Children's Mercy Kansas City

Outpatient Antibiotic Handbook

CMH ASP Group

Version 5, last updated 6/28/2021

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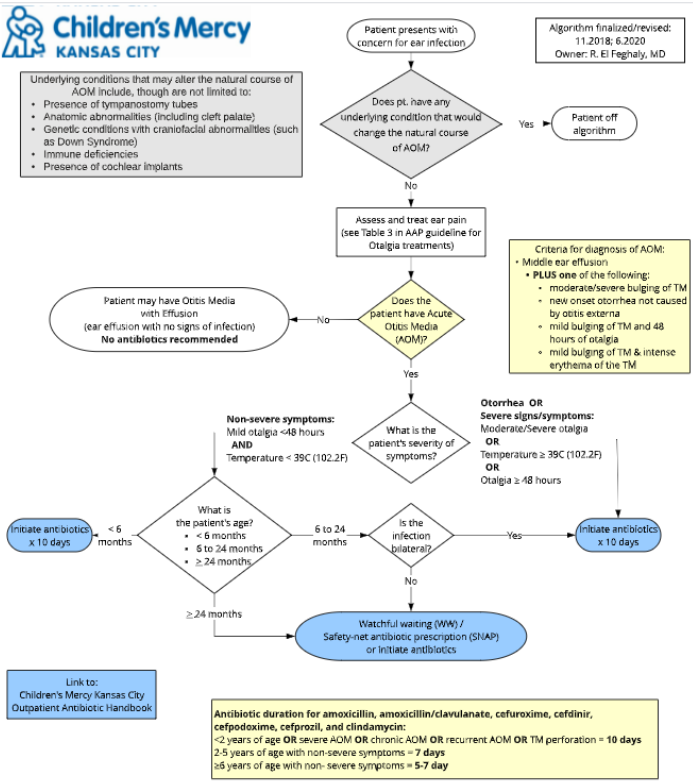
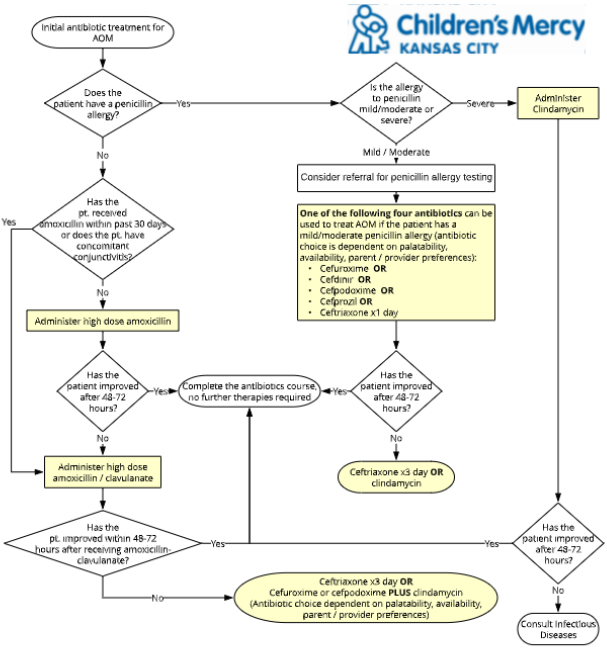
Online version available via the Children's Mercy Evidence Based Practice website (https://www.childrensmercy.org/health-care-providers/evidence-based-practice/clinical-practice-guidelines/) under the "Acute Otitis Media" Care Process Model

Acute otitis media (AOM) (AAP guideline 2013)[1]



Acute otitis media (AOM) (AAP guideline 2013)[1]



Dosing of antibiotics found in algorithm:

- Amoxicillin 40-50 mg/kg/dose PO BID (max 2000 mg/dose)
- Amoxicillin/clavulanate 40-50 mg/kg/dose (amoxicillin component) PO BID (max 2000 mg amoxicillin component /dose)
- Cefuroxime 250 mg PO BID (max 500 mg/dose) for children able to swallow pills (only available in tablet form)
- Cefdinir 7 mg/kg/dose PO BID (max 300 mg/dose)
- Cefpodoxime 5 mg/kg/dose PO BID (max 200 mg/dose)
- Cefprozil 15 mg/kg/dose PO BID (max 500 mg/dose)
- Ceftriaxone 50 mg/kg/dose IM/IV qDay x 1-3 days* (daily max 1 gram/dose)
  *Administer Ceftriaxone for 1 day when used as a first line for patients with penicillin allergy, and 3 days if the patient has failed other antibiotics
- Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)

Antibiotic duration for amoxicillin, amoxicillin/clavulanate, cefuroxime, cefdinir, cefpodoxime, cefprozil, and clindamycin:
<2 years of age **OR** severe AOM **OR** chronic AOM **OR** recurrent AOM **OR** TM perforation = **10 days**
2-5 years of age with non-severe symptoms = **7 days**
≥6 years of age with non- severe symptoms = **5-7 day**

Link to:
Children's Mercy Kansas City
Outpatient Antibiotic Handbook

Algorithm finalized/revised:
11.2018; 6.2020
Owner: R. El Feghaly, MD

Acute otitis media (AOM) (AAP guideline 2013)[1]

Watchful waiting (WW)/ Safety-Net Antibiotic Prescription (SNAP):

- Joint decision between provider and caregiver
- Must have close follow-up (within 48-72 hours) if SNAP not given
- Must be able to fill antibiotic prescription if signs/symptoms worsen or fail to improve in 48-72 hours from onset of symptoms

NOTE: If using WW/SNAP, please place a comment in prescription instructions to "fill only upon patient/family request"

Antibiotic Recommendations

- First line:
  - Amoxicillin 40-50 mg/kg/dose PO BID (max 2000 mg/dose)
- Alternative therapies:
  - If received amoxicillin within the past 30 days **OR** concomitant conjunctivitis:
    - Amoxicillin/clavulanate 40-50 mg/kg/dose (amoxicillin component) PO BID (max 2000 mg amoxicillin/dose)
      NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation
- Mild/moderate penicillin allergy (e.g. rashes including hives):
  - Cefuroxime 250 mg PO BID for children able to swallow pills (only available in tablet form)
  - Cefdinir 7 mg/kg/dose PO BID (max 300 mg/dose)
  - Cefpodoxime 5 mg/kg/dose PO BID (max 200 mg/dose)
  - Cefprozil 15 mg/kg/dose PO BID (max 500 mg/dose)
  - Ceftriaxone 50 mg/kg/dose IM/IV qDay x 1-3 days (max 1000 mg/dose)
    NOTE: Risk of penicillin/cephalosporin cross-reactivity extremely low
    NOTE: Some cephalosporins may have limited availability and/or may be cost-prohibitive
    NOTE: consider referral for penicillin allergy testing
- Severe penicillin allergy (e.g. anaphylaxis):
  - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)

(see next page for failure to improve after initial antibiotic therapy)

- Failure to improve after 48-72 hours of initial antibiotic therapy:
  - Treatment failure with amoxicillin
    - Amoxicillin/clavulanate 40-50 mg/kg/dose (amoxicillin component) PO BID (max 2000 mg amoxicillin/dose)
      NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation
  - Treatment failure with amoxicillin/clavulanate:
    - Ceftriaxone 50 mg/kg/dose (max 1000 mg/dose) IM or IV daily x 3 days

      OR
    - Cefuroxime or cefpodoxime PLUS clindamycin

Otorrhea

- AOM with a perforated tympanic membrane (the following could be considered in addition to systemic antibiotic) **OR** AOM with presence of patent tympanostomy tubes:
  - Ciprodex® (Ciprofloxacin 0.3% - Dexamethasone 0.1%) otic suspension, 4 drops instilled into affected ear twice daily for 7 days for patients >6 months of age
    NOTE: If Ciprodex® on shortage or cost-prohibitive, may use ciprofloxacin ophthalmic 2 drops +/- dexamethasone ophthalmic 2 drops twice daily for 7 days in patients >6 months of age
  - Ofloxacin otic solution, 5 drops into affected ear twice daily for 10 days for children > 6 months of age

- Otitis externa with intact tympanic membrane
  - May use Ciprodex®, ciprofloxacin ophthalmic/dexamethasone ophthalmic or Ofloxacin as noted above

    OR
  - Cortisporin® otic (neomycin-polymyxin B-hydrocortisone otic), 3 drops to affected ear 3 times per day for 7 day

Group A streptococcal pharyngitis (IDSA guidelines 2012)[2]

Please refer to CPG for testing algorithm:
https://www.childrensmercy.org/health-care-providers/evidence-based-practice/clinical-practice-guidelines/pharyngitis-algorithm/

NOTE: Streptococcal pharyngitis is uncommon in children <3 years of age and children of any age with viral symptoms

- First Line:
  - Amoxicillin 50 mg/kg/dose PO qDay (max 1000 mg/day) x 10 days
  - Penicillin G benzathine IM
    - < 27 kg: 600,000 Units x 1 dose
    - ≥ 27 kg: 1.2 million Units x 1 dose
  - Penicillin VK
    - < 27kg: 250 mg PO BID – TID x 10 days
    - ≥ 27 kg: 500 mg PO BID – TID x 10 days
- Alternative therapies:
  - Mild penicillin allergy (e.g. rashes including hives):
    - Cephalexin 20-25 mg/kg/dose PO BID (max 500 mg/dose) x 10 days

      NOTE: consider referral for penicillin allergy testing
  - Severe penicillin allergy (e.g., anaphylaxis):
    - Clindamycin 7 mg/kg/dose PO TID (max 300 mg/dose) x 10 days
    - Azithromycin 12 mg/kg/dose PO qDay (max 500 mg/dose) x 5 days

    NOTE: Azithromycin is not recommended unless patient has severe allergy to penicillin and cephalosporins. Resistance is well known, and treatment failure may occur

Uncomplicated community-acquired pneumonia (IDSA guidelines 2011)[3]

Please refer to CPG:
https://www.childrensmercy.org/health-care-providers/evidence-based-practice/clinical-practice-guidelines/community-acquired-pneumonia-algorithm/

- Duration: 5-7 days
- First line:
  - Amoxicillin 40-50 mg/kg/dose PO BID (max 2000 mg/dose)
    NOTE: Amoxicillin/clavulanate provides no additional coverage for *Streptococcus pneumoniae* and is not a recommended first line agent for community-acquired pneumonia

- Alternative therapies:
  - Mild/moderate penicillin allergy (e.g. rashes including hives) - consider referral for penicillin allergy testing
    - Cefuroxime 250 - 500 mg PO BID for children able to swallow pills (only available in tablets)
    - Cefpodoxime 5 mg/kg/dose PO BID (max 200 mg/dose)
    - Cefprozil 15 mg/kg/dose PO BID (max 500 mg/dose)
      NOTE: Cefdinir is NOT recommended for empiric treatment of Community acquired pneumonia because it is less effective against *Streptococcus pneumoniae*. Given some cephalosporins may have limited availability and/or may be cost-prohibitive, clindamycin is preferred over cefdinir if the above antibiotics are not available
    - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)
  - Severe penicillin allergy (e.g anaphylaxis)/ cephalosporin allergy:
    - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)
  - Severe penicillin allergy / cephalosporin allergy AND intolerance of clindamycin:
    - Levofloxacin 8-10 mg/kg/dose PO BID (ages 6 months – 5 years) **OR** qDay (≥ 5 years) (max 750 mg/**day**)

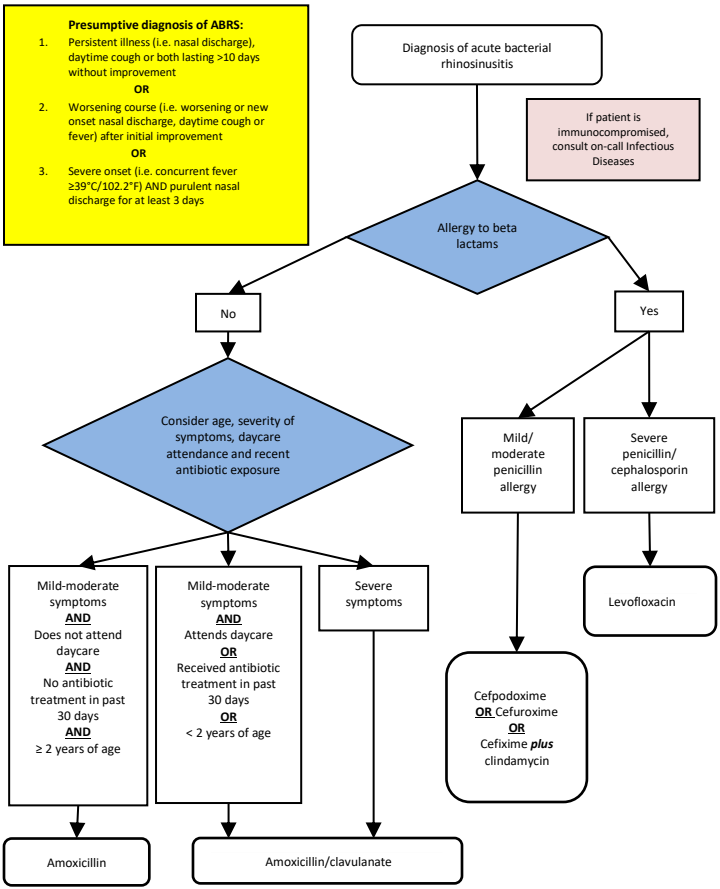
(see next page for atypical pneumonia considerations and treatment)

- Atypical pneumonia (consider in adolescents with bilateral disease):
  - Azithromycin 10 mg/kg/dose PO qDay on day #1 (max 500 mg/dose), then 5 mg/kg/dose PO qDay on days #2-5 (max 250 mg/dose)

    NOTE: resistance to azithromycin is significant among typical bacterial pathogens, especially *Streptococcus pneumoniae*

    NOTE: levofloxacin and doxycycline are alternatives for atypical coverage and do not require the addition of azithromycin for coverage.

Acute bacterial rhinosinusitis (ABRS) (AAP guidelines 2013)[4]



Acute bacterial rhinosinusitis (ABRS) (AAP guidelines 2013)[4]

- Diagnosis

  NOTE: ABRS is uncommon in children < 2 years of age

  - Presumptive diagnosis of ABRS can be made if patient with acute upper respiratory tract infection (URI) presents meeting **ONE** of the following:
    1. Persistent illness (i.e. nasal discharge), daytime cough, or both lasting >10 days without improvement
    2. Worsening course after initial improvement (i.e. worsening or new onset nasal discharge, daytime cough or fever)
    3. Severe onset (i.e. concurrent fever ≥39°C/102.2°F) AND purulent nasal discharge for at least 3 consecutive days

- Treatment
  - Duration: 10 days
    - Continue treatment for at least 7 days after symptom resolution
  - First line:
    - Mild-moderate disease AND patient ≥ 2 years of age, AND does not attend daycare, AND has not received antibiotics within the past 30 days
      - Amoxicillin - High-dose: 45-50 mg/kg PO BID (max 2000 mg/dose)

        NOTE: In communities with low rates of penicillin non-susceptible *S. pneumoniae*, standard dose amoxicillin may be considered.
    - Severe disease **OR** mild-moderate disease with ANY of the following: <2 years of age, attends daycare, received antibiotics in the past 30 days
      - Amoxicillin-clavulanate - High dose: 40-50 mg/kg/dose (amoxicillin component) PO BID (max 2000 mg/dose)

        NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation

(see next page for alternative therapies)

- Alternative therapies for acute bacterial rhinosinusitis:
  - Mild/moderate penicillin allergy (e.g. rashes including hives):
    - Cefpodoxime 5 mg/kg/dose PO BID (max 200 mg/dose)
    - Cefuroxime 250 mg PO BID for children able to swallow pills (only available in tablets)
    - Cefixime 4 mg/kg/dose PO BID (max 200 mg/dose) ***PLUS*** Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)

      NOTE: Some cephalosporins may have limited availability and/or variable insurance coverage
      NOTE: consider referral for penicillin allergy testing
  - Severe penicillin allergy (e.g anaphylaxis) or cephalosporin allergy:
    - Levofloxacin 10 mg/kg/dose PO BID (6 months- 5 years) **OR** qDay (≥5 years)(max 500 mg/**day**)
    - Consider consulting Infectious Diseases physician

      NOTE: per AAP guideline, even patients with a history of serious type 1 immediate reaction to penicillin may be safely treated with cefuroxime and cefpodoxime given low risk of cross-reactivity

Cystitis/uncomplicated UTI in children >2 months of age

NOTE: If history of UTIs, empiric therapy should be based on previous microbiology, ifavailable

- Duration:
  - Adolescents (≥ 13 years old): 3 – 5 days
  - Younger children and older male patients: 5-7 days
- First line:
  - Cephalexin 16.6 mg/kg/dose PO TID (max 1500 mg/day)
- Alternative therapies:
  - Cefixime 8 mg/kg/dose PO qDay (max 400 mg/day)
  - Amoxicillin/clavulanate 13.3 mg/kg/dose PO TID (max 500 mg amoxicillin/dose)
    NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation
- Severe penicillin allergy (e.g. anaphylaxis) / cephalosporin allergy:
  - TMP/SMX 3-6 mg/kg/dose (trimethoprim component) PO BID (max 160 mgTMP/dose)
    NOTE: At CMH, there are increasing rates of *E coli* resistance to TMP/SMX
  - Nitrofurantoin (treatment duration 5-7 days)
    - Macrocrystal (Macrodantin® or Furadantin®) 1.25-1.75 mg/kg/dose PO q6h (max 100 mg/dose)
    - Macrocrystal/monohydrate (Macrobid®) 100 mg PO BID **FOR ADOLESCENTS ONLY**

NOTE: Cefdinir has poor urine concentration in children compared to adults and is not recommended for pediatric UTIs

Pyelonephritis (febrile urinary tract infection) in children ≥ 2 months of age (AAP guidelines 2011)[5]

Evaluate need for admission:

General indications for admission include age < 2 months, ill appearance, poor intake, unable to tolerate oral antibiotic, vomiting, immune compromise, urinary tract obstruction and/or culture-positivity for bacteria known to be resistant to oral antibiotics

NOTE: If history of UTIs, empiric therapy should be based on previous microbiology if available

- Duration: 7-14 days
- First line:
  - Cephalexin 25-33 mg/kg/dose PO TID (max 3000 mg/day)
- Alternative therapies:
  - Cefixime 8 mg/kg/day PO Qday to BID (max 400 mg/day)
    NOTE: q12 hour dosing may be beneficial in younger patients (typically < 3 years of age) or patients with neurogenic bladders who require frequent straight catherization
  - Amoxicillin/clavulanate 13.3 mg/kg/dose (amoxicillin component) PO TID (max 500 mg amoxicillin/dose)
    NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation
- Severe penicillin allergy (e.g. anaphylaxis) /cephalosporin allergy:
  - TMP/SMX 3-6 mg TMP/kg/dose (trimethoprim component) PO BID (max 160 mg TMP/dose)
    NOTE: At CMH, there are increasing rates of *E coli* resistance to TMP/SMX
  - Ciprofloxacin 10 mg/kg/dose PO BID (max 500mg/dose)

NOTE: Cefdinir has poor urine concentration in children compared to adults and is not recommended for pediatric UTIs

Skin and soft tissue infections (IDSA guidelines 2014)[6]

- Impetigo
  - Mild cases with 5 lesions or less
    - Topical mupirocin TID x 5 days
    - Topical retapamulin BID x 5 days
  - Extensive: >5 lesions, lesions covering large areas of the body, or lesions near the mouth
    - Duration: 5-7 days
    - First line treatment:
      - Cephalexin 9-17 mg/kg/dose PO TID (max 250 mg/dose) x 5-7 days
    - If MRSA suspected (i.e. personal or family history of MRSA) or confirmed AND/OR severe penicillin/cephalosporin allergy:
      - Clindamycin 7 mg/kg/dose PO TID (max 450 mg/dose) x 5-7 days
      - TMP-SMX 4-6 mg/kg/dose (trimethoprim component) PO BID (max 160 mg TMP/dose) x 5-7 days
        NOTE: TMP-SMX may not cover group A Streptococcus
      - Doxycycline 2 mg/kg PO BID (max 100 mg/dose)
        NOTE: Doxycycline may not cover group A Streptococcus

- Cellulitis
  - Duration: 5-7 days
  - First line:
    - Cephalexin 17 mg/kg/dose PO TID (max 500 mg/dose)
  - If cephalosporin allergy OR MRSA suspected (i.e. personal or family history ofMRSA):
    - Clindamycin 10 mg/kg/dose PO TID (max 450 mg/dose)
      NOTE: Clindamycin resistance for *Staphylococcus aureus* and group A Streptococcus has been increasing. Consider selecting an alternative if patient has a history of clindamycin-resistant *Staphylococcus aureus* or changing to a narrow spectrum antibiotic if culture results show MSSA or group A Streptococcus.
    - TMP-SMX 4-6 mg/kg/dose (TMP component) PO BID (max 160 mg TMP/dose)
      NOTE: TMP-SMX may not cover group A Streptococcus
    - Doxycycline 2 mg/kg PO BID (max 100 mg/dose)
      NOTE: Doxycycline may not cover group A Streptococcus

- Abscess:
  In addition to incision and drainage with culture:
  - Duration: 5-7 days
  - First-line treatment with one of the following:
    - Clindamycin 10 mg/kg/dose PO TID (max 450 mg/dose)
      NOTE: Clindamycin resistance for *Staphylococcus aureus* and group A *Streptococcus* has been increasing. Consider selecting an alternative if patient has a history of clindamycin-resistant *Staphylococcus aureus* or changing to a narrow spectrum antibiotic if culture results show MSSA or GAS
    - TMP-SMX 4-6 mg/kg/dose (TMP component) PO BID (max 160 mg TMP/dose)
    - Doxycycline 2 mg/kg PO BID (max 100 mg/dose)

Animal/human bites[6]

- Duration:
  - Prophylaxis (for moderate to severe wounds with edema or crush injury, puncture wounds or facial bite wounds): 3 days
  - Treatment of infected wound: 5-10 days
- First line:
  - Amoxicillin/clavulanate 22.5 mg/kg/dose (amoxicillin component) PO BID (max 875 mg amoxicillin/dose)
    NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation
- Penicillin allergy:
  - Clindamycin 10 mg/kg/dose PO TID (max 450 mg/dose) **PLUS** one of the following:
    - TMP-SMX 5 mg/kg (TMP component) PO BID (max 160 mg TMP/dose)
    - Doxycycline 2.2 mg/kg PO BID (max 100 mg/dose)

NOTE: Consider tetanus and rabies immunizations (discussion with ID)

Dental abscess

Assess for complicated infection (i.e. ill-appearing, signs of deep neck space infection, osteomyelitis of the mandible) as management may differ from what is listed below (e.g. hospital admission, longer duration of antibiotics, etc).

- Duration: 10 days
- First line:
  - Amoxicillin 17 mg/kg/dose PO TID (max 500 mg/dose)
- Alternative for complicated infections or amoxicillin failure
  - Amoxicillin/clavulanate 25 mg/kg/dose (amoxicillin component) PO BID (max 875 mg amoxicillin/dose)
    NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation
- If buccal involvement AND/OR penicillin allergy:
  - Clindamycin 10 mg/kg/dose PO TID (max 450 mg/dose)

Acute lymphadenitis

- Duration: 7 – 10 days
- First line options:
  - Cephalexin 17-25 mg/kg/dose PO TID (max 1000 mg/dose)
  - Amoxicillin/clavulanate 22.5 mg/kg/dose (amoxicillin component) PO BID (max 875 mg amoxicillin/dose)
    NOTE: Consider in cases where oral anaerobes may be involved (e.g. unilateral cervical lymphadenitis in child with poor dental hygiene)
    NOTE: Refer to amoxicillin/clavulanate dosing table on page 22 for formulation
- If concern for MRSA (i.e. personal or family history of MRSA) AND/OR severe penicillin or cephalosporin allergy:
  - Clindamycin 10 mg/kg/dose PO TID (max 450 mg/dose)
- If concern for *Bartonella henselae* (treatment may shorten duration of adenopathy):
  - Azithromycin 12 mg/kg PO qDay (max 500 mg/dose) x 5 days

Acute bacterial conjunctivitis beyond neonatal period (AAO 2018)[7]

Refer to Children's Mercy Care Process Models for neonatal conjunctivitis and conjunctivitis for additional diagnostic and treatment considerations.

Most cases of conjunctivitis, both viral and bacterial, are self-limiting and resolve without specific treatment.

Topical antibacterial therapy may result in earlier clinical and microbiological remission if given before day 6 of illness, and may reduce transmissibility in children.

For moderate to severe bacterial conjunctivitis (i.e. copious purulent discharge, pain, and marked inflammation of the eye), systemic antimicrobial therapy and conjunctival cultures may be indicated. Possible etiologies may include gonococcal, chlamydial, or *Staphylococcus aureus* infections.

- Duration: 5 – 7 days
- Broad spectrum, nontoxic, inexpensive topical antibody therapy options:
  - Infants, especially < 2 months:
    - Erythromycin 5 mg/gm ophthalmic ointment: Apply 1 cm ribbon into affected eye 4 times daily
    - Polymyxin B-bacitracin ophthalmic ointment: apply 1.25 cm ribbon to affected eye 4 times daily
  - Children and adolescents
    - Polymyxin B-trimethoprim ophthalmic solution: Instill 1 drop in affected eye 4 times daily

(See next page for alternatives)

- Alternative topical therapies:
  - Tobramycin 3% ophthalmic solution: Instill 1- 2 drops into the affected eye every 4 hours
    NOTE: Resistance seen with *Streptococcus* species limiting effectiveness
    NOTE: Risk of toxicity to the corneal epithelium and reactive keratoconjunctivitis, especially ≥ 7 days of use.
  - Azithromycin 1% ophthalmic solution: Instill 1 drop in the affected eye twice daily (8 – 12 hrs apart) on days 1-2, then 1 drop in the affected eye daily on days 3 – 7
    NOTE: More expensive and challenging to find than other alternatives options
    NOTE: A different agent should be considered for patient ≤ 1 year of age
- If corneal involvement or contact lenses wearer, consider one of the following more expensive alternatives with broader gram-negative coverage:
  - Ciprofloxacin 0.3% ophthalmic drops: instill 1 – 2 drops in affected eye 4 times daily
  - Ofloxacin 0.3% ophthalmic drops: Instill 1 – 2 drops in affected eye 4 times daily

NOTE: Ophthalmic ointments and solutions containing neomycin are usually avoided due to high incidence of allergic sensitization.

Gram Positive Antibiogram for Children's Mercy - 2020 (All Sources)

Children's Mercy Hospitals & Clinics - 2020 Antibiogram
Department of Pathology & Laboratory Medicine- Microbiology Laboratory

2020 Gram Positive Antibiogram (% Susceptible)

Organism	# of isolates tested	Ampicillin	Cefotaxime	Clindamycin	Erythromycin	Gentamicin[F]	Linezolid	Meropenem	Nitrofurantoin[+]	Oxacillin	Penicillin	Penicillin (Oral)	Rifampin[+]	Tetracycline	Trim/Sulfa	Vancomycin
Enterococcus faecalis	190	100	-	-	-	-	-	-	100	-	100	-	-	-	-	99
All Staphylococcus aureus	1175	-	-	82	54	99	100	-	97	69	0	-	100	94	95	100
MSSA	816	-	-	82	68	99	100	-	96	100	0	-	100	95	96	100
MRSA	359	-	-	83	23	99	100	-	100	0	0	-	100	94	94	100
Staphylococcus epidermidis	138	-	-	53	23	82	100	-	100	34	0	-	99	83	64	100
S. pneumoniae[*]	55	-	-	85	46	-	-	94	-	-	-	58§	-	-	-	100
Meningitis breakpoint		-	85†	-	-	-	-	-	-	-	58†	-	-	-	-	-
Non-meningitis breakpoint		-	98‡	-	-	-	-	-	-	-	98‡	-	-	-	-	-

[*] *S. pneumoniae* % susceptible was calculated using all isolates based on meningitis, nonmeningitis and oral breakpoints.
of *S.pneumoniae* isolates tested: Penicillin=52, Cefotaxime=55, Erythromycin=35, Clindamycin=52, Meropenem=18, Vancomycin=21
[†] Susceptible breakpoint for *S. pneumoniae* in patients with meningitis is ≤ 0.5 µg/mL for cefotaxime and ≤ 0.06 µg/mL for penicillin
[‡] Susceptible breakpoint for *S. pneumoniae* in patients with non-meningitis infections is ≤ 1 µg/mL for cefotaxime and ≤ 2 µg/mL for penicillin
[§] Susceptible breakpoint for *S. pneumoniae* is ≤ 0.06 µg/mL for penicillin when penicillin V is administered by the oral route
[+] Used only in combination for synergy and is not adequate therapy by itself.
[F] Antibiotics tested on UTI isolates only: *E. faecalis* (152), *S. aureus* (27), *S. epidermidis* (60)
(-) =No data available

Gram Negative Antibiogram for Children's Mercy - 2020 (All Sources)

Children's Mercy Hospitals & Clinics - 2020 Antibiogram
Department of Pathology & Laboratory Medicine- Microbiology Laboratory
2020 Gram Negative Antibiogram (% susceptible)

Organism	# of isolates tested	Amikacin [1]	Ampicillin	Amp/sulbactam [1]	Cefazolin [1]	Cefepime [1]	Ceftazidime [1]	Ceftriaxone [1]	Ciprofloxacin [1]	Gentamicin [1]	Meropenem [1]	Pip/tazo [1]	Tobramycin [1]	Trimeth/Sulfa [1]
Acinetobacter baumannii complex (includes **ALL** sources)	33	-	-	97	-	-	79	21	88	97	97	-	97	100
Citrobacter freundii (includes **ALL** sources)	39	100	IR	IR	IR	-	87	87	97	95	100	-	95	95
Klebsiella aerogenes^ (includes **ALL** sources)	25	100	IR	IR	IR	100	92	88	100	100	100	-	100	100
Serratia marcescens (includes **ALL** sources)	63	98	IR	IR	IR	97	94	89	100	100	100	-	94	97
Enterobacter cloacae (Non-urine sources **ONLY**)	68	100	IR	IR	IR	91[b]	87	85	100	100	100	-	100	100
Pseudomonas aeruginosa (Non-Urine sources **ONLY**)	171	99	-	-	93	94	-	96	93	98	96	96	96	-
Escherichia coli (Non-Urine sources **ONLY**)	203	100	32	43	53*	96[b]	71	68	75	83	100	91	83	73
Klebsiella oxytoca (Non-Urine sources **ONLY**)	48	100	IR	69	17*	97[b]	96	92	100	96	100	-	96	96
Klebsiella pneumoniae (Non-Urine sources **ONLY**)	75	99	IR	82	78*	93[b]	93	93	97	93	100	99	93	88
Proteus mirabilis (Non-Urine sources **ONLY**)	20	100	85	90	25*	100[b]	85	85	95	95	100	100	95	95

ESBL positive isolates: *E. coli* (10), *K. pneumoniae* (2), *K. oxytoca* (1)

^ *Klebsiella aerogenes*, formerly named *Enterobacter aerogenes*.

[1] Antibiotics tested on Non-Urine isolates only: *A. baumannii complex* (31), *C. freundii* (18), *K. aerogenes* (15), *S. marcescens* (59).

[a] Cefazolin susceptibility based off Kirby Bauer results: *E.coli* (129), *K. oxytoca* (48), *K. pneumoniae* (74), and *P.mirabilis* (16).

[b] Cefepime susceptibility based off Kirby Bauer results: *E. cloacae cpx* (47), *E.coli* (79), *K. oxytoca* (37), *K. pneumoniae* (59), and *P. mirabilis* (7)

IR = Intrinsic Resistance, (-) = No data available

E. coli, K. pneumoniae and P. mirabilis breakpoints differ for urine culture vs. cultures from all other sources. Please contact the Microbiology laboratory for more information.

Gram Negative Antibiogram for Children's Mercy - 2020 (URINE ONLY)

Children's Mercy Hospitals & Clinics - 2020 Antibiogram
Department of Pathology & Laboratory Medicine- Microbiology Laboratory
2020 Gram Negative - URINE ONLY- Antibiogram (% susceptible)

Organism	# of isolates tested	Ampicillin	Amox/clav	Cefazolin	Cefepime	Ceftazidime	Ceftriaxone	Ciprofloxacin	Gentamicin	Nitrofurantoin	Tobramycin	Trimeth/Sulfa
Enterobacter cloacae	34	IR	IR	IR	-	94	88	97	97	44	97	97
Pseudomonas aeruginosa	65	-	-	-	95	95	-	97	95	-	97	-
**Escherichia coli*	1433	61	88	96	-	99	99	95	94	98	95	78
Klebsiella oxytoca	44	IR	94	10	-	100	100	100	97	97	97	100
**Klebsiella pneumoniae*	92	IR	95	97	-	99	99	99	100	31	100	90
**Proteus mirabilis*	98	88	97	98	-	100	100	98	95	IR	95	87

ESBL positive isolates: *E. coli* (48), *K. pneumoniae* (4), *K. oxytoca* (4)

IR = Intrinsic Resistance, (-) = No data available

**E. coli*, *K. pneumoniae and P. mirabilis* breakpoints differ for urine culture vs. cultures from all other sources. Please contact the Microbiology laboratory for more information.

Cumulative Anaerobic Antibiogram- 2018 (NOT Children's Mercy Specific)

2018 Clinical Laboratory Sciences Institute Anaerobic Antibiogram#												
Organism	Number of isolates	Ampicillin/sulbactam (% susceptible)	Number of isolates	Piperacillin/tazobactam (% susceptible)	Number of isolates	Meropenem (% susceptible)	Number of isolates	Penicillin (% susceptible)	Number of isolates	Metronidazole (% susceptible)	Number of isolates	Clindamycin (% susceptible)
Bacteroides fragilis	129	84	1030	96	1505	93	-	-	1140	100	1013	26
Prevotella spp.	29	97	63	100	92	98	63	100	92	99	29	69
Fusobacterium spp.	20	100	55	96	20	100	-	-	75	95	75	77
Cutibacterium acnes	-	-	18	100	-	-	-	-	18	0	17	53
Anaerobic gram positive cocci*	-	-	1853	99	1647	100	1647	100	1692	100	1826	97

Data adapted from CLSI M100-29; Isolates collected from six US hospitals from 2013-2016 – **not CM specific**

*Anaerobic gram positive cocci includes *Peptostreptococcus, Peptococcus, Finegoldia, Peptoniphilus,* and *Anaerococcus*

Dosing of amoxicillin-clavulanate

NOTE: Dosing of amoxicillin-clavulanate (Augmentin™) is based on amoxicillin component. "High dose" of amoxicillin-clavulanate is targeted at providing higher amoxicillin doses to overcome *Streptococcus pneumoniae* resistance while maintaining clavulanate exposure to ≤ 10 mg/kg/day)

General Guidelines for Amoxicillin-Clavulanate Dosage Formulations			
Indication		**< 40 kg**	**≥ 40 kg**
Infection in < 3 months of age	**Formulation**	Augmentin™ Suspension: 250 mg-62.5 mg/5mL **OR** 125 mg-31.25mg/5mL	Not applicable
	Usual Dosing	30 mg/kg/day divided twice daily	
"Standard Dose" Less severe infections (≥ 3 months of age)	**Formulation**	Augmentin™ suspension: 400 mg-57mg/5mL	Augmentin™ Tablet: 500mg-125mg **OR** 875mg-125mg Augmentin™ Suspension: 400 mg-57mg/5mL
	Usual Dosing	25 – 45 mg/kg/day divided twice daily	500 – 875 mg twice daily
"High Dose" Otitis media, pneumonia, sinusitis (≥ 3 months of age)	**Formulation**	Augmentin™ ES Suspension: 600 mg-42.9mg/5mL	Augmentin™ XR Tablet: 1000mg-62.5mg **OR** Augmentin™ ES Suspension: 600 mg-42.9mg/5mL
	Usual Dosing	80 – 100 mg/kg/day divided twice or three times daily	2000 mg twice daily 1000 mg three times daily - *using oral suspension only*
**Prescribing practices may deviate from these guidelines depending on clinical factors (e.g. location of infection, bacterial susceptibility, patient characteristics, etc). Please consult a pharmacist or Antimicrobial Stewardship for additional assistance in selecting formulations.			

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Notes:

Do not hesitate to reach out to infectious diseases in case of doubt!
Questions/comments, please email **relfeghaly@cmh.edu** **or** **anburns@cmh.edu**.

Last Updated 6/28/2021