

AHRQ Safety Program for Telemedicine: Improving Antibiotic Use

Best Practices in Managing Acute Otitis Media in Children Over Telemedicine



Objectives

By the end of this presentation, participants will be able to—

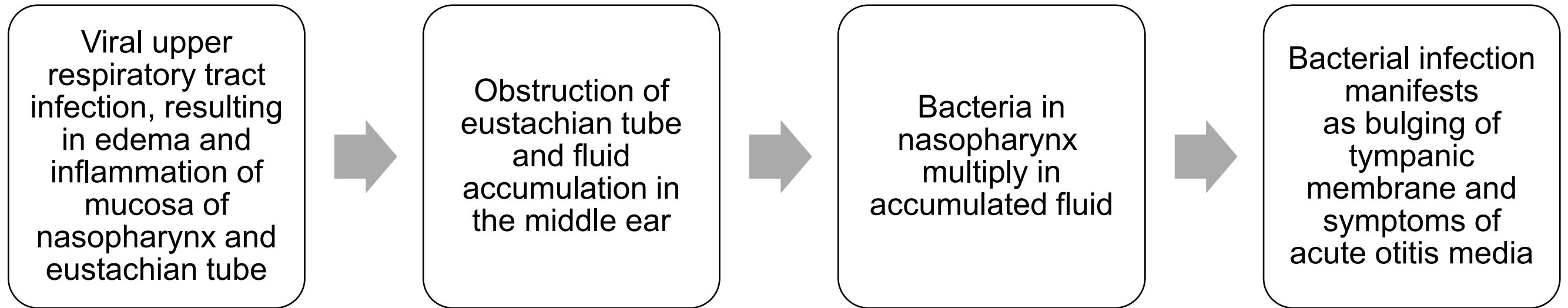
- Describe how to manage acute otitis media in a child over telemedicine
- Understand when a child with potential acute otitis media may need to be examined in person
- Discuss the role of antibiotics and other therapeutic options for acute otitis media



Acute Otitis Media

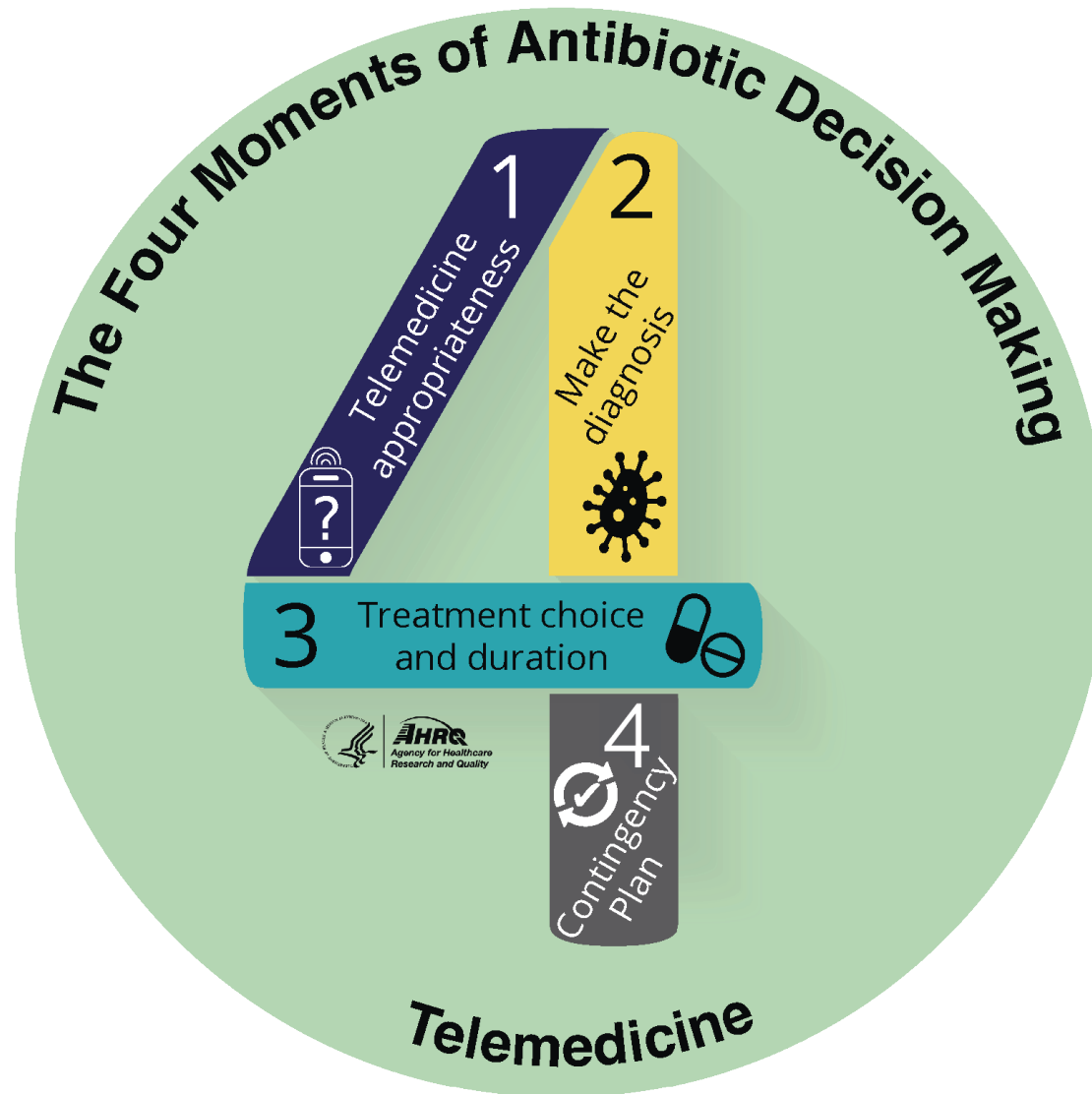
- Moderate to severe bulging of the tympanic membrane or new-onset ear drainage (i.e., otorrhea), usually with ear pain and fever¹
- Most common bacterial pathogens:^{2,3}
 - Nontypeable *Haemophilus influenzae*: 50 percent of cases
 - *Streptococcus pneumoniae*: 25 percent
 - *Moraxella catarrhalis*: 15 percent
- Therapy primarily targets *S. pneumoniae* as it is associated with a greater likelihood of complications such as bacteremia, mastoiditis, and meningitis

Acute Otitis Media Pathophysiology^{4,5}



- Increased prevalence of otitis media at younger ages
 - Younger children have shorter and more horizontal eustachian tubes compared to older children and adults, facilitating fluid accumulation

The Four Moments of Antibiotic Decision Making



1. Is my patient an appropriate candidate for a telemedicine visit?
2. Does my patient have signs and symptoms indicating an infection that may require antibiotics? Is a diagnostic test needed?
3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe?
4. What symptomatic relief should I offer or prescribe to my patient? What should I tell my patient about the expected course and the followup plan?

Case Presentation

- Previously healthy 3-year-old
- Two days of poor sleep
- Increased fussiness
- Complains right ear hurts
- Generally, feels “very warm”
- Mother requesting antibiotics



Moment 1: Telemedicine Appropriateness

- It is reasonable to see children with concerns for acute otitis media via telemedicine **UNLESS—**
 - Under 2 years of age (or under the age limit your practice allows for virtual visits)
 - Triage form suggests patient appears ill (e.g., lethargic, inconsolable) or has signs concerning for suppurative complications of acute otitis media (postauricular swelling or erythema, meningismus, focal neurologic deficits)
- It is reasonable to have a low threshold to refer a child over 2 years of age who does not appear ill for an in-person visit if—
 - Incomplete receipt of primary *Streptococcus pneumoniae* or *Haemophilus influenzae* vaccine series
 - Known underlying immune compromise

Moment 2: History

The following are important to ask about:

- Lethargy
- Lack of interest in drinking any fluids
- Persistent emesis
- Confusion
- Difficulty breathing
- Fever >102 degrees Fahrenheit
- Difficulty moving head
- Pain with movement of neck
- Asymmetrical earlobes
- Pain with urination – suggestive of a urinary tract infection
- Abdominal pain – suggestive of appendicitis or other intra-abdominal process

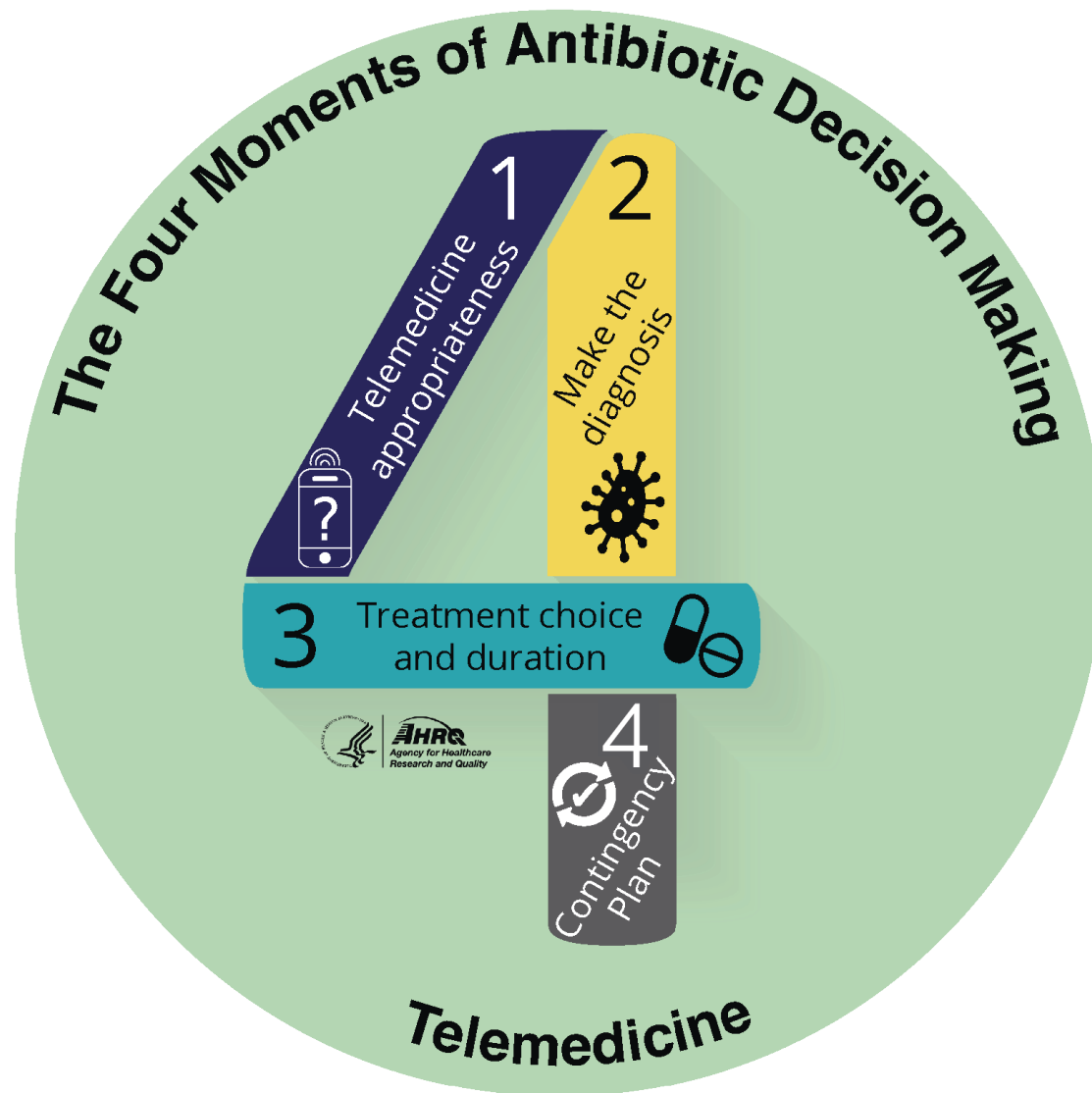


Moment 2: Physical Exam

Ask the mother to remove child's shirt and point the camera toward the child so you can conduct a physical examination

- Check general appearance
- Observe chest movements
- Ask to turn head from side to side and up and down to check for pain with movements or palpitation of the neck
- Ask the mother to—
 - Zoom in and out of both ears
 - Touch the area behind each earlobe over the mastoid bone
 - Take temperature if thermometer available

Moment 3



1. Is my patient an appropriate candidate for a telemedicine visit?
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3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe?

Decision to Prescribe Antibiotic Therapy⁶⁻⁷

Age	Otorrhea With Acute Otitis Media (AOM)	Unilateral or Bilateral AOM With Severe Symptoms	Bilateral AOM Without Otorrhea and Without Severe Symptoms	Unilateral AOM Without Otorrhea and Without Severe Symptoms
<6 months	Antibiotics	Antibiotics	Antibiotics	Antibiotics
6 months to <2 years	Antibiotics	Antibiotics	Antibiotics	Antibiotics or observation
2 years and older	Antibiotics	Antibiotics	Consider observation	Antibiotics or observation

Antibiotic Indications for Acute Otitis Media⁶⁻⁸

- Current case: 3-year-old child
 - Lack of severe symptoms and ear drainage – reasonable to hold off on antibiotics after shared antibiotic decision making
 - If he had presented with severe symptoms (e.g., high fever $\geq 102^{\circ}\text{F}$, lethargy), immediate in-person visit should be recommended



Selecting Among Antibiotics^{6-7,9}

- ***First-line treatment***
 - High-dose amoxicillin (45 mg/kg per dose of amoxicillin every 12 hours)
 - No additional need for topical antibiotic ear drops
 - High-dose amoxicillin-clavulanate is first line if recent amoxicillin use (within 30 days), concurrent purulent conjunctivitis, or history of recurrent otitis media unresponsive to amoxicillin
- ***First-line treatment in case of penicillin allergy***
 - Nonsevere allergy: Oral second- or third-generation cephalosporins (cefuroxime or cefdinir) or intramuscular ceftriaxone (requires in-person visit)
 - Severe allergy: Levofloxacin



Duration of Therapy if Decision is Made to Prescribe Antibiotics for Acute Otitis Media^{6-7,9}

Children <2 years of age

- 10-day antibiotic course recommended

Child 2–5 years

- 7-day antibiotic course recommended

Child 6 years and older

- 5- to 7-day antibiotic course recommended

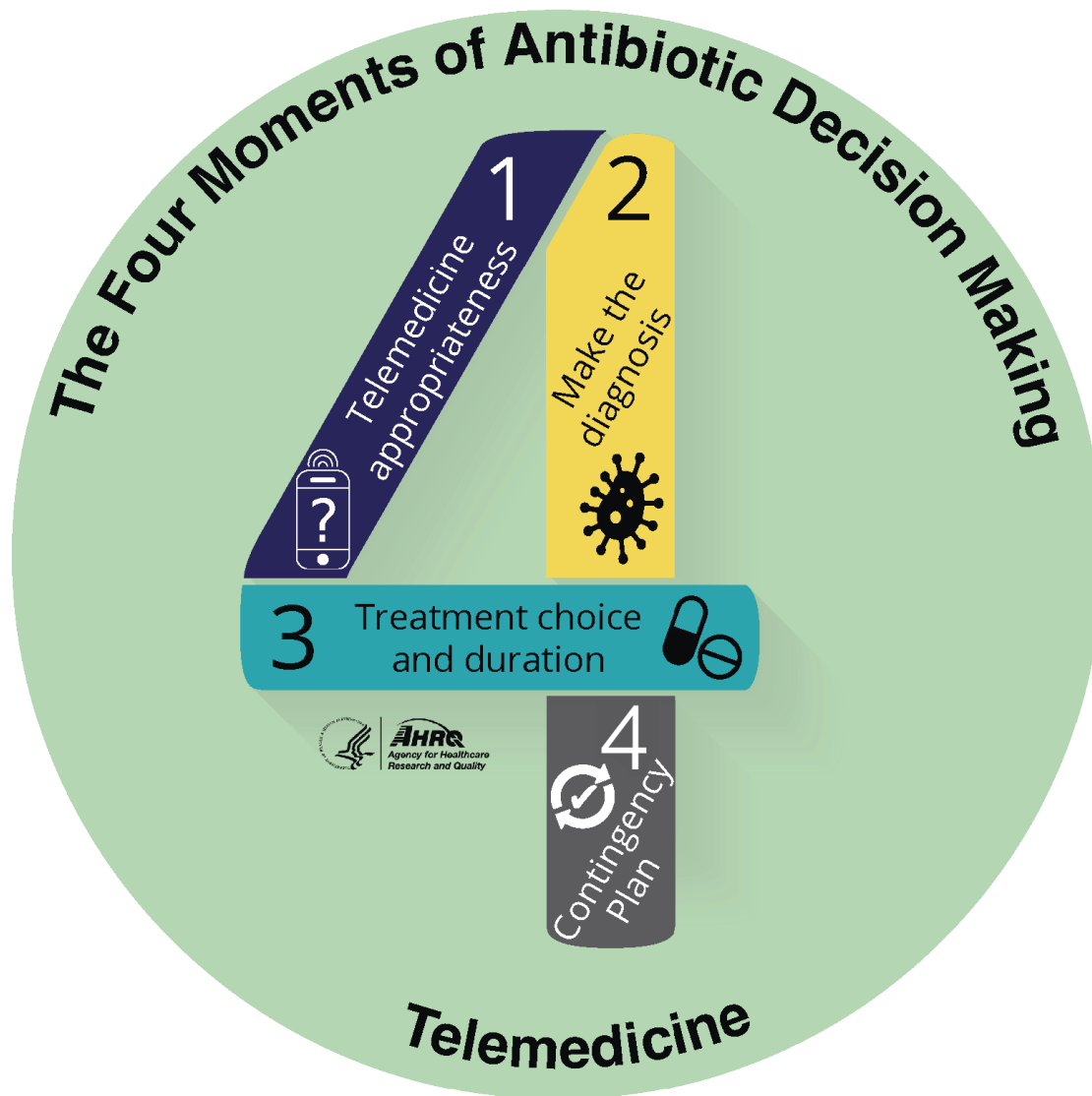
Durations according to American Academy of Pediatric recommendations, for when a decision to treat with antibiotics is made.

Additional Diagnostic Tests

- Case presentation: 3-year-old child
 - No indication to refer for a culture of the ear discharge (otorrhea)
 - Exceptions
 - Failure of multiple courses of antibiotic therapy
 - Concern for antibiotic-resistant bacteria



Moment 4



1. Is my patient an appropriate candidate for a telemedicine visit?
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4. What symptomatic relief should I offer or prescribe to my patient? What should I tell my patient about the expected course and the followup plan?

Symptomatic Relief

- Always address pain control
- Ibuprofen or acetaminophen can help alleviate symptoms of ear pain or fever
- Discuss plan to control the pain until the ear pain resolves even if antibiotics not prescribed



What To Expect and Followup Plan^{1,6,10}

- Clinical symptoms should begin improving within 48–72 hours regardless of whether antibiotics are prescribed or an observation strategy is chosen
 - If a watchful waiting approach is used, a rescue antibiotic should be initiated if symptoms worsen at any time or fail to improve within 48–72 hours
- Ear pain and body temperature should return close to normal within 72 hours of antibiotic initiation
- Persistent middle-ear effusion may be present in 60–70 percent of children for a few weeks following an episode of otitis media
- Patients should seek medical attention if symptoms worsen or fail to improve within the next 48–72 hours from the telemedicine visit

When To Go to an Emergency Department?

- Worsening, severe symptoms warrant a prompt emergency department visit
 - Becoming confused
 - Lethargic/increasingly tired
 - Emesis
 - Ill appearing
 - Tender post-auricular mass or protrusion of the earlobe



Take-Home Messages

✓ Virtual visit

- Appropriate for a verbal child following a comprehensive review of systems, of the medical history, and a virtual physical examination
- Appropriate to manage virtually even if suggestive of otitis media so long as the child is generally well appearing

✓ In-person visit

- Recommended for young children with concerns for ear pain, generally under 3 years who are not fully verbal
- Enables examination of the ear drum and evaluation for alternative invasive bacterial diagnoses

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