Otolaryngology – Head and Neck Surgery
Off-service Resident Orientation

Welcome to Otolaryngology! Here is a document that briefly outlines what can be expected on this rotation.

Schedule and Location

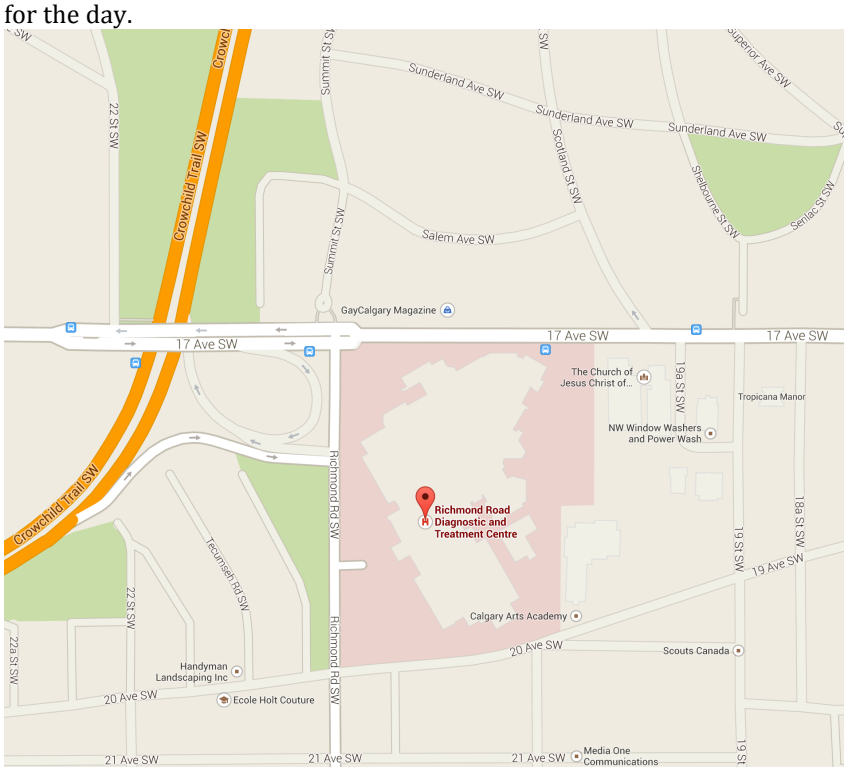
On your rotation at the Foothills, you will be attending both ORs and clinics. While schedules can vary, this is what a typical week looks like:

Monday	Tuesday	Wednesday	Thursday	Friday
OR	Clinic	Head and Neck Cancer Rounds am: TBCC Head and Neck Cancer Clinic or OR pm: OR	OR or clinic	Otolaryngology Grand Rounds Clinic or minor surgery

Ward rounds take place on unit 31. They typically start at 6:30 on Mondays, Tuesdays, and Thursdays, and 6:00 on Wednesday and Fridays. Please check with your senior resident the day before to confirm as time can change depending on the patient load.

Head and neck ORs are scheduled as 'late days' meaning they typically run later into the afternoon and evening.

Location of Head and Neck clinics:
Ear, Nose, and Throat Clinic (second floor). Richmond Road Diagnostic and Treatment Center
1820 Richmond Road SW, Calgary, AB T2T 5C7
Parking is underground, accessed via Richmond Road. Please note that you will have to pay to park for the day.



Otolaryngology grand rounds

- Alberta Children's Hospital 4th floor conference rooms (usually room 2).

Call

Otolaryngology is home call and the call is multi-site. On weekdays, you will cover FMC and RGH. On the weekend, you will cover FMC, ACH, PLC, and RGH. Unfortunately, at this time, there is no ENT call room available at any of the sites. In general, we try to see all the consults we are called for. If you have any questions about whether you should see a patient or not, please call the senior resident you are on call with, or your staff if you do not have a senior resident.

Common call presentations (please see the latter part of this document for a quick approach to each of these presentations)

- Peritonsillar abscess
- Other deep neck space infection/abscess
- Epistaxis
- Supraglottitis
- Otitis Media/Externa
- Mastoiditis
- Sudden Hearing Loss
- Airway obstruction
- Foreign bodies (in any E, N or T)
- Tracheostomy consults

Many of our patients require flexible fiberoptic nasopharyngoscopy as a component of their assessment. Please perform this with your senior resident/staff.

While you should try to see all of the consults you receive, some may be requests for follow up for a non-urgent concern. In the event that the consult is to arrange for follow-up, discuss it with the senior resident on call and call the emergency room physician back; if there is no senior resident on call with you, have the emergency room physician call the staff on call directly to arrange for follow-up with the staff at their clinic.

Your rotation at FMC on otolaryngology focuses on exposing you to common emergency consultations, ward concerns, and inpatient consultations. It tends to be focused on the head and neck oncology subspecialty of otolaryngology. If you would like to try arrange exposure to another area of otolaryngology, please speak with the on service FMC resident prior to or at the beginning of your rotation and we will try accommodate your learning requests as we can.

We're looking forward to having you on service!

Sincerely,

Kristine Smith R5
Carrie Liu R4 (Cheif Resident)
Devon Livingstone R3 (Research yr)
Justin Lui R3 and Julie Lumingu R3
Francisco Lee R2
Ashley Hinther R1 and Gabrielle French R1

Otolaryngology Call – Common Presentations

PERITONSILLAR ABSCESS

History

- Location of pain – does it lateralize?
  - Pain associated with tonsillitis is bilateral
  - Pain associated with a peritonsillar abscess will be worse on one side
- Duration of pain – it takes 3-4 days for an abscess to form. Therefore, pain that has been present for only 2 or 3 days is more likely to be phlegmonous rather than a well-formed collection
- Associated symptoms – **trismus**, difficulty swallowing, drooling, muffled voice
  - Trismus is a very important point to elicit on history – a peritonsillar abscess almost ALWAYS presents with trismus
- Has the patient seen another doctor regarding this? (family doctor or walk-in) and have they been tried on oral antibiotics already?
- Other components of a complete history
  - PMHx
  - Meds, allergies
  - FHx
  - SHx
  - * make note of a personal or family history of any bleeding disorders
- Sometimes, it is reasonable to defer a consult to infectious diseases based on the history
  - Ie. In a patient who has had pain for 3 days with no trismus, it is likely not a formed abscess yet. In this case, it is reasonable to suggested IV antibiotics (clindamycin OR ancef and flagyl) with HPTP follow-up. If the patient does not improve or worsens in 48 hours, reconsult ENT.

Physical exam

- ABCs
  - Airway and breathing – what does the patient look like and sound like? Note the presence of drooling, stridor, stertor
  - Circulation – prior to attempting to drain an abscess, the patient MUST have IV access.
    - To save time, ask for this on the phone at the time of consult initiation
- Otoscopy – some deep neck abscesses (ie. parapharyngeal) may interfere with Eustachian tube function and lead to middle ear effusions or acute otitis media
- Anterior rhinoscopy
- Oral cavity and oropharynx – look for other causes of throat pain – ie. stomatitis and pharyngitis
  - Trismus – assess mouth opening in terms of finger breadths
  - Peritonsillar region – bulging, erythema
  - Uvula – deviation off of the midline towards the unaffected side
  - Tonsils – erythema, exudate
    - Symmetry – deviation of tonsil inferiorly and medially
  - Palpate the peritonsillar region for firm swelling that can indicate the presence of a phlegmon or abscess
    - Sometimes, you can feel a central fluctuant area (this is where you would want to poke to look for the abscess)
- Neck – range of motion
  - Palpate for lymphadenopathy

- Evidence of involvement of other deep neck spaces – it is common for patients with peritonsillar abscesses to have tender lymphadenopathy, and even a firm area just behind or below the angle of the jaw. However, if this swelling is significant, it may indicate that the infection has spread to other deep neck spaces.

Investigations

- CBC, lytes
- Imaging – only if there is concern that the infection involves more than the peritonsillar space

Treatment

- If you think that a patient has peritonsillar abscess that needs to be drained, please call the ENT resident or staff so that you can do it together
- These are the materials that you can gather while waiting for the resident or staff:
  - Local anesthetic – 1 or 2% lidocaine with epinephrine
    - Note, use a smaller syringe (3ml or 5ml) as this is easier to pass through the mouth of a patient with trismus
    - 1 inch, 27 gauge needle
  - Another 3 or 5ml syringe with an 18 gauge needle (this is for finding the abscess)
  - 11 blade scalpel (the disposable ones with the green handle)
  - Curved mosquito, Crile, or Kelly. A minor suture tray will contain these, and an 18 gauge needle.
  - Yankauer suction
- The ENT resident or staff will walk you through the drainage

OTHER DEEP NECK SPACE INFECTION/ABSCESS

Deep neck space infections are concerning not because of their potential for sepsis (though patients could become quite septic with it). The main concern is for potential airway obstruction. These are urgent consults that should be seen in a timely manner.

History

- Preceding symptoms
    - Toothache – most deep neck space infections in adults are odontogenic
        - Determine the culprit tooth if possible, as it may need to be extracted in the treatment of the deep neck space infection
    - Sore throat – may have progressed from a peritonsillar abscess
    - Trauma
    - Recent URI
    - Salivary gland issues – recurrent pain, swelling
- Associated symptoms
    - Fever, chills
    - Neck tenderness
    - Neck stiffness
    - Trismus
    - Voice changes (hoarseness)
    - Airway-specific
        - Dyspnea
        - Dysphagia
        - Odynophagia
        - Drooling
        - Stridor
- Treatment thus far – ie. oral antibiotics from family physician or dentist

Physical exam

- ABCs ** If the patient looks like they are having difficulty breathing (tripoding, drooling, hoarse) – call the ENT resident or staff right away. Otherwise, proceed with a full exam.
- Otoscopy – some deep neck abscesses (ie. parapharyngeal) may interfere with Eustachian tube function and lead to middle ear effusions or acute otitis media
- Anterior rhinoscopy
- Oral cavity and oropharynx
    - Look
        - Trismus – assess mouth opening in terms of finger breadths
        - Peritonsillar region – bulging, erythema
        - Uvula – deviation off of the midline towards the unaffected side
        - Tonsils – erythema, exudate, symmetry
        - Dentition – carious teeth
    - Feel
        - Floor of mouth (the area underneath the tongue) for firmness
        - Loose teeth
        - If suspect suppurative sialadenitis, can palpate/milk the submandibular glands or the parotid gland and look for pus at Stensen's and Wharton's ducts
- Neck
    - Look
        - Obvious swelling and/or asymmetry of the face and neck
        - Erythema, induration

            - *Important to note if erythema is present on the anterior chest, as may indicate the presence of mediastinitis (which can occur in the spread of a deep neck space infection)
        - Range of motion
    - Feel
        - Swelling – firmness, location, extent – does the swelling cross the midline?
        - Lymphadenopathy
- Flexible nasopharyngolaryngoscopy – every patient with a suspected deep neck space abscess needs to undergo this. Should be performed with the ENT resident or staff to avoid having to scope the patient twice.

Investigations
- CBC, lytes, type and screen
- Imaging – these people should get an enhanced CT neck

Management
- Airway – if there is concern for imminent airway obstruction, notify the ENT resident or staff right away
    - Otherwise, airway can be addressed at the time of the OR (typically an awake fiberoptic intubation with surgical airway set on standby)
- Review the imaging with the ENT resident or staff to determine need for OR
    - For a CT-confirmed deep neck space abscess, the definitive treatment is incision and drainage, usually in the OR (unless the abscess is really small)
- In the mean time
    - Initiate IV fluids
    - IV antibiotics – ancef and flagyl

EPISTAXIS

If the patient is actively bleeding

ABCs first

- Airway/breathing – protect the airway
  - Sit upright – so that the patient can spit out the blood
- Circulation – if the patient is actively bleeding, take measures to temporize it
    - Have patient blow his or her nose vigorously to remove all the ineffective clotting
    - Insert cotton pledgets ('neuro-patties') soaked in 50/50 mixture:
      - Adrenaline or otrivin

      AND
      - 4% lidocaine or topical lidocaine spray
    - If the patient is bleeding profusely, just squeeze as much otrivin up the nose as you can
    - Have patient apply FIRM pressure on their nose, right below the bony bridge (where the squishy part of the nose is)
    - NOTE: pressure has to be so firm that the patient's fingers go numb and have to change hands (quickly) every minute. Hold CONSTANT pressure x 10-15 minutes.
    - Ensure the patient has IV access
    - CBC, type and screen
    - If the patient is hypertensive, give PRN antihypertensive

If patient is not actively bleeding or once bleeding is controlled

History (once ABCs have been evaluated)

- Current episode
    - Duration, intermittent vs continuous
    - Trigger – recent nasal trauma?
    - Side of bleeding – if they say bilateral, then clarify to see which side the bleeding started. True bilateral bleeding is uncommon, usually it's just overflow from the other side.
    - Estimate amount of bleeding
    - What have they tried to stop it so far
- Previous episodes
    - Frequency
    - Triggers
    - How do they usually deal with it?
    - Self-resolution or previous hospitalization?
- PMHx – any bleeding disorders, hypertension
    - Past nasal surgeries
- Meds – anticoagulants
    - Supplements – garlic, ginko, ginseng
- SHx – intranasal cocaine use

Physical exam

- ABCs (see above)
- Vitals
- To examine the nose, have the patient blow the nose to clear out any blood/clots from the nasal cavity
- If the patient already has packing in place, look for signs of ongoing anterior bleeding. Also examine the oropharynx for oozing posteriorly.

- Decongest and anesthetize with 50/50 mixture of lidocaine and vasoconstrictor (adrenaline or otrivin)
- After 10 minutes of decongestion, examine the nose using a
    - **Head light**
    - Nasal speculum (from the nasal packing tray available in every emergency department)
- Examine the anterior septum (most bleeds originate here), turbinates, and floor of the nose

Management

- Regardless of how you are planning to treat the patient, please call the resident or staff on call to discuss your treatment plans
- Silver nitrate – only if you can see clearly the vessel that is bleeding
    - Touch the tip of the stick to the area that is bleeding a few times, enough to see the area start to turn white
    - *Important – avoid excessive cautery, only cauterize when there is a clear area that is bleeding
        - DO NOT cauterize on both sides of the septum (this can devascularize the cartilage and lead to a septal perforation)
        - Avoid cauterizing the lateral nasal wall/turbinates and septum, as this can form scar bands
    - If you cauterize, instruct the patient to put a pea-sized amount of polysporin to the cauterized side for 3 days
- Packing
    - Rhino-rapid – comes in anterior and posterior sizes
        - Soak packing in saline – this facilitates insertion
        - Insert using nasal speculum and bayonet forceps
        - Fill with saline or air
        - Wait 10 minutes, if the patient initially had adequate hemostasis but rebleeds, then put in 1-2cc more
    - Merocel – essentially like a nasal tampon. Firm to start with, but will expand once exposed to moisture/blood.
        - Painful to put in, so do it in one swift motion
- Once the patient is packed, avoid repacking if possible to avoid ongoing trauma to the nasal mucosa
- If the bleeding stops with packing, wait 10-15 minutes and reexamine – anteriorly as well as in the oropharynx.
- If adequate hemostasis is achieved with packing, can discharge patient home with prophylactic antibiotics for as long as the packing is in (anti-staph coverage)
- Packing stays for 48 hours
- Arrange with patient to return to the emergency department in 2 days for packing removal.

If bleeding is ongoing with the above measures, then call the ENT resident or staff (or call any time that you are concerned).

SUPRAGLOTTITIS/EPIGLOTTITIS

- Infection and inflammation of the supraglottic structures (including the epiglottis)
- Concerning as can lead to rapid deterioration of the airway
- Common pathogens – h. influenza, s. pneumonia, s. aureus, b-hemolytic strep

History
- Onset of symptoms
- Fever, chills
- Muffled voice
- Dysphagia
- Stridor
- Dyspnea

Physical exam
- ABCs – what does the patient look like?
    - A – if there is an imminent concern re: airway – ie. tripoding, drooling, stridulous, then call the ENT resident or staff right away
        - Consider nebulized epinephrine and heliox
            - Heliox is a mixture of helium and oxygen. It has less resistance than regular air when passing through the airway, and therefore is easier for the patient to breathe in and out.
    - B – apply humidified oxygen
    - C – initiate IV
- Otoscopy
- Anterior rhinoscopy
- Oral cavity and oropharyngeal exam – evidence of swelling or erythema in the oropharynx
- Neck – palpate for lymphadenopathy, any swelling suggestive of a deep neck space abscess
- Flexible nasopharyngolaryngoscopy
    - Patient need to have this done to assess for the status of the upper airway
    - Should be performed with the ENT resident or staff to avoid having to scope the patient twice.

Investigations
- CBC, lytes
- Imaging – lateral neck x-ray for 'thumbprint' sign
    - Consider enhanced CT neck if you suspect that something else is going on (ie. deep neck space infection)

Management
- Establish the airway
    - Typically, this is an awake fiberoptic intubation in the OR by anesthesia with ENT on standby in case an emergent surgical airway is needed
- IV antibiotics – ancef and flagyl

AIRWAY OBSTRUCTION

Upper airway obstruction can be a concerning consult when on citywide call. Always ask over the phone about stridor, vitals and work of breathing (WOB) and let them know your timeline for seeing the patient. If uncertain or unstable airway i.e. severe dyspnea, increased WOB and stridor with respiratory compromise, call ENT staff very early (use common sense). Also consider, does this patient need ICU/anesthesia now rather than ENT in 30 minutes? Can suggest anesthesia consult to assess patient right away while you are going to the hospital

History

- Onset – acute vs. chronic
    - Duration is very important, since a progressive cancer may be increasingly symptomatic but far less emergently life-threatening than an infection or angioedema.
- Severity of stridor
- Progressive vs intermittent
- History based on suspected etiology:
    - Deep neck infection:
        - Fevers, chills, rigor
        - Immunocompromise
        - Tooth pain, sinus pain, DNI's are mainly odotontogenic (from cavities) or rhinogenic (from sinus infections)
    - Neoplastic:
        - Smoking/ETOH hx
        - Weight loss, constitutional symptoms?
        - Hoarseness
        - Otalgia
    - Foreign Body:
        - Otalgia (may get pain referred to ipsilateral ear)
        - Drooling
        - Odynophagia
- Associated symptoms: cough, aspiration
- Ask if they have given the patient steroid: will have rebound edema 24-48h after dexamethasone is given
- Also consider more rare causes: i.e. autoimmune, granulomatous disease, subglottic stenosis
- PMHx – asthma, cardiac/pulmonary problems, prior intubations, OSA
- Meds – ACE-I can cause laryngeal angioedema

Physical Exam

- ABCs – if there is an imminent concern re: airway – ie. tripoding, drooling, stridulous, then call the ENT resident or staff right away
- The sound associated with breathing can give you a good idea of where the obstruction is

Location	Sound
Nasopharynx	Stertor (snoring)
Oropharynx	Wet vocalizations
Supraglottic	Inspiratory stridor
Glottic	Inspiratory OR biphasic, hoarseness
Subglottic	Biphasic, barking cough +/-hoarseness
Tracheobronchial	Expiratory stridor +/- wheeze

- Flexible nasopharyngolaryngoscopy
    - This is key in diagnosing the etiology of the obstruction

    - Should be performed with an ENT resident or staff
    - Specific subsites and assess on exam
        - Nasal cavity
        - Nasopharynx
        - Oropharynx
        - Hypopharynx
        - Supraglottis – including epiglottis
        - Glottis – vocal cords
        - Proximal subglottis
    - Specifc features to note
        - Pooling of secretions
        - Erythema, edema
        - Mucosal abnormalities
        - Foreign bodies
        - Can you see the true vocal cords? How much?

Investigations

- Labs
    - CBC, lytes
    - PT INR
    - ABG
- Enhanced CT neck – if you suspect deep neck space infection/abscess or neoplasm

Management

- Temporizing measures until able to definitively secure airway:
    - Consider nebulized epinephrine and heliox
        - Heliox is a mixture of helium and oxygen. It has less resistance than regular air when passing through the airway, and therefore is easier for the patient to breathe in and out.
    - B – apply humidified oxygen
    - C – initiate IV
- Initiate IV antibiotics if infectious etiology
- Method of securing airway dependent on underlying patient factors and underlying etiology
    - Awake flexible fibreoptic intubation in the OR by anesthesia with ENT standby for emergent surgical airway
    - Awake tracheotomy – required when airway so tenuous that awake flexible fibreoptic intubation may cause obstruction, or if there is altered anatomy (obstructing H&N Ca, severe epiglotittis). ** You may see this on call, some patients refuse treatment of their malignancy or are lost to follow-up until they come into the ED in respiratory distress **
- Treat underlying etiology as applicable i.e. drain DNI, remove foreign body, arrange for tx of Ca

FOREIGN BODY

Foreign bodies can be ingested, aspirated, or placed in any orifice.

- Most common adult foreign body ingestions: fish bones, meat, occasionally wire bbq brush bristles
- Most common pediatric: coins, disc battery
- Most common aspirated foreign bodies are peanuts or almonds

Consider: should this be dealt with by another service

- Adult tracheobronchial foreign body – may be more appropriate for interventional respirology, unless under duress and potentially needing a tracheotomy
- Adult esophageal foreign body (past the upper esophageal sphincter)
    - ENT can deal with these too, but would require that the patient undergo a general anesthetic with rigid esophagoscopy, whereas GI can often take these out at the bedside with flexible endoscopy under sedation, so sometimes the patient would be better served with a GI consult
    - Foreign bodies at or above the cricopharyngeus are not retrievable by GI, so we deal with these cases. Normally an X-ray will show a foreign body in the hypopharynx or the emergency physician will have seen it on their scope. We can scope these patients to confirm whether or not a foreign body is present, then either address it or have emergency refer to GI, if necessary.
- For peds, ENT pretty much does everything (airway and esophageal foreign bodies)

History

- Establish hx of foreign body ingestion/aspiration
- Timing
- Important to elicit – was there a coughing/choking episode
- Signs & Symptoms:
    - Dysphagia
    - Odynophagia
    - Drooling
    - Fever
    - Stridor
    - Otalgia (ipsilateral to FB)
    - Dysphonia
    - Increased work of breathing

** sometimes food becomes temporarily impacted in the pyriform sinus, or a fish/chicken bone traumatizes the oropharynx before being swallowed: these patients may still complain of throat pain, FB sensation and have ipsilateral otalgia. Perform a full exam to rule out foreign body.

Physical Exam

- Fully examine the oral cavity, oropharynx and tonsillar pillars: sometimes fish bones can get trapped in a readily accessible area
- Flexible nasopharyngolaryngoscopy should be performed: get patient to puff out cheeks and stick tongue out to examine pyriform sinuses and base of tongue (BOT).
    - This should be performed with the ENT resident or staff
- Pediatric airway FB
    - Look for increased WOB, tracheal tug, intercostal indrawing
    - Auscultate lung fields
    - Altered air entry
    - Atelectasis/lobar collapse

Investigations

- CXR
    - Inspiratory/expiratory phase: show gas trapping
    - May have tracheal deviation
    - Look for hyperinflation and lobar collapse

Management

- Some FB's can be removed at the bedside i.e. oral cavity or oropharyngeal fish bones
- Grab a head light, tongue depressor, Magill forceps and topical lidocaine spray if required
- Using a gloved hand and gauze pull on tongue or use tongue depressor
- Topicalize as needed to blunt gag reflex
- Use the Magills to remove the FB (and try not to subsequently drop the FB into the airway – it's happened!)

Most other foreign bodies will require going to the OR to treat with direct laryngoscopy or bronchoscopy and occasionally rigid esophagoscopy. Sometimes, the neck needs to be opened to retrieve the foreign body.

SUDDEN SENSORINEURAL HEARING LOSS

A sudden sensorineural hearing loss consult is not typically urgent in nature and can be arranged to be seen either in residents' clinic or in the staff's clinic. If you are on with an ENT resident, arrange with them to have the patient follow up at residents' clinic. If there is no resident on with you, then have the emergency physician call the staff directly to set up follow-up.

*Make sure you ask the emergency physician to order an audiogram. This can be done in SCM (they type in audio, and it should come up as 'audiology adult' or something along those lines). Also ensure that the patient is given ten days of prednisone, 1 mg/kg (up to 50 mg) daily.

ACUTE OTITIS MEDIA

- To qualify as AOM, the following three criteria must be met
    1. Presence of middle ear effusion
    2. Signs and symptoms of middle ear inflammation – erythema and bulging of the tympanic membrane, otalgia, otorrhea (if there has been tympanic membrane perforation)
    3. Acute onset
- Otitis media with effusion – fluid in the middle ear without signs of inflammation
    - No antibiotics are needed for these
    - These patients should have follow-up with family physician to ensure that fluid resolves (most resolve in 3 months)
- The majority of AOM is treated by primary care physicians and we are rarely called to assess an uncomplicated primary AOM.
- Most often, we are called regarding AOM that fails to resolve, complicated AOM or recurrent AOM.
- In the adult population, unilateral AOM or middle ear effusion are less common and should raise suspicions of nasopharyngeal pathology (ie. mass in the nasopharynx blocking the Eustachian tube opening, leading to a unilateral middle ear effusion or AOM)

History

- Onset, Duration, Progression, Side (L or R), Alleviating/Aggravating factors
    - ** in children, surrogate markers include tugging at ears, fussiness
- Other otologic symptoms: tinnitus, vertigo, aural fullness, otalgia, otorrhea
- Risk Factors (these mostly pertain to children)
    - Known ciliary dysfunction – ex. cystic fibrosis, frequent lung and sinus infections
    - Structural abnormalities – cleft palate, craniofacial abnormalities
    - Social – day care, siblings, tobacco smoke exposure, birth weight, socioeconomic status, air pollution
    - Other – pacifier use
    - GERD
- In adults, should take history of sinonasal symptoms to identify possible nasopharyngeal pathology
    - Nasal obstruction, rhinorrhea, epistaxis, smell decrease/disturbances
- PMHx, meds, allergies
    - History of ear issues (recurrent AOM)
    - Previous ear surgery
    - Immunosuppression
    - Autoimmune disease
- SHX – smoking, EtOH, occupation (environmental exposure)
- FHx – ear problems, ear surgeries, immunosuppression, autoimmune diseases

Physical exam

- ABCs, vitals
- Complete head and neck exam
- Otoscopy
    - External auditory canal: may see debris and secondary otitis externa (OE) if perforated TM
    - Tympanic membrane: color, degree of translucency, mobility, middle ear effusion, perforation of TM with purulent otorrhea
    - Tuning Fork Tests: may show conductive hearing loss (Rinne AC < BC, Weber lateralize to affected ear)
- Anterior rhinoscopy
- Examination of the oral cavity and oropharynx

- Neck palpation
- Cranial nerve exam – to assess for potential complications of AOM

Investigations – usually none are needed, but consider the following if the patient is systemically unwell, requires admission, or if complications of AOM are suspected

- CBC, lytes, Cr, glucose
- Swabs – if there is otorrhea
    - Send for C&S, Gram stain, fungal cultures
    - Consider sending for AFB if pt is high risk
- CT temporal bones
- CT head

Management

- Please see the following for antibiotic guidelines
- In patients with recurrent AOM, should arrange for ENT follow-up to discuss tubes

TABLE 4. Criteria for Initial Antibacterial-Agent Treatment or Observation in Children With AOM

Age	Certain Diagnosis	Uncertain Diagnosis
<6 mo	Antibacterial therapy	Antibacterial therapy
6 mo to 2 y	Antibacterial therapy	Antibacterial therapy if severe illness; observation option* if nonsevere illness
≥2 y	Antibacterial therapy if severe illness; observation option* if nonsevere illness	Observation option*

This table was modified with permission from the New York State Department of Health and the New York Region Otitis Project Committee.[32,33]

* Observation is an appropriate option only when follow-up can be ensured and antibacterial agents started if symptoms persist or worsen. 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. A certain diagnosis of AOM meets all 3 criteria: 1) rapid onset, 2) signs of MEE, and 3) signs and symptoms of middle-ear inflammation.

TABLE 6. Recommended Antibacterial Agents for Patients Who Are Being Treated Initially With Antibacterial Agents or Have Failed 48 to 72 Hours of Observation or Initial Management With Antibacterial Agents

Temperature ≥ 39°C and/or Severe Otalgia	At Diagnosis for Patients Being Treated Initially With Antibacterial Agents		Clinically Defined Treatment Failure at 48–72 Hours After Initial Management With Observation Option		Clinically Defined Treatment Failure at 48–72 Hours After Initial Management With Antibacterial Agents	
	Recommended	Alternative for Penicillin Allergy	Recommended	Alternative for Penicillin Allergy	Recommended	Alternative for Penicillin Allergy
No	Amoxicillin, 80–90 mg/kg per day	Non-type I: cefdinir, cefuroxime, cefpodoxime; type I: azithromycin, clarithromycin	Amoxicillin, 80–90 mg/kg per day	Non-type I: cefdinir, cefuroxime, cefpodoxime; type I: azithromycin, clarithromycin	Amoxicillin-clavulanate, 90 mg/kg per day of amoxicillin component, with 6.4 mg/kg per day of clavulanate	Non-type I: ceftriaxone, 3 days; type I: clindamycin
Yes	Amoxicillin-clavulanate, 90 mg/kg per day of amoxicillin, with 6.4 mg/kg per day of clavulanate	Ceftriaxone, 1 or 3 days	Amoxicillin, clavulanate, 90 mg/kg per day of amoxicillin, with 6.4 mg/kg per day of clavulanate	Ceftriaxone, 1 or 3 days	Ceftriaxone, 3 days	Tympanocentesis, clindamycin

Complications/Red flags

- Facial paresis/paralysis
- Severe vertigo
- Immunocompromise
- Very young patient (<6 months)
- Mastoiditis
    - Swollen, erythematous in post-auricular region
    - On palpation, area feels boggy (cannot feel firm mastoid bone)
- Complications
    - Meningitis, epidural or subdural empyema, sigmoid sinus thrombosis

OTITIS EXTERNA

Otitis externa is not uncommon, especially in the summer months. Typically, we will be asked to see regarding a painful, draining ear. Simple bacterial otitis externa is not difficult to manage and treat, but a careful history and physical exam will keep you from missing other more sinister pathologies and complications.

Etiology
- Usually bacterial – especially pseudomonas
- Viral – HSV/VZV, Ramsay Hunt syndrome
- Secondary infection from dermatologic condition – ie. contact dermatitis, psoriasis
- Foreign body
- Neoplastic – squamous or basal cell carcinomas

History
- HPI – onset, duration, progression, side (L or R), alleviating/aggravating factors
  - Event at onset – swimming, trauma (including q-tip use), hearing aid use
  - Otologic symptoms – tinnitus, vertigo, aural fullness otalgia, otorrhea, ET dysfunction
- PHMx – previous ear issues or surgery, **immunosuppression** – diabetes, steroid use
- Meds, allergies (ex. contact dermatitis)
- FHx
- Social History – smoking, EtOH

Physical exam
- Vitals signs
- Otologic exam
  - Pinna – typically tender to touch/manipulate, may be erythematous and swollen
  - EAC – swollen, debris/pus in EAC, narrowed lumen, may not be able to visualize TM, may see blisters in EAC (HSV/VZV), may see black spots/white spots (fungal), rule out foreign body, examine for exposed bone/granulation tissue
  - TM: sometimes may have signs of AOM, if the otitis externa is secondary to ruptured TM from acute otitis media

Investigations – usually none are needed, but consider the following in severe/complicated cases
- CBC, lytes, Cr, glucose
- Swabs – C&S, Gram stain, fungal
  - Consider AFB if pt is high risk
- CT temporal bones – if you suspect malignant otitis externa

Management
- Ciprodex drops 5 drops in affected ear BID for 2 weeks
  - If there is significant swelling of the external ear canal, the patient will need an ear wick placed to facilitate instilling drops
- Dry ear precautions
- May need frequent ENT follow-up for ongoing debridement depending on severity

Complications/Red flags
- Significant EAC/Pinna or surrounding soft tissue involvement
  - Consider adding PO antibiotics (cipro/moxi/levo, +- cephalexin)
- Systemically unwell, immunocompromised, diabetes mellitus
  - Consider admission
  - IV antibiotics: consult ID
- Be suspicious of malignant otitis externa

    - Triad of
        - Exposed bone/granulation tissue in EAC
        - Pain out of proportion
        - Cranial nerve abnormalities
    - Obtain a CT Temporal Bones
- Intracranial possible – any changes in mental status may represent intracranial complications
    - Obtain CT head

Recurrent OE

- Consider fungal infections, TB, external auditory canal cholesteatoma
- Consider CT temporal bones
- Consider underlying malignancy
- Consider repeat swabs for everything and anything, biopsy EAC
- Consider ID consult

MASTOIDITIS

A complication of acute otitis media. True coalescent mastoiditis is rare since the introduction of antibiotics for acute otitis media. However, we are frequently called for query mastoiditis, especially from ACH. Keep in mind that the diagnosis of mastoiditis likely requires a CT temporal bones, and if your suspicion is high obtaining a scan sooner rather than later may be prudent. Remember, the radiation from a CT temporal bones (anywhere from 0.2mSv to 1mSv) is much less harmful than the complications of mastoiditis. Be forewarned! Fluid in the mastoid air cells is NOT coalescent mastoiditis – this may be a normal finding associated with acute otitis media. However, this radiologic finding tends to generate many consults, so imaging can be a double-edged sword if your clinical suspicion is low.

History

- Essentially the same as for acute otitis media
- Additional points to illicit on history
    - Headache
    - Diplopia
    - Meningismus
    - Hearing loss
    - Confusion, altered level of consciousness
    - Neck swelling

Physical exam

- Vitals Signs, mental status
- Complete H&N Exam
- Otologic Exam
    - Pinna – may be pushed forward from post auricular swelling or subperiosteal abscess
    - Post auricular region – examine for mastoid tenderness, post auricular, swelling/fluctuance, bony defects/soft spongy temporal bone
    - EAC – may have debris from ruptures AOM and secondary otitis externa
    - Tympanic membrane – sometimes may have signs of AOM
    - Tuning fork tests: may show conductive hearing loss (ie. Rinne AC < BC, Weber lateralize to affected ear)
- Cranial nerve exam: may suggest coalescent mastoiditis or intracranial complications

Investigations

- CBC, lytes, Cr, glucose
- Swabs – C&S, Gram stain, fungal
    - AFB – consider if pt high risk
- Imaging
    - CT temporal bones – to assess for coalescent mastoiditis or subperiosteal abscess if the infection has extended past the bone into the soft tissues

Management

- Review imaging with ENT resident or staff
- If imaging and physical exam consistent with coalescent mastoiditis (with or without a subperiosteal abscess)
    - Patient will require admission
    - OR for myringotomy and tympanostomy tube placement
        - Incision and drainage of subperiosteal abscess
        - Consider mastoidectomy if
            - Intracranial complications
            - Failure to improve with IV antibiotics and tube placement

- IV antibiotics with ID consult – patient may require prolonged therapy

Complications/Red flags

- Altered level of consciousness – intracranial complications can occur in up to 25% of patients with coalescent mastoiditis
  - Meningitis, subdural empyema, epidural abscess, venous sinus thrombosis
  - These pts will need CT head in addition to CT temporal bones
  - Neurology and neurosurgery consult as needed
- Neck swelling, pain, fluctuance
  - Sometimes, a neck abscess can develop secondary to mastoiditis (called a Bezold abscess)
  - These patients will need an enhanced CT neck
  - Treat as per neck abscess
- Retro-orbital pain, cranial nerve abnormalities (classically, abducens nerve palsy)
  - This is suggestive of petrous apicitis
  - If the patient doesn't already have a CT temporal bones, get one
  - Management – IV antibiotics, may need mastoidectomy with petrous apex debridement.