Otolaryngology Practice Guidelines

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Scope of Practice

- Newborns to centenarians
- Head and Neck Surgery
  - Otology
  - Rhinology
  - Laryngology
  - Allergy
  - Oncology
  - Thyroid / parathyroid
  - Sleep apnea
These multidisciplinary clinical practice guidelines were developed by the AAO-HNSF. As defined by the Institute of Medicine, Clinical Practice Guidelines are “statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options.” Guidelines are one way of increasing implementation of evidence into practice. They can serve as a guide to best practices, a framework for clinical decision making, and a benchmark for evaluating performance.
Review of guideline nomenclature

<table>
<thead>
<tr>
<th>Statement</th>
<th>Definition</th>
<th>Implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong recommendation</td>
<td>A strong recommendation means the benefits of the recommended approach clearly exceed the harms (or that the harms clearly exceed the benefits in the case of a strong negative recommendation) and that the quality of the supporting evidence is excellent (Grade A or B). In some clearly identified circumstances, strong recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms.</td>
<td>Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present.</td>
</tr>
<tr>
<td>Recommendation</td>
<td>A recommendation means the benefits exceed the harms (or that the harms exceed the benefits in the case of a negative recommendation), but the quality of evidence is not as strong (Grade B or C). In some clearly identified circumstances, recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits outweigh the harms.</td>
<td>Clinicians should generally follow a recommendation but should remain alert to new information and sensitive to patient preferences.</td>
</tr>
<tr>
<td>Option</td>
<td>An option means that either the quality of evidence that exists is suspect (Grade D) or that well-done studies (Grade A, B, or C) show little clear advantage to one approach versus another.</td>
<td>Clinicians should be flexible in their decision making regarding appropriate practice, although they may set bounds on alternatives; patient preference should have a substantial influencing role.</td>
</tr>
<tr>
<td>No recommendation</td>
<td>No recommendation means there is both a lack of pertinent evidence (Grade D) and an unclear balance between benefits and harms.</td>
<td>Clinicians should feel little constraint in their decision making and be alert to new published evidence that clarifies the balance of benefit versus harm; patient preference should have a substantial influencing role.</td>
</tr>
</tbody>
</table>

**Table 3. Evidence Quality for Grades of Evidence**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Evidence Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Well-designed randomized controlled trials or diagnostic studies performed on a population similar to the guideline’s target population</td>
</tr>
<tr>
<td>B</td>
<td>Randomized controlled trials or diagnostic studies with minor limitations; overwhelmingly consistent evidence from observational studies</td>
</tr>
<tr>
<td>C</td>
<td>Observational studies (case control and cohort design)</td>
</tr>
<tr>
<td>D</td>
<td>Case reports, reasoning from first principles (bench research or animal studies)</td>
</tr>
<tr>
<td>X</td>
<td>Exceptional situations in which validating studies cannot be performed and there is a clear preponderance of benefit over harm</td>
</tr>
</tbody>
</table>
Clinical Practice Guideline: Tonsillectomy in Children

- Tonsillectomy and adenoidectomy
  - > 530000 annually for children under 15 years

- Primary goal
  - Identifying children who are the best candidates for surgery
Sleep disordered breathing (SDB)

- Abnormal respiratory pattern or the adequacy of ventilation during sleep
  - snoring, mouth breathing, and pauses in breathing
- Spectrum of obstructive disorders
  - OSA prevalence up to 1-4% of children
  - 10% with primary snoring
- Behavioral symptoms (30-40%)
  - excessive sleepiness
  - Inattention, poor concentration, hyperactivity → school performance
  - enuresis
  - aggression, anxiety, depression, somatization

- Lower QoL scores
  - general health, physical functioning, behavior,
  - QoL is similar to children with asthma and juvenile rheumatoid arthritis.

Recurrent pharyngitis

- Clinical statistics
  - Viral pharyngitis - 40 million visits annually
  - Most children and adults experience 3-5 viral upper respiratory tract infections (including pharyngitis) per year.
    - Adults: 2-4
    - Children: 4-6
  - Vast majority of infections are viral
  - Children ages 5-15 most susceptible to strep throat
Bacterial pathogens

- Group a beta hemolytic strep (GABHS)
- Haemophilus influenzae, Moraxella catarrhalis
- Strep pneumoniae (group C strep)
- Staphylococcus aureus
- Bacteroides, Fusobacterium
- Neisseria, Chlamydia
- Corynebacterium
Table 5. Paradise Criteria for Tonsillectomy$^{31}$

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum frequency of sore throat episodes</td>
<td>7 or more episodes in the preceding year, OR 5 or more episodes in each of the preceding 2 y, OR 3 or more episodes in each of the preceding 3 y</td>
</tr>
<tr>
<td>Clinical features (sore throat plus the presence of one or more qualifies as a counting episode)</td>
<td>Temperature $&gt; 38.3^\circ$C, OR Cervical lymphadenopathy (tender lymph nodes or $&gt; 2$ cm), OR Tonsillar exudate, OR Positive culture for group A $\beta$-hemolytic streptococcus</td>
</tr>
<tr>
<td>Treatment</td>
<td>Antibiotics had been administered in conventional dosage for proved or suspected streptococcal episodes</td>
</tr>
<tr>
<td>Documentation</td>
<td>Each episode and its qualifying features had been substantiated by contemporaneous notation in a clinical record, OR If not fully documented, subsequent observance by the clinician of 2 episodes of throat infection with patterns of frequency and clinical features consistent with the initial history$^a$</td>
</tr>
</tbody>
</table>

$^a$This last statement allows children who meet all other criteria for tonsillectomy except documentation to nonetheless qualify for surgery if the same pattern of reported illness is observed and documented by the clinician in 2 subsequent episodes. Because of this tendency to improve with time, a 12-month period of observation is usually recommended prior to consideration of tonsillectomy as an intervention.
Statement 1: Watchful waiting for recurrent throat infections

- If fewer than 7 infections in 1 year, 10 infections in 2 years or 9 infections in 3 years.
  - What about families that do not bring patients in for every sore throat?

**Recommendation**

- Grade B and C data

- Role of patient preference: Limited to unusual circumstances

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Statement 2: Recurrent throat infection with documentation (1/2)

- Physicians may recommend tonsillectomy for patients that exceed 7 episodes in 1 year, 10 in 2 years, 9 in 3 years
  - Documentation
    - Sore throat with:
      - Temperature > 38.3 C
      - Cervical adenopathy
      - Tonsillar exudate
      - Positive GABHS
  - Supportive documentation
    - absence from school,
    - spread of infection within the family
    - family history of rheumatic heart disease or glomerulonephritis.

Statement 2: Recurrent throat infection with documentation (2/2)

- Option
- Grade B / C data
- Benefit: modest reduction in frequency and severity of throat infection and strep throat for up to 2 years post surgery and improved disease specific quality of life
- Harm / Costs: surgical risks and costs (costs vary widely)
- Role of patient preference: Large role for shared decision due to favorable natural history

Statement 3: Recurrent infection with modifying factors

- Assess for modifying factors that may favor tonsillectomy if criteria for Statement 2
  - Multiple antibiotic allergy / intolerance
  - PFAPA (periodic fever, Aphthous stomatitis, pharyngitis and adenitis)
  - Very severe infections (peritonsillar abscess) or infections poorly tolerated
  - Illness related school absences affecting school performance
  - PANDAS

- Recommendation

- Grade B for PFAPA / C otherwise

- Role of patient preference: Should be included

What about these problems?

- Series of poorly validated indications or tonsillectomy that have not been tested in any controlled trials or case series
  - chronic tonsillitis / cryptic tonsils
  - febrile seizures
  - muffled (“hot potato”) speech / tonsillar hypertrophy
  - Halitosis
  - malocclusion of teeth
  - chronic pharyngeal carriage of GABHS.

- Substantial role for shared decision making with caregivers

Statement 4: Tonsillectomy for sleep disordered breathing

- Screen for comorbid conditions
  - growth retardation, poor school performance, enuresis, and behavioral problems
- Tonsillectomy for the indication of SDB significantly improves QoL
  - sleep disturbance, physical symptoms, emotional symptoms, hyperactivity, and daytime functioning
  - pulmonary hypertension has normalized after tonsillectomy
  - school performance has improved
  - health care utilization has been reduced
  - sleep parameters have improved as demonstrated by PSG

Recommendation

- Grade C - before and after observational studies
- Role of patient preference: Large role for caregiver education and shared decision making

Clinical Practice Guideline: Polysomnography for Sleep-Disordered Breathing Prior to Tonsillectomy in Children


<table>
<thead>
<tr>
<th>Statement</th>
<th>Action</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Indications for PSG</td>
<td>Before performing tonsillectomy, the clinician should refer children with SDB for PSG if they exhibit any of the following: obesity, Down syndrome, craniofacial abnormalities, neuromuscular disorders, sickle cell disease, or mucopolysaccharidoses.</td>
<td>Recommendation based on observational studies with a preponderance of benefit over harm.</td>
</tr>
<tr>
<td>2. Advocating for PSG</td>
<td>The clinician should advocate for PSG prior to tonsillectomy for SDB in children without any of the comorbidities listed in statement 1 for whom the need for surgery is uncertain or when there is discordance between tonsillar size on physical examination and the reported severity of SDB.</td>
<td>Recommendation based on observational and case-control studies with a preponderance of benefit over harm.</td>
</tr>
<tr>
<td>3. Communication with anesthesiologist</td>
<td>Clinicians should communicate PSG results to the anesthesiologist prior to the induction of anesthesia for tonsillectomy in a child with SDB.</td>
<td>Recommendation based on observational studies with a preponderance of benefit over harm.</td>
</tr>
<tr>
<td>4. Inpatient admission for children with OSA documented in results of PSG</td>
<td>Clinicians should admit children with OSA documented in results of PSG for inpatient, overnight monitoring after tonsillectomy if they are younger than age 3 or have severe OSA (apnea-hypopnea index of 10 or more obstructive events/hour, oxygen saturation nadir less than 80%, or both).</td>
<td>Recommendation based on observational studies with a preponderance of benefit over harm.</td>
</tr>
<tr>
<td>5. Unattended PSG with portable monitoring device</td>
<td>In children for whom PSG is indicated to assess SDB prior to tonsillectomy, clinicians should obtain laboratory-based PSG, when available.</td>
<td>Recommendation based on diagnostic studies with limitations and a preponderance of benefit over harm.</td>
</tr>
</tbody>
</table>

Abbreviations: OSA, obstructive sleep apnea; PSG, polysomnography; SDB, sleep-disordered breathing.
Statement 5: Tonsillectomy and polysomnography

- Clinicians should counsel caregivers about tonsillectomy as a means to improve health in children with abnormal polysomnography who also have tonsil hypertrophy and sleep-disordered breathing (clinical history).

- Abnormal PSG
  - pulse oximetry less than 92% or an AHI >1
  - AHI >5 is considered by many to warrant tonsillectomy

- Risk factors for persistent or recurrent OSA
  - Severe OSA, obesity, craniofacial / neuromuscular anomalies, positive family history of OSA, and African American ethnicity

- Recommendation

- Grade C

Ear Anatomy and the Eustachian Tube

Figure 1. Location of the middle ear space. Otitis media with effusion occurs when fluid builds up in the middle ear space, which normally is air filled and lies just behind the eardrum. With permission from Rosenfeld 2005.

Figure 3. Position of the eustachian tube (red) as it connects the middle ear space to the back of the nose, or nasopharynx. The child’s eustachian tube (right) is shorter, more floppy, and more horizontal, which makes it less effective in ventilating and protecting the middle ear than the eustachian tube in the adult (left).
Clinical practice guideline: Otitis media with effusion

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otitis media with effusion (OME)</td>
<td>The presence of fluid in the middle ear without signs or symptoms of acute ear infection.</td>
</tr>
<tr>
<td>Chronic OME</td>
<td>OME persisting for $\geq 3$ mo from the date of onset (if known) or from the date of diagnosis (if onset is unknown).</td>
</tr>
<tr>
<td>Acute otitis media (AOM)</td>
<td>The rapid onset of signs and symptoms of inflammation of the middle ear. AOM may persist for weeks or months after the signs and symptoms of AOM resolve.</td>
</tr>
<tr>
<td>Middle ear effusion</td>
<td>Fluid in the middle ear from any cause. Middle ear effusion is present with both OME and AOM and may persist for weeks or months after the signs and symptoms of AOM resolve.</td>
</tr>
<tr>
<td>Hearing assessment</td>
<td>A means of gathering information about a child's hearing status, which may include caregiver report, audiologic assessment by an audiologist, or hearing testing by a physician or allied health professional.</td>
</tr>
<tr>
<td>Pneumatic otoscopy</td>
<td>A method of examining the middle ear by using an otoscope with an attached rubber bulb to change the pressure in the ear canal and see how the eardrum reacts. A normal eardrum moves briskly with applied pressure, but when there is fluid in the middle ear, the movement is minimal or sluggish.</td>
</tr>
<tr>
<td>Tympanogram</td>
<td>An objective measure of how easily the tympanic membrane vibrates and at what pressure it does so most easily (pressure admittance function). If the middle ear is filled with fluid (eg, OME), vibration is impaired, and the result is a flat, or nearly flat, tracing; if the middle ear is filled with air but at a higher or lower pressure than the surrounding atmosphere, the peak on the graph will be shifted in position based on the pressure (to the left if negative, to the right if positive).</td>
</tr>
<tr>
<td>Conductive hearing loss</td>
<td>Hearing loss from abnormal or impaired sound transmission to the inner ear, which is often associated with effusion in the middle ear but can be caused by other middle ear abnormalities, such as tympanic membrane perforation, or ossicle abnormalities.</td>
</tr>
<tr>
<td>Sensorineural hearing loss</td>
<td>Hearing loss that results from abnormal transmission of sound from the sensory cells of the inner ear to the brain.</td>
</tr>
</tbody>
</table>
Otitis media with effusion (OME)

- Natural history
  - OME occurring after an episode of AOM
    - 75% to 90% of cases resolve spontaneously by 3 months
  - Once the fluid becomes chronic (> 3 months)
    - 19% will resolve by 3 months
    - 25% by 6 months
    - 31% by 12 months
    - 33% by 24 months
Statement 1a and 1b: Pneumatic otoscopy

- Clinicians should document OME with pneumatic otoscopy and use pneumatic otoscopy to assess patient’s with otalgia, hearing loss or both.
- Strong recommendation
- Grade A

- Take the time to incorporate this skill into your exam
- https://youtu.be/eD5gLRHkmIs

<table>
<thead>
<tr>
<th>Pneumatic Otoscopy Tip</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>After attaching the speculum to the otoscope, squeeze the pneumatic bulb fully, then firmly cover the tip of the speculum with your finger and let go of the bulb.</td>
<td>The bulb should stay compressed after blocking the speculum if there are no air leaks; if the bulb opens (e.g., the pressure is released), check the speculum for a tight fit and the bulb and tubing for leaks.</td>
</tr>
<tr>
<td>Choose a speculum that is slightly wider than the ear canal to obtain an air-tight seal.</td>
<td>A speculum that is too narrow cannot form a proper seal and will give false-positive results.</td>
</tr>
<tr>
<td>Before inserting the speculum, squeeze the pneumatic bulb halfway (about 50% of the bulb width), then insert it into the canal.</td>
<td>Squeezing the bulb first allows the examiner to apply both negative pressure (by releasing the bulb) and positive pressure (by further squeezing).</td>
</tr>
<tr>
<td>Insert the speculum deep enough into the ear canal to obtain an air-tight seal but not deep enough to cause pain.</td>
<td>Limiting insertion to the cartilaginous (outer) portion of the ear canal is painless, but deep insertion that touches the bony ear canal and periosteum can be very painful.</td>
</tr>
<tr>
<td>Examine tympanic membrane mobility by squeezing and releasing the bulb very slightly and very gently several times.</td>
<td>Many children have negative pressure in their middle ear space, so both positive pressure (squeezing the bulb) and negative pressure (releasing the bulb) are needed to fully assess mobility. Using slight and gentle pressure will avoid unnecessary pain.</td>
</tr>
<tr>
<td>Diagnose otitis media with effusion (OME) when movement of the tympanic membrane is sluggish, dampened, or restricted; complete absence of mobility is not required.</td>
<td>When OME is absent, the tympanic membrane will move briskly with minimal pressure. Motion is reduced substantially with OME, but with enough pressure some motion is almost always possible.</td>
</tr>
</tbody>
</table>
Statement 2: Tympanometry

- Clinicians should obtain tympanometry in children with suspected OME for whom the diagnosis is uncertain after performing (or attempting) pneumatic otoscopy.
- Strong recommendation
- Grade B
- Easy tool to use

Statement 3: Failed Newborn hearing screen

- Clinicians should document in the medical record counseling of parents of infants with OME who fail a newborn hearing screen regarding the importance of follow-up to ensure that hearing is normal when OME resolves and to exclude an underlying sensorineural hearing loss (SNHL).

- Recommendation

- Grade C

Statement 4: Screen at risk children for OME.

- Children at risk for speech, language, or learning problems should be screened for OME.

Table 3. Risk Factors for Developmental Difficulties in Children with Otitis Media with Effusion.∗

<table>
<thead>
<tr>
<th>Risk Factor</th>
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<tbody>
<tr>
<td>Permanent hearing loss independent of otitis media with effusion</td>
</tr>
<tr>
<td>Suspected or confirmed speech and language delay or disorder</td>
</tr>
<tr>
<td>Autism spectrum disorder and other pervasive developmental disorders</td>
</tr>
<tr>
<td>Syndromes (eg, Down) or craniofacial disorders that include</td>
</tr>
<tr>
<td>cognitive, speech, or language delays</td>
</tr>
<tr>
<td>Blindness or uncorrectable visual impairment</td>
</tr>
<tr>
<td>Cleft palate, with or without associated syndrome</td>
</tr>
<tr>
<td>Developmental delay</td>
</tr>
</tbody>
</table>

∗Sensory, physical, cognitive, or behavioral factors that place children who have otitis media with effusion at increased risk for developmental difficulties (delay or disorder).†
Statement 5: Do not screen low risk patients for OME

- Unless patient’s have hearing or otologic related symptoms
- Sometimes common sense prevails in academic ventures

Statement 6: Patient education

- Talk to your patients and caregivers
- If you don’t give them correct information, they’ll find their own facts on the internet

Statement 6: Patient education

Table 2. Frequently Asked Questions: Understanding Ear Fluid.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is ear fluid, and how common is it?</td>
<td>Ear fluid, also called otitis media with effusion (OME), is a buildup of mucus or liquid behind the eardrum, without symptoms of an ear infection. Nearly all children get ear fluid at least once by school age.</td>
</tr>
<tr>
<td>How does ear fluid differ from an ear infection?</td>
<td>Ear infections (acute otitis media [AOM]) occur when germs (bacteria and/or viruses) enter the middle ear and cause fever, ear pain, and active (acute) inflammation. Both AOM and OME have fluid in the middle ear, but with OME the fluid is not actively infected, and pain may be absent or minimal.</td>
</tr>
<tr>
<td>If my child gets ear fluid, how can I tell?</td>
<td>You might not be able to tell. Some children with OME have obvious hearing problems, but other children may have no symptoms at all or more subtle findings (e.g., ear rubbing, clumsiness, selective hearing, disturbed sleep). Your doctor can detect ear fluid by looking in the ear canal (otoscopy) or by measuring the movement of the eardrum ( tympanometry or pneumatic otoscopy).</td>
</tr>
<tr>
<td>What causes ear fluid?</td>
<td>OME may be caused by a cold, an ear infection (AOM), or the normal congestion (negative pressure) that many young children have in their middle ear. Often OME is detected during a routine doctor’s visit, and the exact cause is unknown.</td>
</tr>
<tr>
<td>Should I worry if my child has ear fluid?</td>
<td>Most fluid goes away on its own in weeks or months, especially if it was caused by a cold or an ear infection. OME is of more concern if it lasts &gt;3 mo or when your child has other problems that could be made worse by persistent ear fluid (e.g., delays in speech, language, learning, or development). Your doctor should check the ears periodically until the fluid is gone.</td>
</tr>
<tr>
<td>What is the best way to manage ear fluid?</td>
<td>There are many opinions about managing OME, but the best advice can be found in clinical practice guidelines, which make recommendations based on best available evidence and by considering the potential benefits and harms of different strategies.</td>
</tr>
</tbody>
</table>

Statement 7: Watchful waiting

- Clinicians should observe effusions for patients with low risk factors for 3 months from the onset (if known) or 3 months from the date of diagnosis (if onset is unknown).

- Strong recommendation

- Grade A

- Role of patient preference: small

Statement 8: Medical therapy for OME

- Discourage medical therapy that does not affect long-term outcomes for OME (resolution, HLs, or need for tympanostomy tubes) but does have significant cost and potential adverse events
  - Do not recommend intranasal steroids or systemic steroids
  - Do not recommend antibiotics
  - Do not recommend antihistamines or decongestants

- Strong recommendation against

- Grade A

- Role of patient preference: small

Caveats for medical therapy

- Possible short-term benefit of topical intranasal steroids in children with adenoidal hypertrophy
- Concomitant OME and allergic rhinitis
  - Role for topical steroid therapy
- Please treat with antibiotics if there are concomitant illness that warrant therapy.
- Montelukast was not found to be effective in the clearance of middle ear effusion.

Statement 9: Hearing assessment

- Clinicians should obtain an age-appropriate hearing test if OME persists for 3 months or for OME of any duration in an at risk child.

**Recommendation**

- Grade C

- Role of patient preference: small: caregivers may decline testing

- Chronic OME is associated with significant hearing loss in at least 50% of children.

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Clinicians should counsel families of children with bilateral OME and documented hearing loss about the potential impact on speech and language development.

- **Recommendation**
- **Grade C**

### Table 11. Counseling Information on Otitis Media with Effusion, Speech, and Language Development.

**Otitis media with effusion:** Also called **ear fluid**, otitis media with effusion can affect your child’s ability to hear normally. This hearing loss could affect speech and language development in some children, especially when the fluid is in both ears and lasts a long time. This information will help you better understand how ear fluid might affect your child.

**Your child’s speech:** Speech (sometimes called **articulation**) is the physical production of sounds in sequence to form words. Children with delayed speech may omit sounds or substitute easy sounds for harder sounds (eg, *t*’s as in “I tee the tun in the ty”). These errors can affect the clarity of your child’s speech.

**Findings that suggest delayed speech development:**
- Your child doesn’t babble using consonants (particularly *b, m, d,* and *n*) by 9 mo.
- Your child uses mostly vowel sounds and gestures after 18 mo.
- Your child’s speech is hard to understand at the age of 3 y.
- Your child frequently leaves out or adds consonants in words at the age of 3 y.
- Your child is not able to produce most sounds by the age of 5 or 6 y.

**Your child’s language:** Language is the meaning or message conveyed back and forth through speech, writing, or even gestures. **Receptive language** is the ability to understand what others say. Children with delayed receptive language may have difficulty, compared with other children, following directions or understanding the words or sentence structures used by others. **Expressive language** is the ability to choose the right words when communicating and then put the words together appropriately for sentences and meaning. Children with delayed expressive language may have short utterances or sentences.

**Findings that suggest delayed language development:**
- Your child does not use any single words by 16 to 18 mo.
- Your child cannot follow simple instructions, such as “Give me your shoe,” or cannot point to body parts or common objects following a verbal request by 18 mo.
- Your child does not use 3- or 4-word utterances by the age of 2 y.
- Your child does not communicate with complete sentences by the age of 3 y.
- Your child’s sentences are still short or noticeably incorrect at the age of 4 y.

**What you can do:** If there are delays in your child’s speech or language development because of fluid, these delays usually disappear once the ear fluid goes away on its own or ear tubes are inserted. If a delay persists, your child should be referred to a speech-language pathologist for evaluation and treatment, as necessary. Reading to or with your child is also important because reading and spelling are strongly linked to speech and language development.

- Additional information on typical speech and language development in children can be found at [http://www.asha.org/public/speech/development/](http://www.asha.org/public/speech/development/).
- Additional information on helping your child with reading and writing can be found at [http://families.naeyc.org/everyday-steps-to-reading-writing](http://families.naeyc.org/everyday-steps-to-reading-writing).
Statement 11: Surveillance of Chronic OME

- Clinicians should reevaluate, at 3- to 6-month intervals, children with chronic OME until the effusion is no longer present, significant hearing loss is identified, or structural abnormalities of the eardrum or middle ear are suspected.

- **Recommendation**

- **Grade C**

- Risk factors associated with reduced likelihood of spontaneous resolution of OME:
  - onset of OME in summer or fall season
  - hearing loss $>$30-dB HL in the better-hearing ear
  - history of prior tympanostomy tubes, and not having a prior adenoidectomy.

Statement 11: ... structural abnormalities of the eardrum or middle ear are suspected
Statement 12: Surgery decisions

- Surgery (under 4 and over 4)
  - For patients under 4 years, tubes alone should be recommended unless there are symptoms that can be addressed by adenoidectomy
    - Nasal obstruction
    - Chronic adenoiditis
    - Sleep disordered breathing?
  - For patients over > 4 years, tubes and adenoidectomy should be recommended together

- Recommendation
- Grade B
- Role of patient preference: moderate

Figure 7. Algorithm showing the relationship of guideline key action statements. OME, otitis media with effusion; QOL, quality of life.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Action</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommendations for performing tympanostomy tube insertion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic bilateral otitis media with effusion (OME) with hearing difficulty</td>
<td>Clinicians should offer bilateral tympanostomy tube insertion to children with bilateral OME for ≥3 mo (chronic OME) AND documented hearing difficulties.</td>
<td>Recommendation</td>
</tr>
<tr>
<td>Chronic OME with symptoms</td>
<td>Clinicians may perform tympanostomy tube insertion in children with unilateral or bilateral OME for ≥3 mo (chronic OME) AND symptoms that are likely attributable to OME that include, but are not limited to, vestibular problems, poor school performance, behavioral problems, ear discomfort, or reduced quality of life.</td>
<td>Option</td>
</tr>
<tr>
<td>Recurrent acute otitis media (AOM) with middle ear effusion (or OME)</td>
<td>Clinicians should offer bilateral tympanostomy tube insertion to children with recurrent AOM who have unilateral or bilateral middle ear effusion (or OME) at the time of assessment for tube candidacy.</td>
<td>Recommendation</td>
</tr>
<tr>
<td>Tympanostomy tubes in at-risk children</td>
<td>Clinicians may perform tympanostomy tube insertion in at-risk children with unilateral or bilateral OME that is unlikely to resolve quickly as reflected by a type B (flat) tympanogram or persistence of effusion for ≥3 mo (chronic OME).</td>
<td>Option</td>
</tr>
<tr>
<td><strong>Recommendations for NOT performing tympanostomy tube insertion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OME of short duration</td>
<td>Clinicians should NOT perform tympanostomy tube insertion in children with a single episode of OME of &lt;3 mo of duration.</td>
<td>Recommendation (against tubes)</td>
</tr>
<tr>
<td>Recurrent AOM without middle ear effusion (or OME)</td>
<td>Clinicians should NOT perform tympanostomy tube insertion in children with recurrent AOM who do not have middle ear effusion (or OME) in either ear at the time of assessment for tube candidacy.</td>
<td>Recommendation (against tubes)</td>
</tr>
</tbody>
</table>

*From the American Academy of Otolaryngology—Head and Neck Surgery Foundation’s clinical practice guideline on tympanostomy tubes*[^17]; refer to the guideline for details on the evidence and rationale underlying each recommendation.
Clinical Practice Guideline: Tympanostomy tubes in children

- Most common ambulatory surgery for children
- Indications
  - persistent middle ear fluid
  - frequent ear infections
  - persistent ear infections despite medical therapy
**Figure 2.** (A) Size of tympanostomy tube compared to a dime. (B) Tympanostomy tubes are also called “ventilation tubes” because the opening allows air to enter the middle ear directly from the ear canal (arrows), which bypasses the child’s poorly functioning eustachian tube (X). Reproduced with permission.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myringotomy</td>
<td>A surgical procedure in which an incision is made in the tympanic membrane for the purpose of draining fluid or providing short-term ventilation</td>
</tr>
<tr>
<td>Tymanostomy tube insertion</td>
<td>Surgical placement of a tube through a myringotomy incision for purposes of temporary middle ear ventilation. Tymanostomy tubes generally last several months to several years, depending on tube design and placement location in the tympanic membrane. Synonyms include ventilation tubes, pressure equalization tubes, grommets (United Kingdom), and bilateral myringotomy and tubes</td>
</tr>
<tr>
<td>Otitis media with effusion (OME)</td>
<td>The presence of fluid in the middle ear without signs or symptoms of acute ear infection (AOM)</td>
</tr>
<tr>
<td>Chronic OME</td>
<td>OME persisting for 3 months or longer from the date of onset (if known) or from the date of diagnosis (if onset unknown)</td>
</tr>
<tr>
<td>Hearing assessment</td>
<td>A means of gathering information about a child’s hearing status, which may include caregiver report, audiologic assessment by an audiologist, or hearing testing by a physician or allied health professional using screening or standard equipment, which may be automated or manual. Does not include the use of noisemakers or other nonstandardized methods</td>
</tr>
<tr>
<td>Acute otitis media (AOM)</td>
<td>The rapid onset of signs and symptoms of inflammation of the middle ear</td>
</tr>
<tr>
<td>Persistent AOM</td>
<td>Persistence of symptoms or signs of AOM during antimicrobial therapy (treatment failure) and/or relapse of AOM within 1 month of completing antibiotic therapy. When 2 episodes of otitis media occur within 1 month, it may be difficult to distinguish recurrence of AOM (ie, a new episode) from persistent otitis media (ie, relapse)</td>
</tr>
<tr>
<td>Recurrent AOM</td>
<td>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’</td>
</tr>
<tr>
<td>Middle ear effusion (MEE)</td>
<td>Fluid in the middle ear from any cause but most often from OME and during or, after, an episode of AOM</td>
</tr>
<tr>
<td>Conductive hearing loss (CHL)</td>
<td>Hearing loss, from abnormal or impaired sound transmission to the inner ear, which is often associated with effusion in the middle ear</td>
</tr>
<tr>
<td>Sensorineural hearing loss (SNHL)</td>
<td>Hearing loss that results from abnormal transmission of sound from the sensory cells of the inner ear to the brain</td>
</tr>
<tr>
<td>Tymanostomy tube otorhea (TTO)</td>
<td>Discharge from the middle ear through the tube, usually caused by AOM or external contamination of the middle ear from water entry (swimming, bathing, or hair washing)</td>
</tr>
<tr>
<td>Retraction pocket</td>
<td>A collapsed area of the tympanic membrane into the middle ear or attic with a sharp demarcation from the remainder of the tympanic membrane</td>
</tr>
<tr>
<td>Tymanogram&lt;sup&gt;10&lt;/sup&gt;</td>
<td>An objective measure of how easily the tympanic membrane vibrates and at what pressure it does so most easily (pressure-compliance function). If the middle ear is filled with fluid (eg, OME), vibration is impaired and the line will be flat; if the middle ear is filled with air but at a higher or lower pressure than the surrounding atmosphere, the peak on the graph will be shifted in position based on the pressure (to the left if negative, to the right if positive)</td>
</tr>
<tr>
<td>Statement</td>
<td>Action</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>1. OME of short duration</td>
<td>Clinicians should not perform tympanostomy tube insertion in children with a single episode of OME of less than 3 months’ duration.</td>
</tr>
<tr>
<td>2. Hearing testing</td>
<td>Clinicians should 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.</td>
</tr>
<tr>
<td>3. Chronic bilateral OME with hearing difficulty</td>
<td>Clinicians should offer bilateral tympanostomy tube insertion to children with bilateral OME for 3 months or longer (chronic OME) AND documented hearing difficulties.</td>
</tr>
<tr>
<td>4. Chronic OME with symptoms</td>
<td>Clinicians may perform tympanostomy tube insertion in children with unilateral or bilateral OME for 3 months or longer (chronic OME) AND symptoms that are likely attributable to OME that include, but are not limited to, vestibular problems, poor school performance, behavioral problems, ear discomfort, or reduced quality of life.</td>
</tr>
<tr>
<td>5. Surveillance of chronic OME</td>
<td>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.</td>
</tr>
<tr>
<td>6. Recurrent AOM without MEE</td>
<td>Clinicians should not perform tympanostomy tube insertion in children with recurrent AOM who do not have middle ear effusion in either ear at the time of assessment for tube candidacy.</td>
</tr>
<tr>
<td>7. Recurrent AOM with MEE</td>
<td>Clinicians should offer bilateral tympanostomy tube insertion to children with recurrent AOM who have unilateral or bilateral middle ear effusion at the time of assessment for tube candidacy.</td>
</tr>
<tr>
<td>8. At-risk children</td>
<td>Clinicians should determine if a child with recurrent AOM or with OME of any duration is at increased risk for speech, language, or learning problems from otitis media because of baseline sensory, physical, cognitive, or behavioral factors (see Table 2).</td>
</tr>
<tr>
<td>9. Tympanostomy tubes in at-risk children</td>
<td>Clinicians may perform tympanostomy tube insertion in at-risk children with unilateral or bilateral OME that is unlikely to resolve quickly as reflected by a type B (flat) tympanogram or persistence of effusion for 3 months or longer (chronic OME).</td>
</tr>
<tr>
<td>10. Perioperative education</td>
<td>In the perioperative period, clinicians should educate caregivers of children with tympanostomy tubes regarding the expected duration of tube function, recommended follow-up schedule, and detection of complications.</td>
</tr>
<tr>
<td>11. Acute tympanostomy tube otitis</td>
<td>Clinicians should prescribe topical antibiotic eardrops only, without oral antibiotics, for children with uncomplicated acute TTO.</td>
</tr>
<tr>
<td>12. Water precautions</td>
<td>Clinicians should not encourage routine, prophylactic water precautions (use of earplugs, headbands; avoidance of swimming or water sports) for children with tympanostomy tubes.</td>
</tr>
</tbody>
</table>

Abbreviations: AOM, acute otitis media; MEE, middle ear effusion; OME, otitis media with effusion.
Statement 1: OME short duration

- Fluid less than three months
- No tubes
- Grade C
Statement 2: Hearing testing

- Obtain age appropriate hearing testing for chronic OME or when patients become candidates for tympanostomy tubes

  Recommendation

  Grade C

Statement 3: Chronic bilateral OME with hearing difficulty

- Clinicians should offer tympanostomy bilateral tube insertion to children with bilateral OME for 3 months or longer AND documented hearing difficulties.

- **Recommendation**

- **Grade B**

- Role of patient (caregiver) preferences: Substantial role for shared decision making regarding the decision to proceed with, or to decline, tympanostomy tube insertion

Statement 4: Chronic OME with symptoms

- Clinicians may perform tympanostomy tube insertion in children with unilateral or bilateral OME for 3 months or longer (chronic OME) AND symptoms that are likely attributable to OME that include, but are not limited to, balance (vestibular) problems, poor school performance, behavioral problems, ear discomfort, or reduced quality of life.

- Option
- Grade C

Statement 5: Surveillance of Chronic OME

- Clinicians should reevaluate, at 3- to 6-month intervals, children with chronic OME who do 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.

- Recommendation

Statement 6: Recurrent acute otitis media without middle ear effusion

- Clinicians should not perform tympanostomy tube insertion in children with recurrent acute otitis media who do not have MEE in either ear at the time of assessment for tube candidacy.

  Recommendation against

- Grade A

- Tympanostomy tubes in children with a history of recurrent AOM but without MEE found no reduction in subsequent AOM after insertion of tympanostomy tubes.

- Natural history of recurrent AOM without MEE
  - RCTs of antibiotic prophylaxis for recurrent AOM
    - Favorable rates of improvement in the placebo groups
      - Placebo group decreased from 5.5 episodes / year to 2.8 annual episodes

STATEMENT 7. Recurrent AOM with MEE

- Clinicians should offer bilateral tympanostomy tube insertion in children with recurrent AOM who have unilateral or bilateral MEE at the time of assessment for tube candidacy.

- **Recommendation**
- **Grade B**
- **Benefits:**
  - Mean decrease 3 episodes of AOM per year
  - Topical antibiotic therapy
  - Reduced pain with future AOM episodes
  - Improved hearing during AOM episodes

# AOM with and without a tube

<table>
<thead>
<tr>
<th>Issue</th>
<th>AOM without a Tube</th>
<th>AOM with a Tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ear pain</td>
<td>Mild to severe</td>
<td>None, unless skin irritated or tube occluded</td>
</tr>
<tr>
<td>Drainage from the ear canal (otorrhea)</td>
<td>No, unless eardrum ruptures</td>
<td>Yes, unless tube obstructed</td>
</tr>
<tr>
<td>Duration of middle ear effusion after infection</td>
<td>Can last weeks or months</td>
<td>Usually resolves promptly</td>
</tr>
<tr>
<td>Needs oral antibiotics</td>
<td>Often</td>
<td>Rarely</td>
</tr>
<tr>
<td>Needs antibiotic eardrops</td>
<td>No benefit</td>
<td>Often</td>
</tr>
<tr>
<td>Risk of eardrum rupture</td>
<td>Yes</td>
<td>No, unless tube obstructed</td>
</tr>
<tr>
<td>Risk of suppurative complications</td>
<td>Rare</td>
<td>Exceedingly rare</td>
</tr>
</tbody>
</table>

STATEMENT 8 / 9: At risk children and tubes

- Clinicians should determine if a child with recurrent AOM or with OME of any duration is at increased risk for speech, language, or learning problems from otitis media because of baseline sensory, physical, cognitive, or behavioral factors.

- Clinicians may perform tympanostomy tube insertion in at-risk children with unilateral or bilateral OME that is unlikely to resolve quickly as reflected by a type B (flat) tympanogram or persistence of effusion for 3 months or longer.

Recommendation / Option

Grade C

Statement 10: Perioperative Education

▪ In the perioperative period, clinicians should educate caregivers of children with tympanostomy tubes regarding the expected duration of tube function, recommended follow up schedule, and detection of complications.

▪ Recommendation

▪ Primary care providers
  – Please notify surgeon if there are
  – change in hearing status
  – granuloma, persistent or recurrent otorrhea, TM perf, etc

Statement 11: Acute tympanostomy tube otorrhea

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

  - Strong recommendation
  - Grade B
  - Exceptions: Children with complicated otorrhea, cellulitis of adjacent skin, concurrent bacterial infection requiring antibiotics (e.g., bacterial sinusitis, group A strep throat), or those children who are immunocompromised

Statement 12: Water precautions

- Clinicians should *not* encourage routine, prophylactic water precautions (use of earplugs or headbands; avoidance of swimming or water sports) for children with tympanostomy tubes.

- **Recommendation against**

- **Grade B**

Figure 9. Algorithm of guideline’s key action statements for children with otitis media with effusion.
Sinusitis Adult

- Sinusitis 1/8 adults
- Direct costs > 11 billion annually
- More than 1 in 5 abx for adults are for sinusitis
- Rhinosinusitis - symptomatic inflammation of paranasal sinuses and nasal cavity
- Uncomplicated rhinosinusitis - without clinically evident extension of inflammation outside the sinonasal cavities at the time of diagnosis

Cardinal symptoms of acute rhinosinusitis

- Up to 4 weeks of purulent nasal drainage
  - Accompanied by nasal obstruction, facial pain-pressure-fullness, or both

- Nasal obstruction w/o purulent drainage is not ARS

- Facial pain without purulent drainage is no consistent with ARS
  - Self described “sinus headache” is often related to and responsive to migraine therapy

- Purulent drainage as a sole criterion cannot distinguish between viral and bacterial infection

Transition from viral to bacterial infection

- Only 0.5-2% of VRS episodes are complicated by bacterial infection
- OMC occlusion
- Early onset viral infection cannot be differentiated from early onset ABRS
  - Only pts with unusually severe presentation or extra-sinus manifestations should be presumed to have bacterial illness
  - get figure 2 S10
  - Fever only 50% specific for ABRS

Figure 2. Symptom prevalence by day for rhinovirus illness (data from Gwaltney 1967).\textsuperscript{67}
Categories

- Acute < 4 weeks
  - ARS
- Chronic > 12 weeks with or without acute exacerbations
  - CRS
- Recurrent ARS - 4 or more annual episodes without persistent symptoms in between

Statement 1a: Differential diagnosis of acute rhinosinusitis

- Clinicians should distinguish presume acute bacterial rhinosinusitis from acute rhinosinusitis caused by viral upper respiratory infections and non infectious conditions.

- A clinician should diagnose ABRS when
  - symptoms or signs of acute rhinosinusitis (purulent drainage accompanied by nasal obstruction, facial pain-pressure-fullness, or both) persist without evidence of improvement for at least 10 days beyond the onset of upper respiratory symptoms,
  - symptoms or signs of acute rhinosinusitis worsen within 10 days after initial improvement (double worsening)

- **Strong recommendation**

- **Grade B**

Statement 1b: Radiographic imaging and ARS

- Clinicians should not obtain imaging for patients who meet diagnostic criteria for ARS unless a complication or alternative diagnosis is suspected

  Recommendation

- Grade B

- Decrease exposure to radiation

- Plain films are inaccurate

- Impossible to distinguish VRS vs ABRS

- CT imaging if: severe headache, facial swelling CN palsy, proptosis,

Statement 2: Symptomatic relief of viral rhinosinusitis

- Clinicians may recommend analgesics, topical intranasal steroids, and/or nasal saline irrigation for symptomatic relief of VRS
  - Option
  - Grade B and C
  - Discolored rhinorrhea is not always bacterial
  - NSAIDs, decongestants, antihistamines, mucolytics, cough meds
  - Topical steroids - minor relief of facial pain and congestion

Statement 3: Symptomatic relief of acute bacterial rhinosinusitis

- Clinicians may recommend analgesics, topical intranasal steroids, and/or nasal saline irrigation for symptomatic relief in ABRS

- **Option**

- Grade A for nasal steroids

- Grade B for saline irrigation and systemic steroids

- Grade D analgesics, decongestants, antihistamines and guaifenesin

Statement 4: Initial management of ABRS

Clinicians should either offer watchful waiting or prescribe initial antibiotic therapy for uncomplicated ABRS. Watchful waiting should only be offered when there is assurance of follow up, such that antibiotic therapy is started if the patient’s condition fails to improve by 7 days after ABRS diagnosis or if it worsens at any time.

**Recommendation**

**Grade A**

**Systematic review** -
- Cure or improvement rates at 7-15 days favor abx with small benefit (91% abx vs 86% placebo)
- Duration of pain / illness - no consistent relationship to initial management
- Complications - similar between groups
- ... anectdotal patient stories regarding similar episodes which they did not seek treatment for

Statement 5: Choice of antibiotic for ABRS

- If a decision is made to treat ABRS with an antibiotic agent, the clinician should prescribe amoxicillin with or without clavulanate as first-line therapy for 5-10 days for most adults.

- **Recommendation**

- Grade A

- High dose therapy considered for patients at risk for resistance (90mg/kg)

Statement 5: Choice of antibiotic for ABRS

- PCN allergic - doxycycline or respiratory fluoroquinolone (levofloxacin or moxifloxacin)
  - Combination clindamycin with 3rd generation cephalosporin
  - Macrolides and Bactrim are not recommended for initial therapy

- Therapy duration - no difference between 3-7 days versus 6-10 day duration
  - Abx adverse events more common with 10 days of therapy
Statement 6: Treatment failure for ABRS

- If the patient fails to improve with initial management option by 7 days after diagnose or worsens during the initial management, the clinician should reassess the patient to confirm ABRS, exclude other causes of illness, and detect complications. If ABRS is confirmed in the patient initially managed with observation, the clinician should begin antibiotic therapy. If the patient was initially managed with an antibiotic, the clinician should change the antibiotic.

- **Recommendation**

- **Grade B**

Statement 7a: Diagnosis of chronic rhinosinusitis or ABRS

- Clinicians should distinguish CRS and recurrent ARS from isolated episodes of ABRS and other causes of sinonasal symptoms

Recommendation

Grade C
Statement 7a: Diagnosis of chronic rhinosinusitis or ABRS

Table 8. Definitions of Chronic Rhinosinusitis and Recurrent Acute Rhinosinusitis.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic rhinosinusitis</td>
<td>Twelve weeks or longer of two or more of the following signs and symptoms:</td>
</tr>
<tr>
<td></td>
<td>• mucopurulent drainage (anterior, posterior, or both),</td>
</tr>
<tr>
<td></td>
<td>• nasal obstruction (congestion),</td>
</tr>
<tr>
<td></td>
<td>• facial pain-pressure-fullness, or</td>
</tr>
<tr>
<td></td>
<td>• decreased sense of smell.</td>
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<tr>
<td></td>
<td>AND inflammation is documented by one or more of the following findings:</td>
</tr>
<tr>
<td></td>
<td>• purulent (not clear) mucus or edema in the middle meatus or anterior ethmoid region,</td>
</tr>
<tr>
<td></td>
<td>• polyps in nasal cavity or the middle meatus, and/or</td>
</tr>
<tr>
<td></td>
<td>• radiographic imaging showing inflammation of the paranasal sinuses.</td>
</tr>
<tr>
<td>Recurrent acute rhinosinusitis</td>
<td>Four or more episodes per year of acute bacterial rhinosinusitis (ABRS) without signs or symptoms of rhinosinusitis between episodes:</td>
</tr>
<tr>
<td></td>
<td>• each episode of ABRS should meet diagnostic criteria in Table 4</td>
</tr>
</tbody>
</table>
Statement 7b: Objective confirmation of a diagnosis of chronic rhinosinusitis

- The clinician should confirm a clinical diagnosis of CRS with objective documentation of sinonasal inflammation, which may be accomplished using anterior rhinoscopy, nasal endoscopy or computed tomography

- **Strong recommendation**

- Grade B

Statement 8: Modifying factors

- Clinicians should assess the patient with CRS or recurrent ARS for multiple chronic conditions that would modify management such as asthma, cystic fibrosis, immunocompromised state, and ciliary dyskinesia

**Recommendation**

**Grade B**

- Asthma severity has direct correlation to severity or radiographic sinus disease
  - CRS treatment (medical and surgical) improve asthma symptom scores

Statement 9: Testing for allergy and immune function

- Clinician may obtain testing for allergy and immune function in evaluating a patient with chronic rhinosinusitis or recurrent ARS.

- **Option**

- **Grade C**

- AR prevalence is 40-84% in adults with CRS

- About twice as many patients with AR have abnormal CT scans

Statement 10: CRS with polyps

- Clinician should confirm presence or absence of polyps in a patient with CRS.

  Recommendation
  
  Grade A

  About 4% of patients with CRS have concurrent polyps

  Samter’s triad

  Nasal polyps do not seem to be related to allergic rhinitis

  Presence of polyps vary by geography and environment

  Endoscopy, CT

  Nasal steroid, oral steroid therapy, topical corticosteroid therapy

Statement 11: Topical intranasal therapy

• Clinicians should recommend saline nasal irrigation, topical intranasal corticosteroids, or both for symptom relief of CRS.

• Grade A
Questions