterial from viral causes. Symptoms of acute **bacterial** rhinosinusitis are: • Severe (>3-4 days), such as a fever ≥39°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 • worsening or new onset fever, daytime cough, headache, or nasal discharge within 10 days after initial improvement of a viral URI ("Double worsening") Imaging tests are no longer recommended for uncomplicated cases.	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 (age <2yo, daycare, antibiotics within 30 days, recent hosp, under immunized with PCV, ≥10% penicillin non-susceptible *S. pneumoniae*, immunocompromised): • amoxicillin/clavulanate **45 mg/kg/day PO** of the amoxicillin component in 2 divided doses **(max 1.75 g/day)** x10-14 days (Some experts recommend amoxicillin.) If severe or risk factors for resistance: • amoxicillin/clavulanate **90 mg/kg/day PO** of the amoxicillin component in 2 divided doses **(max 4g/day)** x10-14 days Non-type I penicillin allergy: • cefdinir 14 mg/kg/day PO in 1 dose or 2 divided doses or cefpodoxime 10 mg/kg/day PO in 2 divided doses x10 days Cannot tolerate oral medication: • ceftriaxone 50 mg/kg IM x1 dose then oral antibiotics if improving Macrolides (such as azithromycin) are NOT recommended due to high levels of *S. pneumoniae* antibiotic resistance (~40%). See references for more details, additional treatment options, including re-treatment after initial treatment failure, supportive care, and other important information.

Scan here for a printable .pdf of these guidelines.

Acute otitis media (AOM)[3, 4, 5]

An estimated 85% of acute otitis media (AOM) self-resolves and antibiotics are not shown to be beneficial.

*4-10% of children with AOM treated with antibiotics experience adverse effects. [8]

Diagnosis	Management
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 ≥39°C (102.2°F).	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 (recent beta-lactam therapy, purulent conjunctivitis, or history of recurrent AOM unresponsive to amoxicillin): • amoxicillin 80-90 mg/kg/day PO in 2 divided doses (max 2 g/dose) If severe or risk factors for resistance • 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 PO 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 • ceftriaxone 50 mg/kg IM x 1 (up to 3 doses) 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 Prophylactic antibiotics are not recommended to reduce the frequency of recurrent AOM. See references for more details, additional treatment options, and other important information.

Pharyngitis[6, 7]

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 children <3 yo.

Diagnosis	Management
Clinical features alone may not distinguish between GAS and viral pharyngitis. Testing is not recommended for children with acute pharyngitis and either of the following: • Symptoms strongly suggesting viral etiology, such as cough, rhinorrhea, hoarseness, and oral ulcers • <3 yo, unless there are other risk factors, such as close household contact with diagnosed GAS 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 tests should be confirmed with a throat culture; positives do NOT require a follow up culture.	First-line therapy: • amoxicillin 50 mg/kg once daily x 10 days; max dose 1 g • penicillin V PO if ≤27 kg: 250 mg per dose 2-3x/day x 10 days; if >27 kg: 500 mg per dose 2-3x/day x 10 days • benzathine penicillin G IM if <27 kg: 600,000 Units once; ≥27kg: 1,200,000 Units once (Considered when medication adherence is uncertain) Non-type I penicillin allergy: • cephalexin 40 mg/kg/day in 2 divided doses x 10 days; max dose 500 mg • cefadroxil 30 mg/kg/day (max 1g) daily x 10 days Immediate type I penicillin allergy: • clindamycin 20 mg/kg/day in 3 divided doses x 10 days; max dose 900 mg/day • azithromycin 12 mg/ max dose 500 mg *Resistance of group A strep to azithromycin and clarithromycin is well-known and varies geographically and temporally. Please see references for more details, additional treatment options, and other important information.

Common cold or non-specific upper respiratory tract infection (URI)[2, 8]

Median duration of common cold in children is 8 days and 90% of cases resolve within 23 days. Viruses such as Rhinovirus are the predominant cause.

Diagnosis	Management
Symptoms are self-limited and typical presentation includes: • Nasal congestion • Rhinorrhea • Sore throat • Cough • Low-grade fever, if present, occurring early in illness	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 4 yo because of potential harms and lack of benefit. Low-dose inhaled corticosteroids and oral prednisolone do NOT improve outcomes in non-asthmatic children. OTC cough and cold products are NOT recommended for children < 6 years because of potential harms and lack of benefit. Current information about COVID testing and treatment is available at CDC.gov See references for more details, additional treatment options, and other important information. Treat symptomatically.

Bronchiolitis[9, 10]

Bronchiolitis is a common lower respiratory infection with the most common etiology being respiratory syncytial virus (RSV). By the age of 2 yo, 90% of children have had RSV.

Diagnosis	Management
Occurs in children < 24 months and is characterized by: • Rhinorrhea • Cough • Wheeze • Tachypnea, and/ or • Increased respiratory effort	Antibiotics are NOT helpful and should NOT be used. 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). No evidence to support routine suctioning of the lower pharynx or larynx (deep suctioning). 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. Nirsevimab and palivizumab are preventative and not indicated for acute management. Current information about COVID testing and treatment is available at CDC.gov. See references for more details, additional treatment options, and other important information.

Urinary tract infections (UTIs)[11-13]

85-90% of UTI in children are caused by *Escherichia coli*

Diagnosis	Management
In infants, fever and or strong-smelling urine are common and are not by themselves signs of a urinary tract infection. In older, verbal children, findings may include: • Dysuria • Urgency and/or frequency • Abdominal or flank pain • New-onset incontinence A definitive diagnosis requires both pyuria (i.e., positive leukocyte esterase on dipstick urinalysis or white blood cells on urine microscopy) and significant bacterial growth on urine culture. Diagnosis cannot be made from urine collected in a bag. Urine testing for all children 2-24 mo with unexplained fever and low risk of UTI is no longer recommended. Urine dipstick and microscopic urinalysis have a high rate of false positive and negative results and are poor indicators of UTI. Additional evaluation may be warranted in certain patient populations after UTI.	Initial antibiotic treatment should be based on local antimicrobial susceptibility patterns. High resistance rates to amoxicillin may limit its use for empiric therapy. Suggested agents include: • Cephalexin 50-100 mg/kg/day PO children 2-24 mo: 50-100 mg/kg/day in 4 divided doses (max 500 mg per dose) children older than 24 mo: 25-50 mg/kg/day in 2 to 4 divided doses; for severe infections 50-100 mg/kg/day in 2 to 4 divided doses • TMP/SMX 6-12 mg/kg/day of TMP component children 2-24 mo: 6/30-12/60 mg/kg/day in 2 divided doses (max 160 mg TMP per dose) children older than 24 mo: 8/40 mg/kg/day PO in 2 divided doses • Cefpodoxime 10 mg/kg/day PO in 2 divided doses • Cefixime 8 mg/kg/day PO daily • Cefprozil 30 mg/kg/day PO in 2 divided doses • Amox/clav 50 mg/kg/day divided doses Max 500/dose children 2-24 mo: 20-40 amoxicillin mg/kg/day in 3 divided doses • Cefixime: children 2 mo and older: 8 mg/kg/day once daily (max 400 mg per dose) children older than 2 months: 20-30 mg/kg/day in 2 divided doses (max 500 mg per dose) Duration of treatment: 7-10 days. Follow-up urine cultures in children with resolution of symptoms of uncomplicated UTI is not recommended. Antibiotic treatment of asymptomatic bacteriuria in children is NOT recommended. Antibiotic prophylaxis to prevent recurrent UTIs is NOT recommended. See references for more details, additional treatment options, and other important information.

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