Acute Otitis Media (AAP guidelines 2013)

This care process model was developed by the AOM OI Team and ASP, 11/2018

Criteria for diagnosis of AOM:
- Middle ear effusion
- PLUS one of the following:
  - new onset bulging of TM
  - mild bulging of TM and 48 hours of otalgia
  - moderate/severe bulging of TM

Non-severe symptoms:
- Mild otalgia <48 hours
- Temperature < 39°C (102.2°F)

What is the patient's severity of symptoms?

Severe signs/symptoms:
- Moderate/Severe otalgia
- Temperature ≥ 39°C (102.2°F)
- Otolgia ≥ 48 hours

Initiate antibiotics x 10 days

Watchful waiting (WW) / Safety-net antibiotic prescription (SNAP) or initiate antibiotics

Antibiotic duration for amoxicillin, amoxicillin/clavulanate, cefuroxime, cefdinir, cefpodoxime, and clindamycin:
- <2 years of age OR severe AOM OR chronic AOM OR recurrent AOM OR TM perforation = 10 days
- 2-6 years of age with non-severe symptoms = 7 days
- ≥ 6 years of age with non-severe symptoms = 5-7 days
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Dosing of antibiotics found in algorithm:
- Amoxicillin 40-50 mg/kg/dose PO BID (max 2000 mg/dose)
- Amoxicillin/clavulenate 40-50 mg/kg/dose (amoxicillin component) PO BID (max 2000 mg amoxicillin component /dose)
- Cefuroxime 15 mg/kg/dose PO BID (max 500 mg/dose) (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)
- 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/clavulenate, cefuroxime, cefdinir, cefpodoxime, and clindamycin:
- <2 years of age OR severe AOM OR chronic AOM OR recurrent AOM OR TM perforation = 10 days
- 2-6 years of age with non-severe symptoms = 7 days
- >6 years of age with non-severe symptoms = 5-7 day
The above algorithm is for a previously healthy child with no conditions that may alter the natural course of AOM (i.e. tympanostomy tubes, anatomic abnormalities (i.e. cleft palate), genetic conditions with craniofacial abnormalities, immunodeficiencies or cochlear implants).

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
*** If using SNAP, please place a comment in prescription instructions (fill upon patient 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 component/dose) (use Augmentin ES-600™ 600mg/42.9mg/5mL for liquid. For pills, use 875 mg or 1000 mg XR tablets)
  - Mild/moderate penicillin allergy (e.g. rashes including hives):
    - Cefuroxime 15 mg/kg/dose PO BID (max 500 mg/dose) (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)
    - Ceftriaxone 50 mg/kg/dose IM/IV qDay x 1-3 days (max 1000 mg/dose)
  - Severe penicillin allergy (e.g. anaphylaxis):
    - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)

- Failure to improve after 48-72 hours of initial antibiotic:
  - Treatment failure with amoxicillin
    - Amoxicillin/clavulanate 40-50 mg/kg/dose (amoxicillin component) PO BID (max 2000mg amoxicillin component/dose) (use 600 mg ES form for liquid. For pills, can use 875mg tablet OR XR 1000 mg tablets)
  - 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 (in the setting of an AOM with a perforated tympanic membrane)**
  The following could be considered IN ADDITION TO SYSTEMIC ANTIBIOTICS
  - Ciprodex® (Ciprofloxacin 0.3% - Dexamethasone 0.1%) otic suspension (4 drops instilled into affected ear twice daily for 7 days for patients older than 6 months)
  - Ofloxacin otic solution (Instill 5 drops into affected ear twice daily for 10 days for children older than 6 months)
*** The above otic drops may be used alone for otitis externa or ear tubes
*** If otic drops on shortage, can use ophthalmic drops
Group A Streptococcal pharyngitis (IDSA guidelines 2012)

Please refer to CPG for testing algorithm:
https://www.childrensmercy.org/Health_Care_Professionals/Medical_Resources/Evidence_Based_Practice/Pharyngitis/Algorithm/

Uncommon in children <3 years of age and children of any age with viral symptoms

- First Line:
  - Amoxicillin 50 mg/kg/dose PO qDay (daily max 1000 mg/day) x 10 days
  - Penicillin G benzathine IM once
    - ≤27 kg: 600,000 U
    - >27 kg: 1.2 million U
  - Penicillin VK
    - ≤ 27 kg: 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 25 mg/kg/dose PO BID (max 500 mg/dose) x 10 days
    - Note: 2nd and 3rd generation cephalosporins are not recommended due to unnecessarily broad spectrum
  - Severe penicillin allergy (e.g., anaphylaxis):
    - Clindamycin 10 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)

Please refer to CPG: [https://www.childrensmercy.org/Health_Care_Professionals/Medical_Resources/Evidence_Based_Practice/Community_Acquired_Pneumonia/Community_Acquired_Pneumonia/](https://www.childrensmercy.org/Health_Care_Professionals/Medical_Resources/Evidence_Based_Practice/Community_Acquired_Pneumonia/Community_Acquired_Pneumonia/)

- Duration: 5-7 days
- First line:
  - Amoxicillin 40-50 mg/kg/dose PO BID (max 2000 mg/dose)
- Alternative therapies:
  - Mild/moderate penicillin allergy (e.g. rashes including hives):
    - Cefuroxime 15 mg/kg/dose PO BID (max 500 mg/dose) (only available in tablets)
    - Cefpodoxime 5 mg/kg/dose PO BID (max 200 mg/dose)
    - Cefprozil 7.5-15 mg/kg/dose PO BID (max 500 mg/dose)
      ***Note: Cefdinir is NOT recommended for empiric treatment of CAP as it is less effective against Pneumococcus***
    - 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:
    - Levofoxacin 8-10mg/kg/dose PO BID (6 months – 5 years), once daily (≥ 5 years) (max 750mg/day)

- 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)

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

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Uncomplicated community-acquired pneumonia (IDSA guidelines 2011)

Please refer to CPG: [https://www.childrensmercy.org/Health_Care_Professionals/Medical_Resources/Evidence_Based_Practice/Community_Acquired_Pneumonia/Community_Acquired_Pneumonia/](https://www.childrensmercy.org/Health_Care_Professionals/Medical_Resources/Evidence_Based_Practice/Community_Acquired_Pneumonia/Community_Acquired_Pneumonia/)

- Duration: 5-7 days
- First line:
  - Amoxicillin 40-50 mg/kg/dose PO BID (max 2000 mg/dose)
- Alternative therapies:
  - Mild/moderate penicillin allergy (e.g. rashes including hives):
    - Cefuroxime 15 mg/kg/dose PO BID (max 500 mg/dose) (only available in tablets)
    - Cefpodoxime 5 mg/kg/dose PO BID (max 200 mg/dose)
    - Cefprozil 7.5-15 mg/kg/dose PO BID (max 500 mg/dose)
      ***Note: Cefdinir is NOT recommended for empiric treatment of CAP as it is less effective against Pneumococcus***
    - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)
  - Severe penicillin allergy (e.g. anaphylaxis)/ cephalosporin allergy:
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  - Severe penicillin allergy / cephalosporin allergy AND intolerance of clindamycin:
    - Levofoxacin 8-10mg/kg/dose PO BID (6 months – 5 years), once daily (≥ 5 years) (max 750mg/day)

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

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Outpatient ASP handbook

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Acute bacterial rhinosinusitis (ABRS) (AAP guidelines 2013)

Presumptive diagnosis of ABRS:
1. Persistent illness (i.e. nasal discharge), daytime cough or both lasting >10 days without improvement.
   OR
2. Worsening course (i.e. worsening or new onset nasal discharge, daytime cough or fever) after initial improvement.
   OR
3. Severe onset (i.e. concurrent fever ≥39°C/102.2°F) AND purulent nasal discharge for at least 3 days.

Diagnosis of acute bacterial rhinosinusitis

Allergy to beta lactams

No

Consider age, severity of symptoms, daycare attendance and recent antibiotic exposure

Yes

Mild/moderate symptoms AND Does not attend daycare AND No antibiotic treatment in past 30 days AND ≥ 2 years of age

High dose Amoxicillin

Mild-moderate symptoms AND Attends daycare OR Received antibiotic treatment in past 30 days OR < 2 years of age

High dose Amoxicillin/clavulanate

Severe symptoms

Clindamycin PLUS Cefpodoxime OR Cefuroxime OR Cefixime

Levofloxacin

If patient is immunocompromised, consult on-call Infectious Diseases
**Acute bacterial rhinosinusitis (ABRS)**

### Diagnosis
- Presumptive diagnosis of ABRS can be made if patient with acute URI presents with:
  - Persistent illness (i.e. nasal discharge, daytime cough, or both lasting >10 days without improvement)
  - OR
  - Worsening course after initial improvement (i.e. worsening or new onset nasal discharge, daytime cough or fever)
  - OR
  - 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
  - Treatment should continue for at least 7 days after resolution of symptoms
- **First line:**
  - Mild-moderate disease, does not attend daycare, has not received antibiotics within past 30 days, and ≥ 2 years of age (*Note: ABRS is uncommon in children < 2 years*)
    - Amoxicillin 40-50 mg/kg/dose PO BID (max 2000 mg/dose)
  - Severe disease OR mild-moderate disease AND any of the following: attends daycare, has received antibiotics within past 30 days, < 2 years of age:
    - Amoxicillin/clavulanate 40-50 mg/kg/dose (amoxicillin component) PO BID (max 2000 mg amoxicillin/dose) (use Augmentin ES-600™ 600mg/42.9mg/5mL for liquid. For pills, use 875 mg or 1000 mg XR tablets)
- **Alternative therapies:**
  - Mild/moderate penicillin allergy (e.g. rashes including hives):
    - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)
    - **PLUS one of the following cephalosporins:**
      - 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 OR 8 mg/kg/dose PO qDay (max 400 mg/day)
  - Severe penicillin allergy (e.g anaphylaxis)/ cephalosporin allergy:
    - Levofoxacin 10-20 mg/kg/dose PO qDay (for patients ≥ 5 years) OR 5-10 mg/kg/dose PO BID (for patients 6 months- 5 years) (daily max 500 mg/day)

***per AAP guidelines, 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***

***consider calling on-call infectious disease physician***
**Uncomplicated Urinary Tract Infection in children >2 years** (no fever, vomiting or flank pain. Well appearing. No concern for possible pyelonephritis)

- If history of UTIs, empiric therapy should be based on previous microbiology if available
- Duration:
  - Adolescents: 3 days
  - Younger children: 5-7 days
- First line:
  - Cephalexin 17-25 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 component/dose)
- Severe penicillin allergy (e.g. anaphylaxis) / cephalosporin allergy:
  - TMP/SMX 3-6 mg/kg/dose (trimethoprim component) PO BID (max 160 mg TMP/dose)
  - Nitrofurantoin
    - Macrocystal (Macrobid®) 100 mg PO BID FOR ADOLESCENTS ONLY

*Note: Cefdinir should not be used for UTI due to poor urine concentration*

**Pyelonephritis, febrile Urinary Tract Infection, and children 2-24 months of age** (AAP guidelines 2011)

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

**Evaluate need for admission**

- Duration: 10-14 days
- First line:
  - Cephalexin 25-33 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 (amoxicillin component) PO TID (max 500 mg amoxicillin component/dose)
- 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)
  - Ciprofloxacin 5-10 mg/kg/dose PO BID (max 500 mg/dose)

*Note: Cefdinir should not be used for UTI due to poor urine concentration*
Skin and soft tissue infections (IDSA guidelines 2014)

- **Impetigo**
  - Mild cases with few lesions
    - Topical mupirocin TID x 5 days
    - Topical retapamulin BID x 5 days
  - Numerous lesions or outbreaks involving several patients
    - Duration: 5-7 days
    - First line treatment:
      - Cephalexin 9-17 mg/kg/dose PO TID (max 250 mg/dose) x 5-7 days
    - Alternative therapies:
      - Amoxicillin/clavulanate 15 mg/kg/dose (amoxicillin component) PO TID (max 875 mg/dose) x 5-7 days
      - If MRSA suspected or confirmed (i.e. personal or family history of MRSA) AND/OR severe penicillin allergy/ cephalosporin allergy:
        - Clindamycin 10 mg/kg/dose PO TID (max 600 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 GAS***

- **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 of MRSA):
    - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)

- **Abscess**: Drainage with cultures AND
  - Duration: 5-7 days
  - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)
  - OR TMP-SMX 4-6 mg/kg/dose (trimethoprim component) PO BID (max 160 mg TMP/dose)

Animal/Human bite

- **Duration:**
  - Prophylaxis (for moderate to severe wounds with edema or crush injury, puncture wounds, facial bite wounds): 3 days
  - Treatment: 5-10 days

- **First line:**
  - Amoxicillin/clavulanate 22.5 mg/kg/dose (amoxicillin component) PO BID (max 875 mg/dose)

- **Penicillin allergy:**
  - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose) **PLUS** TMP-SMX 5 mg/kg (trimethoprim component) PO BID (max 160 mg TMP/dose)
**Dental abscess**
Assess for complicated infection (ill-appearing, signs of deep neck space infection, osteomyelitis of the mandible)

- 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 17 mg/kg/dose (amoxicillin component) PO TID (max 600 mg/dose)
- If buccal involvement AND/OR penicillin allergy:
  - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose)

Refer to dentist for F/U within 7 days. May contact Children’s Mercy Dental Clinic for “emergency” appointment if unable to see dentist within 7 days.

**Acute lymphadenitis**

- First line:
  - Cephalexin 17-25 mg/kg/dose PO TID (max 4 gram/day) x 7-10 days
- Alternative therapies:
  - Amoxicillin/clavulanate 22.5 mg/kg/dose (amoxicillin component) PO BID x 7-10 days (max 875 mg/dose)
- If concern for MRSA (i.e. personal or family history of MRSA) AND/OR severe penicillin allergy/cephalosporin allergy:
  - Clindamycin 10 mg/kg/dose PO TID (max 600 mg/dose) x 7-10 days
- If concern for *Bartonella henselae* (treatment may shorten duration of adenopathy):
  - Azithromycin 12 mg/kg PO qDay (max 500 mg/dose) x 5 days
Do not hesitate to reach out to infectious diseases in case of doubt!
If you have questions or comments, please email relfeghaly@cmh.edu

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