

**Atrium Health ADULT ED/Outpatient Empiric Antibiotic Guideline**

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These guidelines cannot account for all factors in an individual patient and should be used in conjunction with clinical judgment. All doses reflect normal renal and hepatic function.
These recommendations do not apply if microbiologic data show resistant pathogens.

Clinical Scenario	First-Line Therapy	Alternative Therapy	Clinical Pearls
COPD exacerbation 	amoxicillin-clavulanate 875-125 mg PO BID ¹ x 7 d	<u>Severe penicillin allergy (anaphylaxis):</u> doxycycline 100 mg PO BID ² x 7 d <u>Third-line (unable to tolerate other options):</u> azithromycin 500 mg PO daily x 3 d <u>If <i>Pseudomonas</i> spp. risk factors</u> <u>(see Clinical Pearls):</u> levofloxacin 750 mg PO daily ^{1,2} x 5 d	COPD exacerbations are often viral; consider influenza <i>Pseudomonas aeruginosa</i> risk factors: a. Documented <i>P. aeruginosa</i> infection/colonization in the last year b. Neutropenia (ANC <500 cells/μL) c. Chemotherapy within past 30 days d. Acquired Immune Deficiency Syndrome (AIDS) e. Transplant recipients f. Chronic immunosuppression with IV or PO corticosteroids (equivalent of prednisone 20 mg daily or higher)
Community-acquired pneumonia: patients without comorbidities* *Comorbidities include chronic heart, lung, liver or renal disease; diabetes mellitus; alcoholism; malignancy; or asplenia Recommendations do not apply for cystic fibrosis, bronchiectasis, or immunocompromised hosts (e.g., neutropenic, active chemotherapy, chronic steroids at prednisone ≥20 mg day or equivalent)	amoxicillin 1000 mg PO TID ¹ x 5-7 d	doxycycline 100 mg PO BID ² x 5-7 d* <u>Severe penicillin allergy (anaphylaxis) and allergy to doxycycline:</u> levofloxacin 750 mg PO daily ^{1,2} x 5 d	Consider influenza and COVID-19 during respiratory viral season The presence of an infiltrate alone is not diagnostic for pneumonia Azithromycin monotherapy is not recommended due to high local macrolide resistance rates for <i>S. pneumoniae</i> *Monohydrate formulation may be less expensive & better tolerated
Community-acquired pneumonia: patients with comorbidities* or concern for atypical pneumonia *Comorbidities include chronic heart, lung, liver or renal disease; diabetes mellitus; alcoholism; malignancy; or asplenia Recommendations do not apply for cystic fibrosis, bronchiectasis, or immunocompromised hosts (e.g., neutropenic, active chemotherapy, chronic steroids at prednisone ≥20 mg day or equivalent)	amoxicillin-clavulanate 875-125 mg PO BID ¹ x 5-7 d* -PLUS- azithromycin 500 mg PO daily x 3 d -OR- amoxicillin-clavulanate 875-125 mg PO BID ¹ x 5-7 d* -PLUS- doxycycline 100 mg PO BID ² x 5-7 d	<u>Penicillin allergy NOT anaphylaxis (rash):</u> cefpodoxime 200 mg PO BID ¹ x 5-7 d -PLUS- azithromycin 500 mg PO daily x 3 d -OR- cefpodoxime 200 mg PO BID ¹ x 5-7 d -PLUS- doxycycline 100 mg PO BID ² x 5-7 d <u>Severe penicillin allergy (anaphylaxis):</u> levofloxacin 750 mg PO daily ^{1,2} x 5 d <u>*If concern for penicillin-resistant <i>S. pneumoniae</i> (PRSP)</u> alternatives (with azithromycin or doxycycline): 1. amoxicillin 1000 mg PO TID ¹ x 5-7 d -OR- 2. amoxicillin-clavulanate 2000-125 mg PO BID ¹ x 5-7 d	Consider influenza and COVID-19 during respiratory viral season The presence of an infiltrate alone is not diagnostic for pneumonia *Penicillin susceptibility for non-meningeal isolates of <i>S. pneumoniae</i> at the metro Atrium Health facilities is 90% based on the 2020 Atrium Health Outpatient Antibigram. If the patient is from an area with a high rate of <i>S. pneumoniae</i> penicillin resistance, such as the mid-Atlantic United States, high-dose therapy can be considered. Azithromycin monotherapy is not recommended due to high local macrolide resistance rates for <i>S. pneumoniae</i>
Acute uncomplicated bronchitis Usually viral; self-limiting	antibiotics not indicated; supportive care	antibiotics not indicated; supportive care	For acute uncomplicated bronchitis diagnostic criteria: https://physicianconnect.carolinas.org/Docs/InfDis/Guidelines/Adult-Acute-Bronchitis-Outpatient-Treatment-Guidelines.pdf
Acute bacterial rhinosinusitis (Duration of illness less than 4 weeks) For bacterial rhinosinusitis diagnostic criteria: https://physicianconnect.carolinas.org/Docs/InfDis/Guidelines/Sinusitis-Outpatient-Treatment-Guidelines.pdf	amoxicillin-clavulanate 875-125 mg PO BID ¹ x 5-7 d	<u>Severe penicillin allergy (anaphylaxis) or failure of 1st-line therapy:</u> doxycycline 100 mg PO BID ² x 5-7 d -OR- levofloxacin 500 mg PO daily ^{1,2} x 5-7 d	Most cases of rhinosinusitis are viral. Consider watchful waiting for mild, uncomplicated cases (not severe & without worsening symptoms) with reliable follow-up within 48-72 hrs. Fluoroquinolones are not 1st-line due to risk of collateral damage, <i>C. difficile</i> colitis, & potential serious side effects. Consider sinus CT if cranial nerve palsy, pain with eye movement, altered mental status, immunocompromised, or diabetes

¹Doses are for normal renal function; ²Avoid in pregnancy

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Clinical Scenario	First-Line Therapy	Alternative Therapy	Clinical Pearls
Pharyngitis Group A streptococcal (GAS) pharyngitis diagnostic criteria: https://physicianconnect.carolinas.org/Docs/InfDis/Guidelines/Pharyngitis-Outpatient-Treatment-Guidelines.pdf	penicillin VK 500 mg PO BID ¹ x 10 d -OR- amoxicillin 500 mg PO BID ¹ x 10 d	<u>Penicillin allergy NOT anaphylaxis (rash):</u> cephalexin 500 mg PO BID ¹ x 10 d <u>Severe penicillin allergy (anaphylaxis):</u> azithromycin 500 mg PO daily x 5 d	Most cases of pharyngitis are viral. The presence of cough, rhinorrhea, conjunctivitis, & lack of fever suggests a viral etiology. Throat cultures are not routinely recommended for adults. Consider gonorrhea if severe pharyngitis is present Antibiotics are only recommended if rapid antigen detection test (RADT) for GAS is positive
Acute otitis media (AOM) AOM (suppurative OM) is defined as the acute onset of signs/symptoms (e.g., otalgia & fever) + a middle ear effusion + signs or symptoms of middle ear inflammation	amoxicillin-clavulanate 875-125 mg PO BID ¹ x 5-10 d*	<u>Penicillin allergy NOT anaphylaxis (rash):</u> cefdinir 300 mg PO BID ¹ x 5-10 d* <u>Severe penicillin allergy (anaphylaxis):</u> levofloxacin 500 mg PO daily ^{1,2} x 5-7 d*	*Consider 5-7 days of therapy if mild to moderate AOM A persistent middle ear effusion is common after resolution of Acute symptoms of AOM Otitis media with effusion (OME, non-suppurative OM) is defined as the presence of a middle ear effusion without pain or fever. In contrast to AOM, antibiotics are not indicated for OME.
Diverticulitis	If decision is made to treat: cephalexin 500 mg PO 4x/day ¹ x 7 d -PLUS- metronidazole 500 mg PO TID x 7 d	<u>Severe penicillin allergy (anaphylaxis):</u> ciprofloxacin 500 mg PO BID ^{1,2} x 7 d -PLUS- metronidazole 500 mg PO TID x 7 d	Consider observation without antibiotics if uncomplicated diverticulitis (no evidence of abscess or perforation on imaging) Consider CT if fever or peritoneal signs
Acute uncomplicated cystitis (nonpregnant female without urological abnormalities & no catheter)	nitrofurantoin 100 mg PO BID x 5 d (do not use if CrCl <30 mL/min) -OR- cephalexin 500 mg PO BID ¹ x 7 d (if urine culture & susceptibilities will be followed) -OR- cefpodoxime 100 mg PO BID ¹ x 7 d (\$\$\$)*	<u>Allergy/contraindication to other options:</u> sulfamethoxazole-trimethoprim (SMX-TMP) 1 DS tab PO BID ^{1,3} x 3 d -OR- ciprofloxacin 500 mg PO BID ^{1,2} x 3 d	Fluoroquinolones are not 1st-line due to risk of collateral damage, <i>C. difficile</i> colitis & local resistance rates SMX-TMP is not 1 st -line due to local resistance rates If available, prior cultures can help guide antibiotic selection *Broader than cephalexin - covers possible resistant pathogens (e.g., if history of UTI due to resistant organisms)
Acute cystitis during pregnancy	<u>Any trimester:</u> cephalexin 500 mg PO BID ¹ x 7 d (if urine culture & susceptibilities will be followed) -OR- cefpodoxime 100 mg PO BID ¹ x 7 d (\$\$\$) -OR- <u>2nd & 3rd trimester (avoid near-term):*</u> nitrofurantoin 100 mg PO BID x 5-7 d (do not use if CrCl <30 mL/min)	<u>1st trimester:</u> <i>severe β-lactam allergy (anaphylaxis) or non-susceptible pathogen & no suitable alternative**</i> nitrofurantoin 100 mg PO BID x 5-7 d (do not use if CrCl <30 mL/min) <u>Any trimester:</u> <i>severe β-lactam allergy (anaphylaxis) & inability to use nitrofurantoin:</i> fosfomycin 3 g PO x 1	*Avoid use in pregnancy near-term (>38 weeks) due to potential risk of hemolytic anemia in the infant **ACOG notes that the evidence regarding an association between nitrofurantoin & birth defects is mixed, & that its use in the 1 st trimester is considered appropriate when no other suitable alternative antibiotics are available (ref 15). Cefpodoxime is broader than cephalexin & covers possible resistant pathogens; cephalexin has more safety data in pregnancy
Acute uncomplicated pyelonephritis (nonpregnant female without urological abnormalities, no catheter, & stable for outpatient therapy) Inpatient initial IV therapy usually recommended in pregnancy	ceftriaxone 1000 mg IV x 1 in ED, then ciprofloxacin 500 mg PO BID ^{1,2} x 7 d	ceftriaxone 1000 mg IV x 1 in ED, then cefixime 400 mg PO daily ¹ x 10 d	SMX-TMP should not be used empirically due to local rates of resistance Nitrofurantoin & fosfomycin do not penetrate the renal parenchyma & should not be used for pyelonephritis
Bacterial Prostatitis	<u>Acute:</u> ciprofloxacin 500 mg PO BID ^{1,2} x 14 d* <u>Chronic:</u> ciprofloxacin 500 mg PO BID ^{1,2} x 4 weeks*	<u>Acute:</u> SMX-TMP 1 DS tab PO BID ^{1,3} x 14 days* <u>Chronic:</u> SMX-TMP 1 DS tab PO BID ^{1,3} x 4 weeks*	*Close follow-up recommended to determine clinical response & if extension of therapy is needed β-lactam antibiotics do not adequately penetrate the prostate Consider coverage of gonorrhea & chlamydia if STI suspected

¹Doses are for normal renal function; ²Avoid in pregnancy; ³SMX-TMP = sulfamethoxazole-trimethoprim (avoid in 1st trimester & near-term)

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Clinical Scenario	First-Line Therapy	Alternative Therapy	Clinical Pearls
Urethritis, cervicitis <i>Chlamydia trachomatis</i> <i>Neisseria gonorrhoeae</i>	ceftriaxone 500 mg IM x 1 if <150 Kg or ceftriaxone 1000 mg IM x 1 if ≥150 Kg -PLUS- 1 of the following if chlamydial infection not excluded: doxycycline 100 mg PO BID ² x 7 d (first line)* -OR- azithromycin 1000 mg PO x 1 (pregnancy or at provider discretion if concern for compliance with doxycycline)	<u>If severe β-lactam allergy (anaphylaxis):</u> azithromycin 2000 mg PO x 1** -PLUS- gentamicin 240 mg IM x 1	*Adding azithromycin for <i>Chlamydia</i> coverage is no longer recommended except during pregnancy due to increasing resistance or if concern for compliance. During pregnancy, azithromycin 1000 mg x1 is recommended to treat <i>Chlamydia</i> . **Consider premedication with anti-emetic due to high incidence of GI side effects with high-dose azithromycin. The CDC no longer recommends azithromycin monotherapy due to potential for rapid development of resistance.
Gonococcal infections of the pharynx <i>Neisseria gonorrhoeae</i>	ceftriaxone 500 mg IM x 1 if <150 Kg or ceftriaxone 1000 mg IM x 1 if ≥150 Kg -PLUS- 1 of the following if chlamydial infection not excluded: doxycycline 100 mg PO BID ² x 7 d (first line)* -OR- azithromycin 1000 mg PO x 1 (during pregnancy or at provider discretion if concern for compliance with doxycycline)	<u>If severe β-lactam allergy (anaphylaxis):</u> Consult Infectious Diseases for guidance***	***No reliable treatment alternatives are available for pharyngeal gonorrhea. For persons with history of β-lactam allergy, a thorough assessment of reaction is recommended. Consult Infectious Diseases for guidance. Test-of-cure is recommended 7-14 days after initial treatment for pharyngeal gonorrhea Do not use fluoroquinolones or azithromycin monotherapy due to significant resistance Test for HIV & other STIs
Gonococcal infections of the rectum <i>Neisseria gonorrhoeae</i>	ceftriaxone 500 mg IM x 1 if <150 Kg or ceftriaxone 1000 mg IM x 1 if ≥150 Kg -PLUS- 1 of the following if chlamydial infection not excluded: doxycycline 100 mg PO BID ² x 7 d (first line)* -OR- azithromycin 1000 mg PO x 1 (during pregnancy or at provider discretion if concern for compliance with doxycycline)	<u>If severe β-lactam allergy (anaphylaxis):</u> azithromycin 2000 mg PO x 1** -PLUS- gentamicin 240 mg IM x 1	
Acute epididymitis Pain, swelling, & inflammation of epididymis lasting < 6 weeks	<u>If <i>N. gonorrhoeae</i> & <i>C. trachomatis</i> most likely:*</u> ceftriaxone 500 mg IM x 1 if <150 Kg or ceftriaxone 1000 mg IM x 1 if ≥150 Kg -PLUS- 1 of the following if chlamydial infection not excluded: doxycycline 100 mg PO BID ² x 7 d (first line)** -OR- azithromycin 1000 mg PO x 1 (at provider discretion if concern for compliance with doxycycline) <u>If <i>N. gonorrhoeae</i> & <i>C. trachomatis</i> & enteric pathogens most likely:***</u> ceftriaxone 500 mg IM x 1 if <150 Kg or ceftriaxone 1000 mg IM x 1 if ≥150 Kg -PLUS- levofloxacin 500 mg PO daily ^{1,2} x 10 d <u>If enteric pathogens likely & gonorrhea excluded:[§]</u> levofloxacin 500 mg PO daily ^{1,2} x 10 d	<u>If severe β-lactam allergy (anaphylaxis):</u> Consult Infectious Diseases for guidance	Maintain high index of suspicion for spermatic cord (testicular) torsion if epididymitis associated with sudden symptom onset, nausea or vomiting, or abnormal testicular exam. Test for HIV & other STIs * Most frequently due to <i>N. gonorrhoeae</i> or <i>C. trachomatis</i> in sexually active men < 35 yrs. of age **Adding azithromycin for <i>Chlamydia</i> coverage is no longer recommended except during pregnancy due to increasing resistance or if concern for compliance. *** May be due to sexually transmitted enteric pathogens in men practicing insertive anal intercourse §In men > 35 yrs. of age who do not report insertive anal intercourse, acute epididymitis is less commonly sexually transmitted. In this group, it may occur in the setting of BPH, urinary tract instrumentation, systemic disease, &/or immunosuppression.
Pelvic inflammatory disease (PID) If appropriate for oral therapy (nonpregnant, non-severe, no complication such as pelvic abscess, etc.)	ceftriaxone 500 mg IM x 1 if <150 Kg or ceftriaxone 1000 mg IM x 1 if ≥150 Kg -PLUS- doxycycline 100 mg PO BID ² x 14 d -PLUS- metronidazole 500 mg PO BID x 14 d*	<u>If severe β-lactam allergy (anaphylaxis):</u> IV therapy for 24-48 hours is recommended Consult Infectious Diseases for guidance	Do not use fluoroquinolones due to significant resistance Test for HIV & other STIs *Consider addition of metronidazole if bacterial vaginosis is present or cannot be ruled out

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Atrium Health **ADULT** ED/Outpatient Empiric Antibiotic Guideline (Continued)

Clinical Scenario	First-Line Therapy	Second-Line Therapy	Clinical Pearls
Vaginitis: bacterial vaginosis	metronidazole 500 mg PO BID x 7 d -OR- metronidazole vaginal gel 0.75%: one applicator (5 g) intravaginally daily x 5 d*	clindamycin 300 mg PO BID x 7 d -OR- clindamycin ovules 100 mg intravaginally x 3 d	*If intolerance but not a <i>bona fide</i> allergy to PO metronidazole Test for HIV & other STIs
Vaginitis: <i>Trichomonas vaginalis</i>	metronidazole 500 mg PO BID x 7 d	If severe metronidazole allergy, consult Infectious Disease for guidance	New guidelines recommend 7-day course of therapy regardless of HIV status Test for HIV & other STIs
Syphilis: Primary, secondary, or early latent Primary: ulcers or chancre at infection site Secondary: manifestations include but not limited to skin rash, mucocutaneous lesions, & lymphadenopathy Latent syphilis lacks above clinical manifestations & is detected by serologic testing**	benzathine penicillin G 2.4 million units IM x 1	<u>Severe penicillin allergy (anaphylaxis):</u> doxycycline 100 mg PO BID x 14 d (only for non-pregnant patients)*	Test for HIV & other STIs *No proven alternatives to penicillin are available for treating neurosyphilis or syphilis in pregnancy. Consult Infectious Diseases for guidance. **This guideline does not apply to late latent or latent of unknown duration, tertiary syphilis or neurosyphilis: consult with Infectious Diseases for guidance in these scenarios
Genital herpes simplex (HSV)	acyclovir 400 mg PO 3x/day ¹ x 7-10 days -OR- valacyclovir 1000 mg PO BID ¹ x 7-10 days		Test for HIV & other STIs See CDC guidelines (ref 21) for management of HSV during pregnancy
Non-purulent cellulitis (no abscess), uncomplicated For diagnostic criteria & exclusions: https://physicianconnect.carolinas.org/Docs/InfDis/Guidelines/Skin-Soft-Tissue-Infection-Guidelines.pdf	cephalexin 500 mg PO 4x/day ¹ x 5-7 d -OR- dicloxacillin 500 mg PO 4x/day ¹ x 5-7 d	<u>Severe penicillin allergy (anaphylaxis):</u> clindamycin 300 mg PO TID x 5-7 d	Most commonly due to group A Streptococcus (GAS) Doxycycline & SMX-TMP provide poor coverage against GAS; these agents should not be used alone for typical cellulitis. Consider 5 days of therapy if clinical improvement by that time
Skin abscess/purulent cellulitis, uncomplicated For diagnostic criteria & exclusions: https://physicianconnect.carolinas.org/Docs/InfDis/Guidelines/Skin-Soft-Tissue-Infection-Guidelines.pdf Most commonly due to <i>S. aureus</i>	I&D, if drainable abscess* +/- SMX-TMP ^{1,3} If <70 Kg: 1 DS tab PO BID x 5-10 d If >70 Kg: 2 DS tab PO BID x 5-10 d	I&D, if drainable abscess* +/- doxycycline 100 mg PO BID ² x 5-10 d <u>If unable to take sulfa or doxycycline:</u> I&D, if drainable abscess* +/- clindamycin 300 mg PO TID x 5-10 d	*Antibiotics are not indicated (use I&D alone) if drainable abscess <5 cm & no systemic signs of infection ⁴ *If abscess >5 cm, treat with I&D & antibiotics *If no drainable abscess, treat with antibiotics Consider 5 days of therapy if clinical improvement by that time Clindamycin may increase risk of <i>C. difficile</i> colitis & is not 1 st -line due to local resistance rates against MRSA
<i>C. difficile</i> colitis: initial episode Non-severe: WBC ≤15K AND SCr <1.5 mg/dL Severe: WBC ≥15K OR SCr >1.5 mg/dL	vancomycin 125 mg PO q 6h x 10 d -OR- fidaxomicin 200 mg PO q 12h x 10 d*		NOTE that PO metronidazole no longer recommended due to inferior outcomes & side effects *Consider fidaxomicin first line in high-risk patients: immunocompromised (hematopoietic stem cell transplant recipient, solid organ transplant recipient, malignancy, patients on immunosuppressive medications), age >65 years
<i>C. difficile</i> colitis: first recurrence Treatment should be based on the therapy that was given during the initial episode	<u>If vancomycin given initially:</u> fidaxomicin 200 mg PO q 12h x 10d -OR- vancomycin PO taper* <u>If fidaxomicin given initially:</u> vancomycin PO taper* -OR- fidaxomicin 200 mg PO q 12h x 10 d <u>If metronidazole given initially:</u> vancomycin 125 mg PO q 6h x 10 d -OR- fidaxomicin 200 mg PO q 12h x 10d		*Vancomycin PO taper: 125 mg q 6h x 14d, then 125 mg q 12h x 7d, then 125 mg q 24h x 7d, then 125 mg q 48h x 2 weeks
<i>C. difficile</i> colitis: ≥2 recurrences	Consult with Infectious Diseases or Gastroenterology for guidance		

¹Doses are for normal renal function; ²Avoid in pregnancy; ³SMX-TMP = sulfamethoxazole-trimethoprim (avoid in 1st trimester & near-term);⁴Systemic signs of infection: T >38 °C or <36 °C, HR >90 beats/min, RR >24 breaths/min or PaCO₂ <32 mm Hg, WBC >12,000 or <4000 cells/μL or >10% bands, acute hypotension

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