

Pediatrics Small Group Activity (Facilitator Notes)

Curriculum for Antimicrobial Stewardship

Facilitator instructions:

- Read through the facilitator notes and make note of discussion points for each scenario

Objectives:

At the completion of this small group activity, the learner should be able to:

1. Identify strategies to reduce unnecessary antimicrobial use in children with otitis media
2. Distinguish Acute Otitis Media (AOM) from Otitis Media with Effusion (OME)
3. Discuss the appropriate antimicrobial treatment of AOM in children
4. Discuss the rational approach to antibiotic use for respiratory infections in children
5. Discuss techniques that can be used with parents who demand antibiotics

Case Scenario #1: You are in the Pediatrics outpatient clinic seeing Rachel, an otherwise healthy 16-month-old girl. Her parents tell you that she has had fevers to 103°F and irritability, which started yesterday. She has been pulling at her right ear. Her parents are concerned that she has an ear infection and needs antibiotics. Describe the physical exam techniques you would use as well as the clinical findings you would expect to find if Rachel were to have a certain diagnosis of acute otitis media.

When evaluating a pediatric patient in whom you are concerned about Acute Otitis Media (AOM), it is important to differentiate AOM from Otitis Media with Effusion (OME) as this can be an important tool to promote appropriate antibiotic use. A pneumatic otoscopy or tympanometry should always be performed. If the patient does not have an effusion, the patient does not have AOM or OME. If the patient has a history of acute onset of signs and symptoms of AOM (such as ear pain, fever, and bulging yellow or red TM), with the presence of middle ear effusion (indicated by bulging of the TM or limited/absent TM mobility or otorrhea or air-fluid level), with signs or symptoms of middle-ear inflammation (indicated by distinct erythema of the TM or distinct otalgia), then antibacterial therapy should be initiated in a child of any age with severe symptoms. Severe symptoms of AOM are defined by the American Academy of Pediatrics as moderate or severe otalgia or otalgia for at least 48 hours or temperature 39°C (102.2°F) or higher. Other indications for antibiotic treatment in children between 6 and 24 months of age would be bilateral otitis media with mild to moderate symptoms or failure to improve after 48-72 hours of observation without antibiotics.

OME is characterized by the presence of effusion (including immobility of the tympanic membrane) without signs or symptoms of acute infection. Nonspecific signs and symptoms (rhinitis, cough, diarrhea) are often present. Antibiotic treatment has not been demonstrated to be effective in long-term resolution of OME. A single course of treatment for 10-14 days may be used when a parent or caregiver expresses a strong aversion to impending surgery.

Case Scenario #2: You are in the Pediatrics outpatient clinic seeing Ella, an otherwise healthy 5-year-old girl. Her mother tells you that she had a sudden onset of fevers up to 100.8°F and rhinorrhea 2 days. Ella started complaining that her left ear was hurting 2 days ago as well. Her mother has heard about antibiotic-resistant bacteria on the news and tells you that she only wants her daughter to take antibiotics if they are absolutely necessary. On exam, you note a bulging, erythematous left tympanic membrane with limited mobility. Under what circumstances would observation be an appropriate treatment strategy in patients with acute otitis media?

This patient has a certain diagnosis of AOM (She has a rapid onset of symptoms, signs of middle ear effusion, and signs/symptoms of middle ear inflammation). The management should include an assessment of pain. If pain is present, the clinician should recommend treatment to reduce pain. With regard to antibacterial therapy, an observation approach is appropriate in children over the age of 2 years with a diagnosis of AOM and mild to moderate symptoms if follow-up can be ensured and the illness is not severe (see chart below). Nonsevere illness is mild otalgia and fever <39°C in the past 24 hours. Severe illness is moderate to severe otalgia or fever > 39°C. If the patient fails to respond to the initial management option within 48-72 hours, clinician must reassess to confirm AOM and exclude other causes of illness. If AOM is confirmed in a patient initially managed with observation, then antibacterial therapy should be initiated. If AOM is confirmed in a patient initially managed with an antibacterial agent, the agent should be changed.

Age	Severe Symptoms	Mild symptoms
<6 mo	Antibacterial therapy	Antibacterial therapy
6 mo -2 yr	Antibacterial therapy	Antibacterial therapy if bilateral ear involvement; Observation option if unilateral
≥ 2 yr	Antibacterial therapy	Observation option

Case Scenario #3: You are in the Pediatrics outpatient clinic seeing Francis, an otherwise healthy 4-year-old boy. His parents tell you that he has had fevers to 100.4°F, cough, rhinorrhea and several loose stools over the past 2 days. On physical examination, you note bilateral tympanic membrane immobility, but no erythema or air-fluid levels. The remainder of the exam is benign. What is your presumptive diagnosis? What treatment strategy do you recommend?

This patient has otitis media with effusion (OME), which is characterized by the presence of bilateral middle ear effusions (tympanic membrane immobility) without signs or symptoms of acute middle ear infection. He also has non-specific signs and symptoms of low-grade fever, cough, rhinorrhea and diarrhea. Antibiotic treatment has not been demonstrated to be effective

in long-term resolution of OME. A single course of treatment for 10-14 days may be used when a parent or caregiver expresses a strong aversion to impending surgery.

Avoiding unnecessary treatment of OME would save up to 6-8 million courses of antibiotics each year.

Case Scenario #4: You are in the Pediatrics acute care clinic seeing Samuel, a 2-year-old child, who has been coughing over the past seven days. His mother states that he initially had a fever and rhinorrhea, but has not been febrile over the past 4 days. His rhinorrhea is improved. She is concerned because he has been ill for a week and is still coughing. The physical examination is benign. Should antibiotics be considered in this patient? What clinical parameters would prompt you to consider antibiotics?

This patient has a cough illness/bronchitis. These disease entities are principally caused by viral pathogens and antibiotic treatment is not warranted. Airway inflammation and sputum production are non-specific responses and do not imply a bacterial etiology. Antibiotic treatment of upper respiratory infections does not prevent bacterial complications such as pneumonia.

- *Do not use antibiotics for:*
 - *Cough <10-14 days in well-appearing child without physical signs of pneumonia.*
- *Consider antibiotics only for:*
 - *Suspected pneumonia, based on fever with focal exam, infiltrate on chest x-ray, tachypnea, or toxic appearance.*
 - *Prolonged cough (>10-14 days without improvement) may suggest specific illnesses (e.g. sinusitis) that warrant antibiotic treatment.*
 - *Treatment with a macrolide (erythromycin) may be warranted in the child older than 5 years when Mycoplasma pneumoniae or pertussis is suspected.*

Case Scenario #5: You are in the Pediatrics acute care clinic seeing Samantha, a 6-year-old child with a cough of five days duration. The patient initially had a fever to 102.5°F, rhinorrhea, conjunctivitis and diarrhea. These symptoms resolved after 3 days, but her cough has persisted. You suspect that she has had a viral illness, which is resolving; however, her parents are demanding antibiotics for her cough. What would you say to her parents? What techniques can you use to counsel parents and patients when they demand antibiotics?

When parents demand antibiotics, the following techniques are often effective: acknowledge the child's symptoms and discomfort, promote active management with non-pharmacologic treatments, give a realistic time course for resolution, and explain when the risks of using antibiotics outweigh the benefits. Share the Centers for Disease Control and Prevention and the American Academy of Pediatrics materials with parents to help them understand when the risks of antibiotic treatment outweigh the benefits. Materials can be found at:

<http://www.cdc.gov/getsmart/campaign-materials/brochures.html> and <http://www.cdc.gov/getsmart/campaign-materials/info-sheets/child-otitismedia.html>.

Resources:

- American Academy of Pediatrics and American Academy of Family Physicians, Subcommittee on Management of Acute Otitis Media. Diagnosis and management of acute otitis media. *Pediatrics* 2013;131(3)e965.
- American Academy of Family Physicians, American Academy of Otolaryngology-Head and Neck Surgery, American Academy of Pediatrics Subcommittee on Otitis Media with Effusion. Otitis media with effusion. *Pediatrics* 2004;113(5):1412-29.
- OBrien KL, Dowell SF, Schwartz B, Marcy SM, Phillips WR, Gerber MA. Cough illness/bronchitis principles of judicious use of antimicrobial agents. *Pediatrics* 1998;101:178-181.
- <http://www.cdc.gov/getsmart/campaign-materials/brochures.html>