



Virtual Pediatric Lecture Series:

**Clinical Practice Guidelines for the
Management of Acute and Chronic
Otitis Media**

Thursday, August 27, 2020 from 12:30 – 1:30 PM (PST)

WELCOME

DISCLOSURES RELEVANT TO POTENTIAL COMMERCIAL BIAS

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Pediatric Virtual Lecture Series:

Clinical Practice Guidelines for the Management of Acute and Chronic Otitis Media

Planning Committee Disclosures – *The following Planning Committee members have had no relevant financial relationships in the last 12 months with any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients:*

- Leslie Castelo
- Cristen Hemingway
- Mary Hickcox
- James D. Korb, MD

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- Gurpreet S. Ahuja, MD
- Jay Bhatt, MD
- Qiu Zhong, MD

Faculty Disclosures - *The following planner(s)/speaker(s) has had a financial relationship in the last 12 months with an entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients.*

- Kevin Huoh, MD, FAAP, FACS – *Educational Consultant for Smith & Nephew*
- Nguyen Pham, MD – *Educational Consultant for Smith & Nephew*

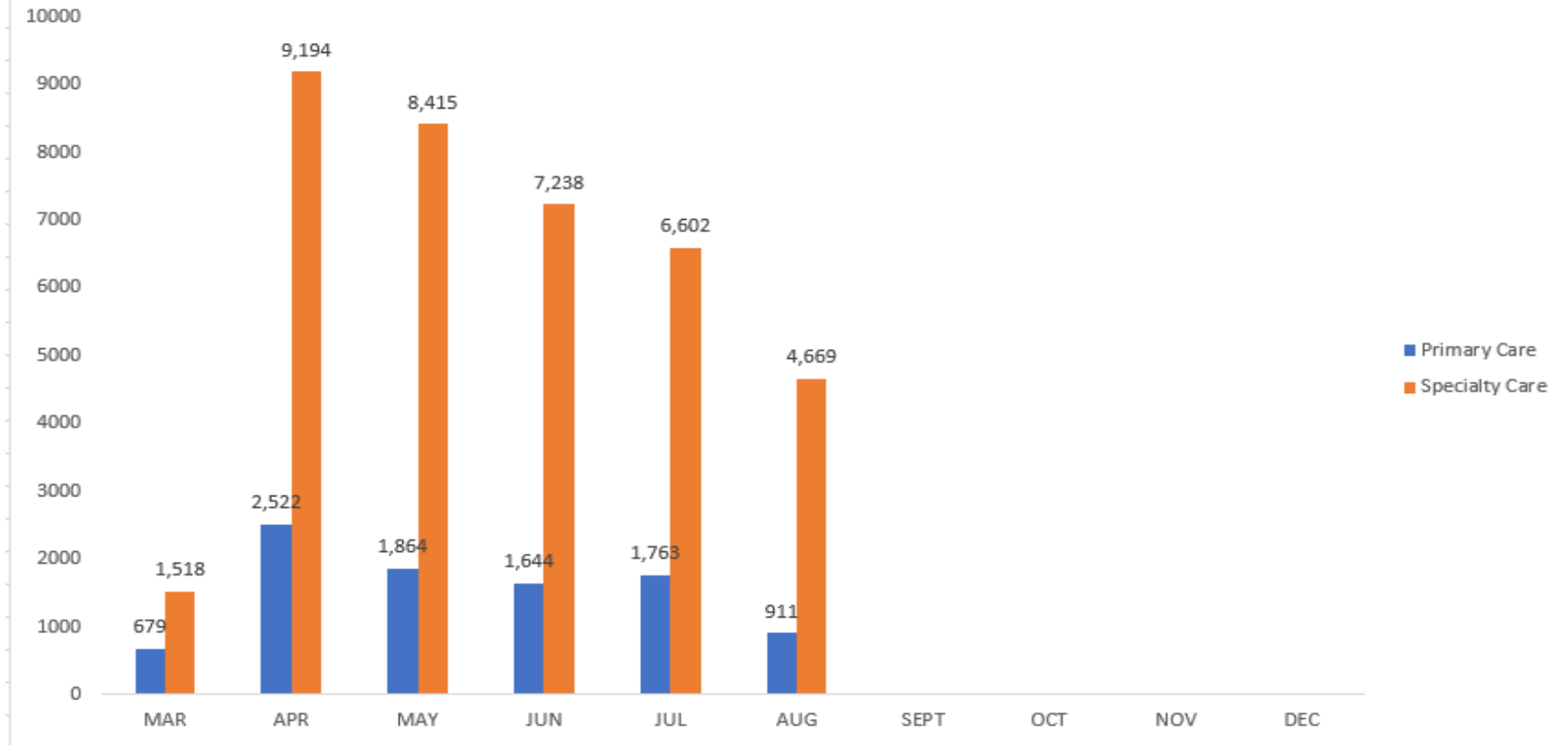
This conflict of interest has been resolved as follows: The financial relationship was researched. The presentation was peer reviewed and determined to be free of any bias favoring any specific commercial interest. Additionally, Dr. Huoh has agreed his presentation will 1) be free of any bias favoring any specific commercial interest, and comply with the ACCME Standards for Commercial Support; 2) be based on scientific methods and evidence generally accepted within the medical community; and, 3) include a balanced discussion of any commercial product or treatment, including favorable and unfavorable information. Alternate treatment options will be fairly discussed.

CME Planning Committee Disclosure -

This live activity was approved outside of the CME Committee. The following CME Committee members have had no relevant financial relationships in the last 12 months with any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients:

- Mary E. Hickcox
- James D. Korb, MD

TELEHEALTH ENCOUNTERS - 2020



CUMULATIVE	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Primary Care	679	2522	1864	1644	1763	911	0	0	0	0	9383
Specialty Care	1518	9194	8415	7238	6602	4669	0	0	0	0	37636
MONTHLY TOTAL	2197	11716	10279	8882	8365	5580					47019



Clinical Practice Guidelines for Acute and Chronic Otitis Media

CS Division of Pediatric Otolaryngology - Head and Neck Surgery
CHOC Children's

Gurpreet Singh Ahuja, MD

Nguyen S. Pham, MD

Kevin C. Huoh, MD

Jay M. Bhatt, MD

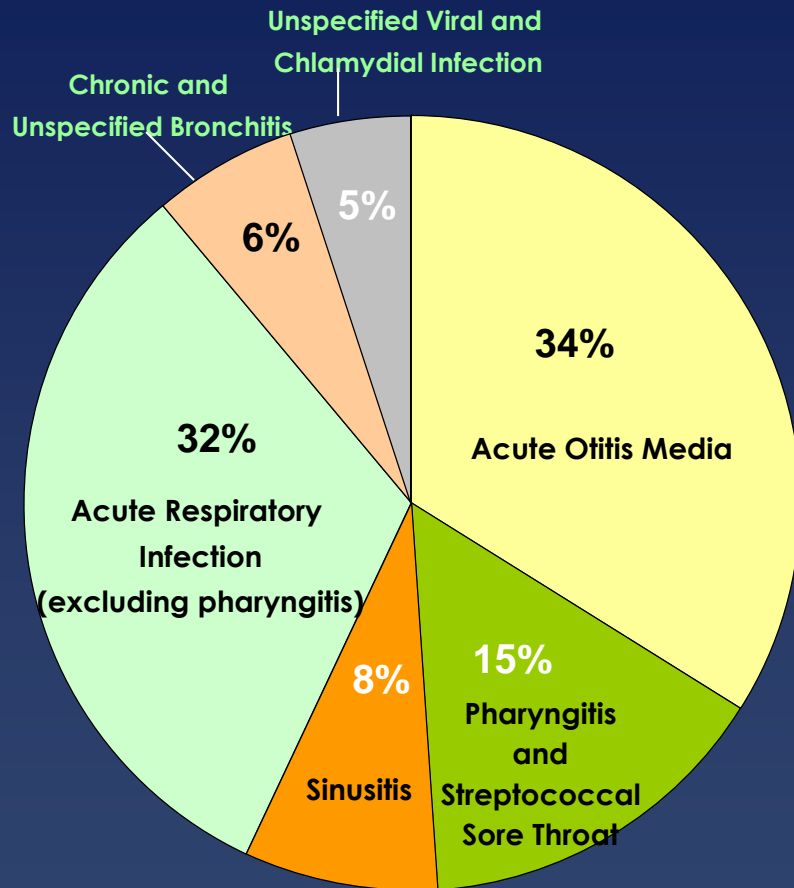
Qiu Zhong, MD

LEARNING OBJECTIVES

- Recognize the indications for antibiotic therapy and the recommended choice of antibiotics in the management of acute otitis media.
- Determine appropriate otolaryngology referral of a child for placement of ventilation tubes in the management of acute and chronic otitis media and discern the role of adenoidectomy in the management of otitis media.

Burden of Upper Respiratory Infections (URIs)

Prevalence and Economic Impact



■ URIs: a leading cause of acute morbidity and absenteeism (industrial and school) in the United States¹

■ Acute otitis media (AOM)

- 16 million visits in children under 15 y²
- Annual cost: approximately \$5 billion³

■ Acute bacterial rhinosinusitis (ABRS)

- 3.6 million visits in children under 15 y²
- Annual cost: approximately \$3.5 billion³

■ Pharyngitis

- 5.2 million visits in children under 15 y²

■ OME

- 2.2 million diagnoses of OME annually
- Annual cost: \$4.0 billion⁴

1. File TM Jr, Hadley JA. *Am J Manag Care*. 2002;8:713-727. 2. Schappert SM, Nelson C. National Ambulatory Medical Care Survey: 1995-96 summary. National Center for Health Statistics. *Vital Health Stat*. 1999;13(142). 3. Gates GA. *Otolaryngol Head Neck Surg*. 1996;114:525-530. 4. Shekelle P et al. Agency for Health Care and Quality publ. 2003 03-E023

Otitis Media

- Great deal of inaccuracy in making diagnosis
- Tremendous amount of misinformation about the correct management options for both AOM and OME
- Poor understanding of the definition of AOM vs OME and the natural course of each.

Otitis Media

Classification*

- Myringitis
- Acute (suppurative) otitis media (AOM)
 - rapid onset of signs and symptoms of ME inflammation
- Otitis media with effusion (OME)
 - presence of ME fluid w/o signs or symptoms of acute ear infection
- Chronic OME
 - OME persisting >3 mos (from date of onset, if known, or from DOD)
- Chronic suppurative otitis media (CSOM)

* Modified after The Task Force of the Fourth International Symposium on Otitis Media, Bar Harbour, FL; 1987

OM Classification

Recurrent AOM:

- Three or more well-documented and separate AOM episodes in the past 6 months or at least 4 well-documented and separate AOM episodes in the past 12 months with at least 1 in the past 6 months



Casselbrant ML, Kaleida PH, Rockette HE, et al. *Pediatr Infect Dis J.* 1992;11(4):278-286.

Acute Otitis Media

■ Epidemiology

- 50 - 70% of children have one or more episodes AOM by age 3 years
- 9 - 18% of children have three or more episodes AOM in the first year
- 33% of children have three or more episodes AOM by age 3 years



Improving Diagnosis Tympanic Membranes in Children

Normal



- Translucent/transparent
- Gray or pink color
- Neutral position
- Fully mobile with pneumatic otoscopy
- No effusion

AOM



- Opaque
- Red, yellow, or cloudy
- Bulging or full position
- Reduced mobility with pneumatic otoscopy
- Effusion present

Acute Otitis Media

Bullous Myringitis



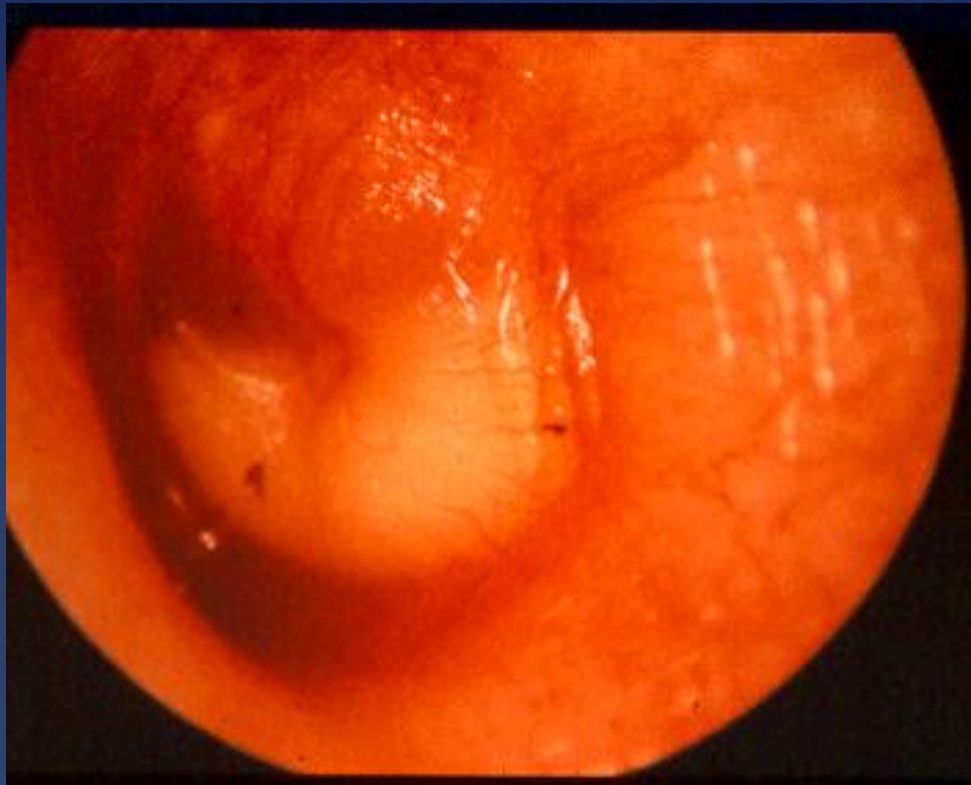
Acute Suppurative Otitis Media (AOM)

Early AOM



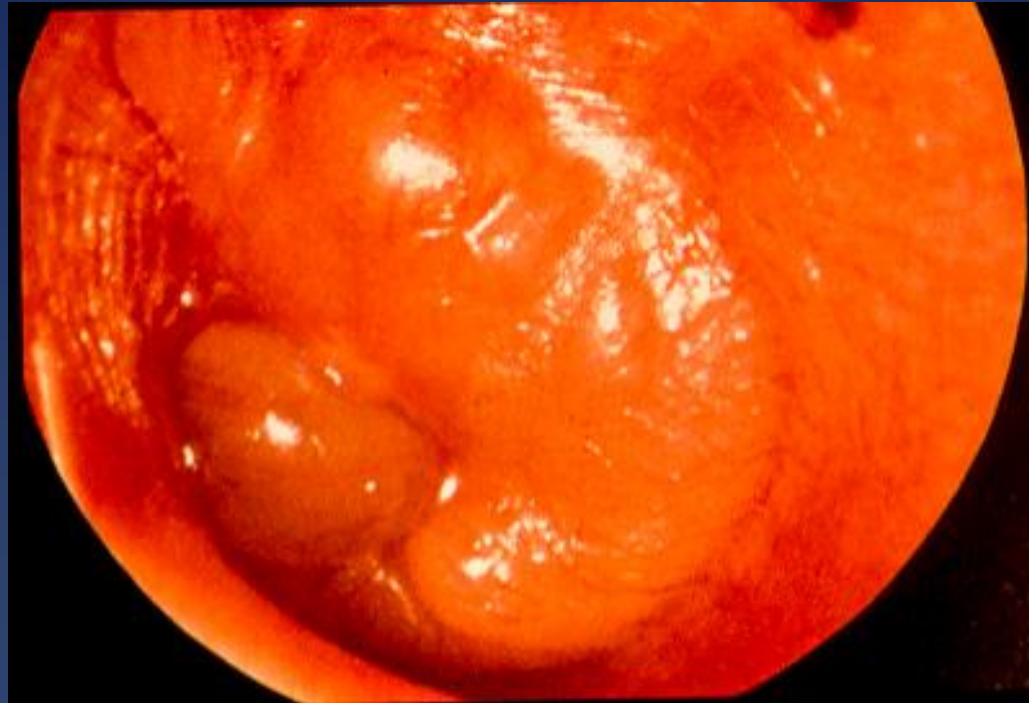
Acute Suppurative Otitis Media

Pus in middle ear



Acute Otitis Media (AOM)

Acute Suppurative Otitis Media (impending rupture)



Acute Otitis Media

- Principal Organisms:
 - *Hemophilus influenzae*
 - *Streptococcus pneumoniae*
 - *Moraxella catarrhalis*

 - Coliforms in the neonatal period

Acute Otitis Media

■ Risk factors

- male gender
- siblings with history of recurrent OM
- onset in early infancy (< 6 months)
- bottle feeding (breast feeding < 6 months)
- group day care
- passive smoke exposure
- Native Americans, Eskimos
- family history of atopy

Acute Otitis Media - treatment

■ Spontaneous rate of primary control - **81%**

■ Role of antibiotics

Increased rate of resolution to: **95%**

(Rosenfeld et al. J. Peds., 1994)

Acute Otitis Media (AOM)

■ 2013 Clinical Practice Guidelines:

Lieberthal AS et al. Pediatrics 2013; 131:e964-e999

- Primary goal was to update the 2004 AAP guideline by identifying and reviewing additional studies performed over the past decade.

Acute Otitis Media (AOM)

2013 Clinical Practice Guidelines:

■ Focuses on the diagnosis and management of uncomplicated AOM in healthy children **6 mos-12 yrs** without underlying disorders, such as:

- PET's
- Anatomic abnormalities such as cleft palate
- Genetic conditions with craniofacial abnormalities such as Down syndrome
- Immune deficiency
- Cochlear implant

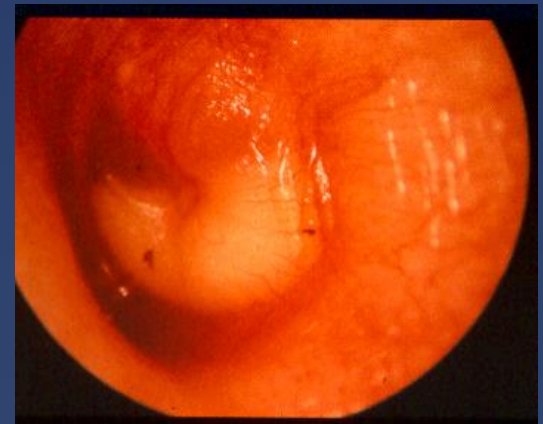
2013 Clinical Practice Guidelines

Significant changes from 2004 guidelines:

- Addresses recurrent AOM
- Provides a specific, stringent definition of AOM
- Addresses pain management, initial observation vs. antibiotic treatment, appropriate choices of antibiotic agents and preventive measures

2013 Clinical Practice Guidelines: Key Action Statement 1

- 1A Clinicians should diagnose AOM in children who present with moderate to severe bulging of the TM or new onset of otorrhea not due to Ac. Otitis Externa
- 1B Clinicians may diagnose AOM in children who present with mild bulging of the TM and recent (<48h) onset of ear pain or intense erythema of TM
- 1C Clinicians should not diagnose AOM in children who do not have MEE based on pneumatic otoscopy and/or tympanometry



2013 Clinical Practice Guidelines: Key Action Statement 2

- The management of AOM should include an assessment of pain. If pain is present, the clinician should recommend treatment to reduce pain.

(Evidence quality B; Strong Rec)

2013 Clinical Practice Guidelines: Key Action Statement 3A

- Severe AOM: The clinician should prescribe antibiotic rx for AOM in children >6 mos with severe signs or symptoms (ie, moderate or severe otalgia or otalgia for at least 48 hours or T>39)

(Evidence Quality B; Strong Recommendation)

2013 Clinical Practice Guidelines: Key Action Statement 3B

- Non-severe bilateral AOM in young children: The clinician should prescribe antibiotic rx for bilateral AOM in children 6-23 mos without severe signs or symptoms

(Evidence quality B; Recommendation)

2013 Clinical Practice Guidelines: Key Action Statement 3C

- Non-severe unilateral AOM in young children: the clinician should **either prescribe antibiotic rx or offer observation with close follow-up** based on joint decision making with the parents for unilateral AOM in children 6-23 mos without severe signs or symptoms. When observation is used, a mechanism must be in place to ensure follow-up and begin antibiotic rx if the child worsens or fails to improve within 48-72 hours of onset of symptoms

(Evidence quality B; Recommendation)

2013 Clinical Practice Guidelines: Key Action Statement 3D

- Nonsevere AOM in older children: The clinician should either prescribe antibiotic rx or offer observation with close follow-up based on joint decision making with the parents for unilateral AOM in children >24 mos without severe signs or symptoms. When observation is used, a mechanism must be in place to ensure follow-up and begin antibiotic rx if the child worsens or fails to improve within 48-72 hours of onset of symptoms

(Evidence quality B; Recommendation)

2013 Clinical Practice Guidelines: Key Action Statement 4A

Clinicians should prescribe amoxicillin for AOM when a decision to treat with antibiotics has been made and:

- The child has not rec'd amox in the past 30 days
- Or, the child has not had concurrent purulent conjunctivitis
- Or, the child is not allergic to penicillin

(Evidence quality B; Recommendation)

2013 Clinical Practice Guidelines: Key Action Statement 4A

■ Alternative initial antibiotics include:

- Amoxicillin/Clavulanate (90mg/kg of amox)
- Cefdinir (14mg/kg/day divided BID)
- Cefuroxime (30mg/kg/day divided BID)
- Cefpodoxime (10mg/kg/day divided BID)
- Ceftriaxone (50mg/kg/dose QD for 1-3 days)

■ Broad spectrum antibiotics are not associated with better outcomes, but associated with a higher incidence of adverse events¹

1. Gerber JS et al. JAMA (2017);318(23)2325-2336

2013 Clinical Practice Guidelines: Key Action Statement 4A

■ Length of therapy:

- For children <2y and children with severe symptoms, 10d is recommended
- For children 2-5y with mild-mod AOM, 7 days is effective
- For children >6y with mild-mod AOM, 5-7 days is adequate.

2013 Clinical Practice Guidelines: Key Action Statement 4B

- Clinicians should prescribe an antibiotic with additional beta-lactamase coverage for AOM when a decision to treat with antibiotics has been made, and:
 - The child has rec'd amoxicillin in the last 30 days,
 - Or, has concurrent purulent conjunctivitis
 - Or, has a history of recurrent AOM unresponsive to amoxicillin

(Evidence quality C; Recommendation)

2013 Clinical Practice Guidelines: Key Action Statement 4C

- Clinicians should reassess the pt if the caregiver reports that the child's symptoms have worsened or failed to respond to the initial antibiotic rx within 48-72 hours and determine whether a change in therapy is needed.

(Evidence quality B; Recommendation)

- If pt was initially treated with amox, amox/clav should be used
- If pt was initially treated with amox/clav or oral 3rd gen cephalosporin, IM CTX can be used (3 days).

2013 Clinical Practice Guidelines: Key Action Statement 5A

- Clinicians should not prescribe prophylactic antibiotics to reduce the frequency of episodes of AOM in children with recurrent AOM

(Evidence quality B; Recommendation)

2013 Clinical Practice Guidelines: Key Action Statement 5B

Clinicians may offer tympanostomy tubes for recurrent AOM (3 episodes in 6 mos or 4 episodes in 1 year with 1 episode in the preceding 6 mos)

(Evidence quality B; Option)

2013 Clinical Practice Guidelines:

Key Action Statement 6A

- Clinicians should recommend PCV to all children according to the schedule of the ACIP, AAP and AAFP.

(Evidence quality B; Strong Recommendation)

Key Action Statement 6B

- Clinicians should recommend annual influenza vaccine to all children according to the schedule of the ACIP, AAP and AAFP.

(Evidence quality B; Recommendation)

2013 Clinical Practice Guidelines:

Key Action Statement 6C

- Clinicians should encourage exclusive breast-feeding for at least 6 mos

(Evidence quality B; Recommendation)

Key Action Statement 6D

- Clinicians should encourage avoidance of tobacco smoke exposure.

(Evidence quality C; Recommendation)

Areas for Future Research

■ Treatment

- Optimal drug
- Optimal duration
- Evaluate “wait and see prescription” strategy
- Determine the role of adjuvant therapies in RCTs
- Develop new bacterial and viral vaccines to prevent AOM

Otitis Media with Effusion (OME)

Clinical Practice Guideline –OME update 2016

Rosenfeld RM et al. *Oto-HNS*, 2016;154: S1-S41



OME: Updated Clinical Practice Guideline (2016)

Action Statements

■ Strong Recommendations:

- Use of pneumatic otoscopy (PnO) – to diagnose OME, and perform PnO in a child w/ hearing loss or otalgia
- Tympanometry if pneumatic otoscopy unsuccessful or findings of PnO are uncertain
- Watchful waiting in a “not-at-risk” child for 3 mos from date of onset effusion (if known) or date of diagnosis

OME: Updated Clinical Practice Guideline (2016)

Action Statements

■ Strong Recommendations:

- Recommend against use of nasal or systemic steroids for treating OME
- Recommend against use of systemic antibiotics for treating OME
- Recommend against use of antihistamines or decongestants for treating OME

OME: Updated Clinical Practice Guideline (2016)

Action Statements

■ Recommendations:

- Document counseling of parents of infants with OME who failed NBHS re: need for f/u evaluation
- Determine if a child w/ OME is at increased risk for speech, language or learning problems from MEEs because of baseline sensory, physical, cognitive or behavioral factors

OME: Updated Clinical Practice Guideline (2016)

Action Statements

■ Recommendations:

- Should evaluate at-risk children for OME at time of diag. of the at-risk condition and at 12-18 mos of age
- Should not routinely screen children who are not at risk and do not have symptoms related to OME
 - Hearing difficulties
 - Balance (vestib.) problems
 - Poor school performance
 - Behavioral issues
 - Ear discomfort

OME: Updated Clinical Practice Guideline (2016)

Action Statements

■ Recommendations:

- Educate parents about natural h/o OME, its potential sequelae, and need for f/u
- Audiogram for OME ≥ 3 mos, or OME of any duration in an at-risk child
- Counsel parents of pt. with B/L OME and documented H. Loss of potential impact on speech and language development
- F/u pts w/ chr. OME at 3-6 mo intervals till effusion resolves, hearing loss is identified, or structural abnormalities of TM or ME are suspected

OME: Updated Clinical Practice Guideline (2016)

Action Statements

■ Recommendations:

- Tympanostomy tubes (TTs) when surgery is performed for OME in children <4yrs of age
- Adenoidectomy should not be performed for OME alone in a child <4yrs of age
- TTs, or adenoidectomy, or both when surgery is performed for OME in a child \geq 4yrs of age
- Should document resolution of OME, improved hearing, or improved QOL when managing a child w/ OME

Tympanostomy Tubes

- Clinical Practice Guideline: Tympanostomy Tubes in Children (2013)

Richard M. Rosenfeld, MD, et al. *Oto-HNS*, 2013; 149(1S) S1–S35

Tympanostomy Tubes

- Most common procedure performed on children in the US (~677,000 children <15yrs of age)
- Nearly 1 in 15 children by age 3
- Rate doubles amongst children in day care setting

Tympanostomy Tubes - Indications

■ Chronic middle ear effusion

- Persistent middle ear effusion of >3mos duration associated with hearing loss ≥ 20 dB
 - obtain an age-appropriate hearing test if OME persists for 3 months or longer (chronic OME) OR prior to surgery when a child becomes a candidate for tympanostomy tube insertion.
- Severe retraction pocket, disequilibrium / vertigo, tinnitus (suggestion of middle ear dysfunction)

Tympanostomy Tubes - Indications

OME and Speech / language delay, learning problems

■ Risk factors for developmental difficulties:

- Permanent hearing loss independent of otitis media with effusion
- Suspected or confirmed speech and language delay or disorder
- Autism-spectrum disorder and other pervasive developmental disorders
- Syndromes (eg, Down) or craniofacial disorders that include
 - Cognitive, speech, or language delays
 - Blindness or uncorrectable visual impairment
 - Cleft palate, with or without associated syndrome
 - Developmental delay

Tympanostomy Tubes - Indications

■ Recurrent acute otitis media

- ≥ 3 episodes in previous 6 months
- ≥ 4 episodes per year

- Important to identify middle ear pathology –inflammation or ME fluid, in a patient being referred by PCP for TTs

Tympanostomy Tubes - Indications

- Suppurative complications of otitis media
 - meningitis
 - mastoiditis
 - facial nerve paralysis
- Eustachian tube dysfunction
 - severe retraction pocket
 - fluctuating hearing loss
- Accompanying tympanoplasty &/or mastoidectomy

Tympanostomy Tubes

Surveillance of Chronic OME:

■ Clinicians should reevaluate, at 3- to 6-month intervals, children with chronic OME who did not receive tympanostomy tubes, until:

- the effusion is no longer present,
- significant hearing loss is detected, or
- structural abnormalities of the tympanic membrane or middle ear are suspected.

Tympanostomy Tubes

Acute Tympanostomy Tube Otorrhea (TTO):

- Clinicians should prescribe topical antibiotic eardrops only, without oral antibiotics, for children with uncomplicated acute TTO.

Tympanostomy Tube Otorrhea

Use of systemic antibiotics

- Cellulitis of the pinna or adjacent skin is present
- Concurrent bacterial infection (eg, sinusitis, pneumonia, or streptococcal pharyngitis) is present
- Signs of severe infection exist (high fever, severe otalgia, toxic appearance)
- Acute TTO persists, or worsens, despite topical antibiotic therapy
- Administration of eardrops is not possible because of local discomfort or lack of tolerance by the child
- A patient has an immune-compromised state
- Cost considerations prevent access to non-ototoxic topical antibiotic drops

Issues not addressed

- Oral vs Topical Abx for TT otorrhea
- Role of cultures in TT otorrhea
- When to remove PETs
- Should medially migrated PETs be removed – and when?

Tympanostomy Tubes

- Water precautions are not routinely recommended

ADENOIDECTOMY

Role of Adenoidectomy

- COM receiving adenoidectomy with or without tubes did better, independent of adenoid size.
 - Gates, GA et al. *Laryngoscope*, 1988; 98:58-63
- Some benefits of adenoidectomy for children <4 years old as primary therapy for OME, the data are inconsistent and relatively sparse
- Balance with risk of surgery
- Balance with more complex anesthesia

Role of Adenoidectomy

Age stratification → current guidance on adenoidectomy for Otitis Media:

- Not recommended in children **<4yrs** of age at *primary surgery*, unless indicated for other reasons, independent of the hx OM
- Recommended as a primary surgical treatment or as an adjunct in children **>4yrs** of age with OME/Rec OM

-Boonacker CWB, Rovers MM, Browning GG, et al. Health Technol Assess (Winch Eng). 2014;18:1-118

-Mikals SJ, Brigger MT. JAMA Otolaryngol Head Neck Surg. 2014;140:95-101.

- Rosenfeld, R. M., Shin, J. J., Clinical Practice Guideline: Otitis Media with Effusion (Update). Otolaryngology–Head and Neck Surgery, 154(1_suppl), S1–S41.

SUMMARY

Surgical Intervention

■ For children ≥ 4 yrs of age, surgical options include:

- *Bilateral myringotomies and tubes*
- *Adenoidectomy alone*
- *Adenoidectomy with myringotomies (w/o PE tube placement)*
- *Adenoidectomy with bilateral myringotomies with tube placement*

Management of Otitis Media

Summary:

- Shared decision making
- Be mindful of the impact/sequelae of your interventions
 - Antibiotics-microbiomes
 - Anesthesia
 - Sequelae /complications from TTs
 - Sequelae/complications of adenoidectomy
 - Sequelae of non-intervention
- Education of the parents and communication with the PCP - both critical

Thank you.

Questions?

CONTACT INFORMATION

Main Office

CHOC Children's Specialists - Otolaryngology
1010 W. La Veta Ave., Suite 640
Orange, CA 92868
Phone: 714-633-4020
Fax: 714-953-5462

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Monday, September 28, 2020
12:30 pm – 1:30 pm

PRESENTED BY

Rahul Bhole, MD, MBA

Section Chair Ophthalmology, CHOC Children's
Medical Director, Ophthalmology, CHOC Children's Specialists

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