
CHAPTER 2 – EARS, NOSE, THROAT AND MOUTH

First Nations and Inuit Health Branch (FNIHB) Clinical Practice Guidelines for Nurses in Primary Care.

The section on Pharyngotonsillitis, Bacterial has been updated as of December 2017.

The remaining content of this chapter was reviewed in August 2011.

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ASSESSMENT OF THE EARS, NOSE, THROAT (ENT) AND MOUTH

HISTORY OF PRESENT ILLNESS AND REVIEW OF SYSTEMS

The following characteristics of each symptom should be elicited and explored:

- Onset (sudden or gradual)
- Chronology
- Current situation (improving or deteriorating)
- Location
- Radiation
- Quality
- Timing (frequency, duration)
- Severity
- Precipitating and aggravating factors
- Relieving factors
- Associated symptoms
- Effects on daily activities
- Previous diagnosis of similar episodes
- Previous treatments
- Efficacy of previous treatments

CARDINAL SYMPTOMS

Characteristics of specific symptoms should be elicited, as follows.

Ears

- Recent changes in hearing
- Compliance with and effectiveness of hearing aid
- Itching
- Earache
- Discharge
- Tinnitus
- Vertigo
- Ear trauma, including Q-tip use

Nose

- Nasal discharge or postnasal drip
- Epistaxis
- Obstruction of airflow
- Sinus pain, pressure
- Itching
- Anosmia
- Nasal trauma

Mouth and Throat

- Dental status
- Oral lesions
- Bleeding gums
- Sore throat
- Dysphagia (difficulty swallowing)
- Hoarseness or recent voice change

Neck

- Pain
- Swelling
- Enlarged glands

Other Associated Symptoms

- Fever
- Malaise
- Nausea or vomiting

PAST MEDICAL HISTORY (SPECIFIC TO ENT)

- Frequent ear or throat infections
- Rhinosinusitis
- Trauma to head or ENT area
- ENT surgery
- Audiometric screening results indicating hearing loss
- Allergies
- Smoking
- Prescription or over-the-counter medications used regularly

FAMILY HISTORY (SPECIFIC TO ENT)

- Others at home with similar symptoms
- Seasonal allergies
- Asthma
- Hearing loss
- Menière's disease
- ENT cancer

PERSONAL AND SOCIAL HISTORY (SPECIFIC TO ENT)

- Frequent exposure to water (swimmer's ear)
- Use of foreign object to clean ear
- Crowded living conditions
- Dental hygiene habits
- Exposure to smoke or other respiratory toxins
- Recent air travel
- Occupational exposure to toxins or loud noises

REVIEW OF SYSTEMS

Obtain a history about other relevant systems for the presenting concern. This may include information about the eyes, central nervous system, gastrointestinal system and/or respiratory system.

PHYSICAL EXAMINATION

GENERAL APPEARANCE

- Apparent state of health
- Degree of comfort or distress
- Colour (flushed or pale)
- Nutritional status (obese or emaciated)
- Match between appearance and stated age
- Difficulty with gait or balance

EARs

Inspection

- Pinna: lesions, abnormal appearance or position
- Canal: discharge, swelling, redness, wax, foreign bodies
- Ear drum: colour, light reflex, landmarks, bulging or retraction, perforation, scarring, air bubbles, fluid level
- Assess mobility of ear drum using pneumatic otoscope (if available)

Palpation

- Tenderness over tragus or mastoid process
- Tenderness on manipulation of the pinna

Estimate hearing with a watch or whisper test; perform screening audiometry or tympanography (if equipment available). Perform Weber and Rinne tests.

NOSE

Inspection

- External: inflammation, deformity, discharge, bleeding
- Internal: colour of mucosa, edema, deviated septum, polyps, bleeding points
- Transilluminate sinuses for dulling of light reflex
- Nasal vs. mouth breathing

Palpation

- Sinus (frontal and maxillary) and nasal tenderness

Percussion

- Sinus (frontal and maxillary) and nasal tenderness

MOUTH AND THROAT

Inspection

- Lips: colour uniformity (light to dark pink), lesions, symmetry of lips
- Oral mucosa and tongue: breath odour; colour; lesions of buccal mucosa, palate, tongue; tenderness of floor of mouth
- Gums (*see the section "Gingivitis" in this chapter*): redness, swelling
- Xerostomia (*see the section "Xerostomia" in this chapter*) (dry mouth)
- Teeth: caries, fractures
- Throat: colour, tonsillar symmetry and enlargement, exudates, uvula midline

NECK

Inspection

- Symmetry
- Swelling
- Masses
- Redness
- Thyroid enlargement
- Active range of motion

Palpation

- Tenderness, enlargement, mobility (passive range of motion), contour and consistency of masses
- Thyroid: size, consistency, contour, position, tenderness

LYMPH NODES OF THE HEAD AND NECK

Palpation

- Tenderness, enlargement, mobility, contour and consistency of nodes
- Pre- or post-auricular nodes

- Anterior and posterior cervical nodes
- Tonsillar
- Submaxillary
- Submandibular
- Occipital

COMMON PROBLEMS OF THE EARS AND NOSE

ANTERIOR EPISTAXIS

Localized bleeding from the anterior portion of the nasal septum.

CAUSES

- Trauma and irritation
- Drying of nasal mucosa due to lack of humidity in environment
- Foreign-body irritation
- Nasal tumour (rare)

Predisposing Factors

- Allergic rhinitis
- Deviated nasal septum
- Infection of the upper respiratory tract
- Local vascular lesions
- Nasal polyps
- Cocaine use
- Nasal spray use
- Systemic coagulopathies
- Drugs (warfarin, NSAIDs)
- Hematological malignancies
- Hypertension
- Liver failure
- Uremia
- Blood dyscrasias (hemophilia, von Willebrand's disease)

HISTORY

- Exposure to one or more of the predisposing factors
- Usually unilateral
- Profuse bleeding or blood-streaked nasal discharge
- Determine duration, amount and frequency of bleeding
- Use of anticoagulants, ASA products or other medications such as topical nasal steroid sprays

- History of easy bruising or bleeding elsewhere (for example, melena, heavy menstrual periods)
- Family history of bleeding disorders (von Willebrand's disease)

PHYSICAL FINDINGS

- Examine client sitting up and leaning forward so that the blood will flow forward
- Blood pressure normal unless bleeding is severe enough to cause loss of volume
- Heart rate may be elevated because of fear or if bleeding is severe enough to cause loss of volume
- Obvious deformity or displacement may be present
- Bleeding from anterior portion of septum may be present
- Inspect throat for posterior bleeding
- Sinuses may feel tender
- Septum may be deviated

DIFFERENTIAL DIAGNOSIS

- Infection of nasal mucosa
- Dryness and irritation of nasal mucosa
- Nasal fracture
- Foreign body
- Tumor
- Tuberculosis
- Blood dyscrasias

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Stop loss of blood
- Prevent further episodes

Appropriate Consultation

Usually not necessary unless complications arise or serious underlying pathology is a concern.

Nonpharmacologic Interventions

Most bleeding will be stopped by application of pressure to both sides of the nose, with firm pressure against the nasal septum for 15–20 minutes.

Client Education

- Recommend increasing room humidity (client should keep a pot of water on the stove at all times, especially in winter)
- Counsel client about appropriate use of medications (dosage and side effects; avoidance of overuse)
- Recommend avoidance of known irritants and local trauma (nose-picking, forceful nose-blowing)
- Instruct client about first-aid control of recurrent epistaxis (sitting up and leaning forward; applying firm, direct pressure to soft part of nose)
- Recommend liberal use of lubricants such as petroleum jelly (for example, Vaseline) in the nares to promote hydration of the nasal mucosa
- Advise client to trim fingernails to avoid trauma from nose-picking

Pharmacologic Interventions

If direct pressure alone is insufficient to stop the bleeding, try a topical vasoconstrictor:

xylometazoline 0.1% drops (Otrivin)

Soak a cotton ball with the solution. Place the medicated cotton ball in the anterior portion of the nose. Press firmly against the bleeding nasal septum for 10–20 minutes.

If there is failure to control bleeding with this measure, nasal packing should be performed.

Anesthesia and vasoconstriction:¹

- Soak cotton ball in a mix of 1% lidocaine with epinephrine (1:1000)
- Put 1–2 cotton balls into the bleeding nostril. (If bleeding is not clearly unilateral, put cotton balls into both nostrils.)
- Put a dry cotton ball at the external nares to prevent leakage and dripping
- Leave cotton balls in place for 10 minutes

- Pack the anterior nasal cavity with one-half inch ribbon gauze soaked in Vaseline layered anterior to as far posterior as possible, starting at the nasal floor and going toward the nasal roof. Leave in place for 2–3 days
- Nasal tampons or Gelfoam, if available, are alternatives to ribbon gauze

Monitoring and Follow-Up

Follow up to remove packing in 2–3 days.

Referral

Refer to a physician to rule out other pathologies if the problem is recurrent or if the client is older. If there has been trauma (for example, a fist fight), it is important to rule out septal hematoma. Management of hematoma of the nasal septum is surgical, and medevac is necessary.

CERUMINOSIS (IMPACTED CERUMEN)

Obstruction of the ear canal by cerumen (ear wax).

CAUSES

Cerumen is produced naturally by the ear canal and is normally cleared by the body's own mechanisms. Occasionally, cerumen is produced in excessive amounts and partially or totally occludes the ear canal.

HISTORY

- Ear pain
- Sensation of fullness
- Itching
- Conductive hearing loss

PHYSICAL FINDINGS

- Wax blocks canal
- Canal may be reddened and swollen
- Abnormal Weber and Rinne test results (evidence of conductive loss) may be present

DIFFERENTIAL DIAGNOSIS

- Foreign-body irritation
- Otitis media
- Otitis externa

COMPLICATIONS

- Hearing loss
- Otitis externa

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Remove wax
- Treat any underlying irritation of the canal

Appropriate Consultation

Consulting a physician is usually not necessary.

Nonpharmacologic Interventions

Sometimes it is helpful to soften the wax with a few drops of slightly warmed mineral oil or baby oil before attempting to irrigate the ear. Inject lukewarm water upward within ear canal with an ear syringe until wax is cleared (only do this if tympanic membrane is visible and intact).

To prevent ceruminosis, anyone who produces large amounts of cerumen can periodically (once or twice weekly) instill 3 drops of a 1:1 solution of hydrogen peroxide and water into each ear to decrease the likelihood of impaction. One or two drops of baby oil once or twice weekly will help to keep wax soft. Only instill a solution if the tympanic membrane is intact.

Monitoring and Follow-Up

Advise client to return as necessary if symptoms recur.

LABYRINTHITIS²

Disorder involving inflammation of the vestibular labyrinth in the inner ear. Most commonly presents as a self-limiting condition following a viral upper respiratory illness (URI). This section also includes benign positional vertigo.

CAUSES³

- Viral infection – influenza, parainfluenza, adenovirus, RSV, coxsackie, CMV, varicella zoster
- Bacterial infections (*S. pneumoniae*, *H. influenzae*, *M. catarrhalis*, *P. aeruginosa*, *P. mirabilis*): If found in nearby structures such as middle ear, such infections may cause the following:
 - Fluid to collect in the labyrinth (serous labyrinthitis)
 - Fluid to directly invade the labyrinth, causing pus-producing (suppurative) labyrinthitis
- Trauma or injury to head or ear

- Allergies
- Certain medications taken in high doses (for example, furosemide⁴, ASA, some IV antibiotics, or phenytoin at toxic levels⁵)
- Benign tumor of the middle ear
- Benign positional vertigo, where small stones or calcified particles break off within the vestibule and bounce around. The particles trigger nerve impulses that the brain interprets as movement
- Neuronitis
- Vasculitis
- Rarely, more serious causes of vertigo can mimic labyrinthitis, such as:
 - Tumors at the base of the brain
 - Strokes or insufficient blood supply to the brainstem or the nerves surrounding the labyrinth

HISTORY

- Vertigo (most prominent symptom)
- Dizziness
- Nausea and vomiting
- Fluctuating hearing loss
- Tinnitus
- Malaise
- Perspiration

PHYSICAL FINDINGS

- Diaphoresis
- Increased salivation
- Nystagmus

DIFFERENTIAL DIAGNOSIS

- Menière's disease
- Chronic bacterial mastoiditis
- Drug-induced damage to the vestibular labyrinth
- Acoustic neuroma
- Multiple sclerosis
- Temporal-lobe epilepsy

COMPLICATIONS

- Permanent hearing loss
- Falls potentially leading to injury
- Meningitis (if bacterial cause)

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Identify and treat underlying disorder if anything other than viral labyrinthitis is suspected
- Supportive treatment of symptoms only

Appropriate Consultation

Consult a physician if the client's symptoms persist for more than 1 week with therapy or if anything other than a simple viral illness is suspected.

Nonpharmacologic Interventions

Advise client to rest in a darkened room with eyes closed during acute attacks (otherwise, activity as tolerated).

Advise client to drink fluids in sufficient quantity to maintain hydration status.

If benign paroxysmal positional vertigo is suspected, instruct the patient to do the modified Epley exercise TID until free from vertigo for 24 hours. These modified Epley instructions are for the left side. Each side should be done once with every set of exercises:

- Start sitting in the middle of a bed, with a pillow behind, so if laying down it will be under your shoulders
- Turn head 45 degrees to left side (looking over shoulder)
- Lie back quickly with shoulders on pillow and head reclined onto the bed. Hold for 30 seconds
- Turn head only 90 degrees to the right (without raising it) and hold for 30 seconds
- Turn body and head another 90 degrees to the right and hold for 30 seconds
- Sit up on right side, with legs hanging down over side of bed

Pharmacologic Interventions

Treat nausea and vomiting:

dimenhydrinate (Gravol), 50 mg PO or rectal suppository q6h prn

Monitoring and Follow-Up

Follow up in 1 or 2 days to monitor symptom control. Ensure that the client remains hydrated if nausea or vomiting is significant.

Referral

Refer to a physician if anything other than viral labyrinthitis is suspected, especially if attacks are severe or recurrent. A neurology consult may be necessary to identify and treat underlying disorder.

MENIÈRE'S DISEASE (ENDOLYMPHATIC HYDROPS)

A disorder in which there is inadequate absorption of endolymph fluid in the inner ear so it accumulates and distorts the membranous labyrinth resulting in recurrent attacks of a cluster of symptoms.

CAUSES

Unknown, but the best theory suggests that it is an inner ear response to an injury (for example, reduced inner ear pressure, allergy, endocrine disease, lipid disorder, vascular disorder, viral infection).

Risk Factors

- Caucasian heritage
- Stress
- Allergy
- High salt intake
- Exposure to noise

HISTORY

- Occurs as episodic attacks lasting several hours with intervening periods of remission
- Fluctuating loss of low-frequency hearing
- Tinnitus
- Vertigo (spontaneous attacks lasting from 20 minutes to several hours)
- Sensation of fullness in the ear
- Nausea, vomiting
- Ataxia; falls may occur
- Prostration (inability to stand up because motion increases symptoms)

PHYSICAL FINDINGS

- Pallor
- Sweating
- Distress, prostration
- May be some measure of dehydration if vomiting is severe

- Audiometry testing with pure tones may show low-frequency sensorineural nerve loss and impaired speech distinction
- Tuning fork tests (Weber and Rinne) confirm validity of the audiometry results

DIFFERENTIAL DIAGNOSIS

- Viral labyrinthitis
- Benign positional vertigo
- Acoustic neuroma
- Syphilis
- Multiple sclerosis
- Vertebrobasilar disease

COMPLICATIONS

- Hearing loss
- Injury from falls during attacks
- Inability to work
- Failure to diagnose acoustic neuroma

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Control symptoms
- Ascertain underlying cause

Appropriate Consultation

Consult physician for help with diagnosis (not urgent so long as client is stable and symptoms are controlled with treatment).

Nonpharmacologic Interventions

Client Education

Counsel client about prevention of attacks:

- stress-reduction strategies
- avoidance of excessive salt intake
- smoking cessation
- reduction of alcohol intake
- avoidance of ototoxic medications such as acetylsalicylic acid (ASA)

Bed rest as necessary until vertigo settles.

Pharmacologic Interventions

For acute attack, control nausea and vomiting:

dimenhydrinate (Gravol), 50 mg PO or rectal suppository q6h prn

Monitoring and Follow-Up

Assess hearing at least annually in clients with stable symptoms.

Referral

Refer to a physician if symptoms are not controlled or if hearing loss is evident. A neurology consult may be necessary to identify and treat underlying disorder.

OTITIS EXTERNA⁶

Infection or inflammation of the ear canal, which presents in two forms:

- A benign painful infection of the outer canal
- Malignant (necrotizing) otitis externa is a potentially lethal form that usually occurs in elderly, immunocompromised or diabetic patients. Involves bacterial spread to the cartilage of the external ear with pain and edema. It may be accompanied by a fever and systemic manifestations of infection

CAUSES

- Gram-negative rods: *Proteus*, *Pseudomonas*
- Gram-positive cocci (less common): *Staphylococcus*, *Streptococcus*
- Fungal infection (for example, candidiasis)

Predisposing Factors

- Hearing aids
- Narrow ear canal
- Use of cotton-tipped applicators
- Use of ear plugs
- Swimming

Risk Factors

- Immunocompromised status, for example:
 - Patients with diabetes
 - Patients on immunosuppressant medication
 - Post-transplant surgery
 - Chronic systemic steroid use

HISTORY

- Ear pain (otalgia)
- Pruritus or irritation
- Purulent discharge from canal (cheesy white, greenish blue or gray)
- Recent exposure to water or mechanical trauma
- Reduced hearing or feelings of fullness in ear may be present
- Unilateral headache may be present

PHYSICAL FINDINGS

- Temperature may be elevated
- Redness and edema of ear canal
- Purulent exudate or debris in canal
- Tympanic membrane usually normal (may be slightly reddened)
- If edema and debris are severe, it may be impossible to visualize the tympanic membrane
- Manipulation of pinna or pressure on tragus causes pain
- Peri-auricular and anterior cervical nodes may be enlarged and tender

DIFFERENTIAL DIAGNOSIS

- Acute otitis media with perforation
- Skin condition involving the ear (for example, eczema)
- Mastoiditis
- Furuncle in canal
- Foreign-body irritation

COMPLICATIONS

- Severe otitis externa with closure of canal
- Cellulitis of the external ear and face

DIAGNOSTIC TESTS

None. Swab for culture and sensitivity is not routinely indicated.

MANAGEMENT**Goals of Treatment**

- Relieve pain
- Prevent recurrence
- Eradicate infection

Appropriate Consultation

Consultation usually not needed, unless complicated by cellulitis of the external ear or face, the problem is recurrent, the therapy failed, systemic symptoms are present (for example, fever), the client is immunocompromised (for example, diabetic) or malignant otitis externa is suspected.

Nonpharmacologic Interventions

Debriding the canal is critical, and the importance of this step cannot be overemphasized. Clean the outer ear and the canal with normal saline and gently debride the area of debris and exudate with a gauze wick.

If there is significant drainage or if there is threat of further narrowing, an ear wick (1 inch [2.5 cm] of cotton or gauze) threaded gently into the canal and left there will help keep the canal open and ensure that medicated drops reach the distal part of the canal. The wick will eventually fall out as edema subsides or can be removed after 2–3 days.

Client Education

- Counsel about appropriate use of medications (if possible, have another family member instill drops and clean the ear)
- Counsel about proper ear hygiene before instilling medications
- Advise client about preventing recurrent irritation (for example, client should not use cotton-tipped applicators in the ears)
- Recommend proper drying of ears after swimming or use of ear plugs while swimming, bathing or showering
- Counsel client about proper hygiene of hearing aids and ear plugs

For recurrent episodes, start the client on prophylactic measures:

Burrow's solution (Buro-Sol otic solution),
2 or 3 drops after swimming or showers

or

solution of half vinegar and half sterile water,
2 or 3 drops after swimming or showers

Pharmacologic Interventions⁷

Manage pain with simple analgesics:

acetaminophen (Tylenol) 325 mg, 1–2 tabs
PO q4-6h prn

As otitis externa can be very painful, stronger analgesia may be necessary if acetaminophen does not control pain.

Otitis Externa (Acute Uncomplicated):

If there is no danger of perforated tympanic membrane, start:

gramicidin/polymyxin (Optimyxin) eye/ear solution
4 drops qid for 7 days

If the tympanic membrane cannot be visualized or is perforated:

ciprofloxacin/dexamethasone (Ciprodex)
otic solution, 4 drops bid for 7 days

Malignant (Necrotizing) Otitis Externa:

Contact physician as treatment requires parenteral antibiotics with coverage for *Pseudomonas* species (for example, ciprofloxacin) in addition to hospital care.

Fungal Otitis Externa (Otomycosis):

Fungal organisms can cause otitis externa, especially in immunocompromised patients. In mild to moderate cases of otitis externa due to fungi, treat with antifungal agents:

clotrimazole 1% cream (Canesten), apply bid for 7 days

or

Locacorten Vioform otic drops, 2 drops bid for 7 days (can be obtained from a retail pharmacy)

Monitoring and Follow-Up

Follow up 7 days after course of therapy is complete. Instruct client to return sooner if pain increases or if fever develops despite therapy.

Referral

Immediately refer cases of malignant (necrotizing) otitis externa to a hospital after consultation with a physician, especially clients with comorbid conditions (such as an immunocompromised status or diabetes). They require admission to hospital for intravenous (IV) antibiotic therapy.

OTITIS MEDIA, ACUTE⁸

Infection of the middle ear.

CAUSES

- Viral in 25% of cases
- Bacterial forms due to *Streptococcus pneumoniae* (primarily), *Haemophilus influenzae*, *Moraxella catarrhalis*

Active or passive smoking is a major predisposing factor.

HISTORY

- General malaise and fever
- Ear pain (throbbing)
- Sensation of fullness
- Hearing decreased
- Tinnitus or roaring in ear, vertigo
- Purulent discharge if drum perforated
- Infection of the upper respiratory tract may be present concurrently or may precede the otitis media

PHYSICAL FINDINGS

- Temperature may be elevated
- Client may be mildly or moderately ill
- Tympanic membrane red, dull, bulging
- Bony landmarks obscured or absent
- Possible perforation and purulent discharge in canal
- Decreased mobility of tympanic membrane (as noted with pneumatic otoscope if available)
- Bullae seen on tympanic membrane (but only in cases of mycoplasma infection)
- Peri-auricular and anterior cervical nodes enlarged and tender

DIFFERENTIAL DIAGNOSIS

- Acute otitis externa
- Transient middle-ear effusion (not an infection)
- Mastoiditis
- Trauma or foreign-body irritation
- Referred ear pain from dental abscess or temporomandibular joint dysfunction

COMPLICATIONS

- Reduced hearing
- Serous otitis media
- Mastoiditis
- Chronic otitis media
- Meningitis
- Epidural abscess
- Cholesteatoma

DIAGNOSTIC TESTS

None. Swab for culture and sensitivity if there is discharge.

MANAGEMENT**Goals of Treatment**

- Eradicate infection
- Relieve pain
- Prevent complications

Appropriate Consultation

Usually not necessary if condition is uncomplicated.

Nonpharmacologic Interventions**Client Education**

- Recommend increased rest in the acute febrile phase
- Counsel client about appropriate use of medications (dosage, compliance, follow-up)
- Explain disease course and expected outcome (serous otitis media may persist for several weeks)
- Recommend avoidance of flying until symptoms have resolved

Pharmacologic Interventions⁷

To relieve pain and fever:

acetaminophen (Tylenol), 325 mg, 1–2 tabs
PO q4-6h prn

Antibiotic therapy:

amoxicillin (Amoxil), 500 mg PO tid for 7 days

or

azithromycin (Zithromax) 500 mg PO on first day
then 250 mg PO od for 4 days

Monitoring and Follow-Up

- Instruct client to return in 3 days if symptoms do not improve or if symptoms progress despite therapy

- Follow up in 7 days: look for development of serous otitis media
- Assess hearing 1 month after treatment if any symptoms persist

Referral

Not necessary if condition is uncomplicated.

**OTITIS MEDIA,
CHRONIC SUPPURATIVE⁹**

Nonresolving or recurrent low-grade infection of the middle ear associated with perforation of the tympanic membrane.

It can become a dangerous clinical problem if it spreads from being a simple mucosal disease to causing in-growth of stratified epithelium into the middle ear (a cholesteatoma), although such conditions are rare.

CAUSES

- Generally develops as a consequence of recurrent acute otitis media and tympanic membrane rupture
- *Proteus, Pseudomonas or Staphylococcus* (usually polymicrobial)

HISTORY

- Hearing decreased
- Continuous foul-smelling discharge from the ear
- Tinnitus
- Usually no pain, occasional dull ache
- No fever

PHYSICAL FINDINGS

- Client appears generally well
- Foul-smelling purulent drainage from ear canal
- Perforation of tympanic membrane
- Conductive hearing loss

DIFFERENTIAL DIAGNOSIS

- Chronic otitis externa
- Sub-acute otitis media

COMPLICATIONS

- Permanent, severe hearing loss
- Mastoiditis
- Cholesteatoma

DIAGNOSTIC TESTS

None. Swab any drainage for culture.

MANAGEMENT

Goals of Treatment

- Prevent complications
- Avoid unnecessary use of antibiotics

Appropriate Consultation

Consult a physician immediately if a cholesteatoma is suspected.

Nonpharmacologic Interventions

Client Education

- Explain disease process and expected course
- Counsel client about appropriate use of medications (including compliance)
- Aural irrigation is an effective therapy prior to instillation of drops. If possible a solution of 50% peroxide and 50% sterile water can be used. Thirty to 40 mL of this solution can be irrigated through the external auditory canal, using a small syringe or bulb-type aspirator. The irrigant solution can be allowed to drain out for 5–10 minutes prior to instilling the ototopical antimicrobial
- Recommend against using Q-tips for cleaning
- Recommend proper drying of ears after swimming, bathing or showering; use of ear plugs while swimming
- Counsel client about proper hygiene of hearing aids and ear plugs

To prevent recurrence, recommend that ear canal be cleaned with:

Burrow's solution (Buro-Sol otic solution)

or

solution of half vinegar and half sterile water, 4–6 drops in the ear after exposure to water

Pharmacologic Interventions

Mild chronic suppurative otitis media:

Topical antibiotic ear drop alone is sufficient:

ciprofloxacin/dexamethasone (Ciprodex) otic drops, 4 drops bid for 7 days

Moderate chronic suppurative otitis media:

If there is significant soft-tissue involvement, systemic antibiotics may be indicated in addition to topical therapy with ear drops. Consult a physician for advice about choice of systemic antibiotics. One option is:

ciprofloxacin/dexamethasone (Ciprodex) otic drops, 4 drops bid for 7 days

and

levofloxacin 500 mg once daily

Monitoring and Follow-Up

Follow up in 7 days.

Referral

Referral to ear, nose and throat (ENT) specialist may be necessary if treatment fails or complications develop. Surgical intervention is sometimes required. In some cases, referral is done by the nurse, but usually it is done by a consulting physician.

OTITIS MEDIA, SEROUS (OTITIS MEDIA WITH EFFUSION)

Presence of non-infective fluid in the middle ear for longer than 3 months without symptoms or signs of acute infection. Tympanic membrane is intact.

CAUSES

- Dysfunction of eustachian tube
- Nasal obstruction, nasal polyps

Predisposing Factors

- Viral infection of the upper respiratory tract
- Allergies
- Barotrauma
- Enlargement of adenoids
- Recent acute otitis media

HISTORY

- Exposure to one of the predisposing factors
- Reduced hearing in affected ear
- Sensation of fullness in ear
- Nose and ears may be itchy
- Pain mild or absent
- Fever absent

PHYSICAL FINDINGS

- Tympanic membrane intact, dull, retracted or hypomobile
- Presence of clear fluid, air bubbles or air-fluid level behind the tympanic membrane
- Bony landmarks usually accentuated because of retraction of the tympanic membrane
- Audiometric screening may show a decrease in hearing
- Abnormal Weber and Rinne test results (evidence of conductive loss) may be present

DIFFERENTIAL DIAGNOSIS

Nasopharyngeal tumour (if problem longstanding).

COMPLICATIONS

- Secondary infection (purulent acute otitis media)
- Chronic serous otitis media
- Hearing loss

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Identify underlying cause
- Relieve symptoms
- Prevent hearing loss

Appropriate Consultation

Consult a physician if the client has effusion with significant hearing loss (more than 20 dB), if effusion is bilateral with hearing loss or if effusion persists for more than 2–3 months.

Nonpharmacologic Interventions

Client Education

- Explain disease process and expected outcomes
- Offer support and reassurance, as symptoms can last a long time (2–3 months)
- Counsel client about appropriate use of medications (dosage and compliance)
- Recommend against flying until signs and symptoms have resolved, if possible

- If client must fly, recommend the use of topical nasal decongestant (for example, xylometazoline [Otrivin]) 1 hour prior to flight in addition to appropriate doses of systemic oral decongestants (for example, pseudoephedrine [Sudafed])
- Discuss signs and symptoms of purulent otitis media; advise client to return to clinic if they occur
- Instruct client to gently try to equalize pressure between middle ear and throat, using a simple maneuver such as yawning or chewing gum

Pharmacologic Interventions

Most studies indicate that antihistamines and decongestants are ineffective, but some clients may derive symptomatic relief.

Oral decongestant can be obtained from a retail pharmacy:

pseudoephedrine (Sudafed), 30–60 mg PO tid or qid for 4–7 days (Maximum dose: 240 mg/day)

Note: this frequency is for regular-release pseudoephedrine; long-acting preparations must be dosed accordingly.

Start with the smaller dose and lower frequency. Instruct client to increase dose slowly to minimize any side effects (such as restlessness, insomnia, irritability, tremor).

Do not prescribe decongestants for elderly clients, for people with hypertension, heart disease, peripheral vascular disease, diabetes, hyperthyroidism, previous acute angle-closure glaucoma, previous urinary retention or prostatic hypertrophy, or for anyone taking monoamine oxidase inhibitors or tricyclic antidepressants.

Oral antibiotics may be prescribed for those with persistent bilateral effusions causing significant hearing loss. Consultation with a physician is recommended in these situations.

Monitoring and Follow-Up

Monitor the response to therapy in 2–4 weeks. In particular, note any improvement in hearing or decrease in tinnitus.

Reassess hearing, preferably with screening audiometry (if available).

Referral

Refer to an ENT physician if effusion persists after 3 months.

RHINITIS

Inflammation of the mucosal lining of the nasal cavity leading to nasal congestion and rhinorrhea (runny nose). The 3 most common types of rhinitis to consider in the differential diagnosis of rhinitis are:

- **Allergic rhinitis:** Reactive inflammation of the nasal mucosa
- **Vasomotor rhinitis:** Perennial inflammation of the nasal mucosa, which represents a hyperreactive state of the nasal mucosa (nonallergic)
- **Viral rhinitis (infection of upper respiratory tract):** Viral infection confined to the upper respiratory tract. Usually mild and self-limiting

CAUSES

Allergic Rhinitis

- Sensitivity to inhaled allergens (pollens, grasses, ragweed, dust, molds, animal dander, smoke)

Vasomotor Rhinitis

- Unknown; symptoms do not correlate with exposure to specific allergens
- Atrophic mucosa (in the elderly)
- Attacks may be triggered by abrupt changes in temperature or barometric pressure, odours, emotional stress or exercise

Viral Rhinitis (Infection of Upper Respiratory Tract)

- Numerous viral agents

HISTORY

Allergic Rhinitis

- Seasonal or perennial symptoms
- History of familial allergies (for example, ASA)
- Asthma or eczema may be present
- Paroxysmal sneezing
- Itchy nose
- Nasal congestion
- Excessive, continuous, clear, watery nasal discharge
- Eyes may be itchy or watery
- Ears may be itchy
- General malaise and headache may be present
- Symptoms worst in the morning and least during the day, worsening again during the night
- Postnasal drip
- Breathing through the mouth
- Snoring and dry cough at night may be present

Vasomotor Rhinitis

- Sudden onset of nasal congestion
- Perennial symptoms
- Persistent postnasal drip
- Intermittent throat irritation
- No response to environmental controls and medications
- Sensation of constantly needing to clear throat
- Changes in acuity of hearing or smell
- Snoring at night
- Fatigue

Viral Rhinitis (Infection of Upper Respiratory Tract)

- Nonproductive cough or cough that produces clear sputum
- Low-grade fever
- Nasal congestion with clear nasal discharge
- Sneezing
- Postnasal drip
- Scratchy throat
- Mild headache and general malaise
- Pressure in ears

PHYSICAL FINDINGS

Allergic Rhinitis

- Injected conjunctiva may be present
- Eyes may tear
- Edema of the eyelids and periorbital area may be present
- Pale, edematous nasal mucosa is pink, with clear thin secretions
- Nasal polyps may be present
- Skin around nose may be irritated
- “Allergic salute” may be present
- Sinuses may feel tender if symptoms are severe
- Mouth breathing

Vasomotor Rhinitis

- Vital signs usually normal
- Nasal mucosa red and swollen
- Nasal turbinates enlarged
- Throat may be slightly reddened because of irritation from postnasal drip
- Tonsils and adenoids may be enlarged
- Sinuses may feel tender if symptoms are severe

Viral Rhinitis (Infection of Upper Respiratory Tract)

- Temperature may be slightly elevated
- Client appears mildly ill
- Clear nasal discharge
- Skin around nares slightly irritated
- Ears may have transient, middle-ear sterile effusion
- Throat may have mild erythema, but otherwise is normal
- Sinuses may feel tender if symptoms are severe

DIFFERENTIAL DIAGNOSIS (ALL TYPES OF RHINITIS)

- Acute or chronic sinusitis
- Abuse of nose drops
- Abuse of drugs or solvents (for example, cocaine, gas, glue)
- Foreign body in nares
- Nasal polyps
- Deviated septum
- Hypothyroidism as a cause of the nasal congestion
- Nasal congestion induced by pregnancy or use of oral contraceptives

COMPLICATIONS (ALL TYPES OF RHINITIS)

- Otitis media
- Nasal polyps
- Epistaxis
- Enlargement of tonsils and adenoids
- Sinusitis

DIAGNOSTIC TESTS (ALL TYPES OF RHINITIS)

Consider skin testing for allergies.

MANAGEMENT (ALL TYPES OF RHINITIS)

Goals of Treatment

- Relieve and suppress symptoms
- Identify the underlying allergen(s)
- Prevent complications

Appropriate Consultation

Consultation with a physician is not usually required.

Nonpharmacologic Interventions

Environmental control is important. Eliminate or reduce known allergen(s) in the environment wherever possible, or avoid them altogether.

Client Education

- Recommend increasing fluid intake to improve hydration
- Counsel client about appropriate use of medications (dose, frequency, side effects, avoidance of overuse)
- Recommend avoidance of caffeine
- Recommend avoidance of known allergens (client should keep living area clear of dust, avoid going outside when pollen count is high and use synthetic fibres in bedding and clothing) and removal of pets (to eliminate animal dander)
- Counsel client about preventing spread of viral rhinitis to other household members
- Recommend frequent hand-washing, appropriate disposal of used facial tissues and covering of mouth and nose when coughing or sneezing

Pharmacologic Interventions

Allergic and Vasomotor Rhinitis:

Saline nasal drops/salinex nasal spray, prn, to wash out mucus and any inhaled allergen.

Oral antihistamines to treat acute symptoms of runny nose, sneezing, itch and conjunctival symptoms (but these will not help nasal congestion):

cetirizine (Reactine), 10 mg PO daily to be taken as long as the patient is in contact with the allergen

Topical nasal steroids are the mainstay of therapy for chronic allergic rhinitis and chronic vasomotor rhinitis and for maintenance and prophylactic treatment of these conditions. They can be used alone or in combination with the antihistamine and decongestant regimen.

Consult a physician about the use of inhaled nasal steroids/parasympathetic blockers if oral antihistamines and decongestants (see “viral rhinitis”) are not effective. For example:

fluticasone (Flonase/generics), 50 µg/spray, 2 sprays/nostril daily

or

triamcinolone (Nasocort AQ), 55 µg/spray, 2 sprays/nostril daily

Viral Rhinitis:

Oral antihistamines and decongestants, which can be obtained from a retail pharmacy, can be tried for a maximum 4–7 days, to avoid rebound effect:

pseudoephedrine (Sudafed), 30–60 mg PO tid or qid for 4–7 days (Maximum dose: 240 mg/day)

Note: this frequency is for regular-release pseudoephedrine; long-acting preparations must be dosed accordingly.

Antihistamines have little proven benefit in the treatment of the common cold, including viral rhinitis.

Do not prescribe decongestants for elderly clients, for people with hypertension, heart disease, peripheral vascular disease, diabetes, hyperthyroidism, previous acute angle-closure glaucoma, previous urinary retention or prostatic hypertrophy, or for anyone taking monoamine oxidase inhibitors or tricyclic antidepressants.

Manage fever:

acetaminophen (Tylenol), 325 mg, 1–2 tabs PO q4-6h prn

Monitoring and Follow-Up

Instruct client to return for further assessment if fever develops or if symptoms have not resolved within 14 days.

Referral

Refer to a physician if symptoms of rhinitis are not controlled with initial treatment. Allergy testing, sinus radiography or other medications may be required.

RHINOSINUSITIS, ACUTE^{10,11}

Infection of mucosal lining of the paranasal sinuses (symptoms present less than 4 weeks and with less than 3 episodes per year).

Maxillary sinuses most commonly affected.

CAUSES

- Common: *Haemophilus influenzae*, *Moraxella catarrhalis*, *Streptococcus pneumoniae*
- Less common: *Chlamydia pneumoniae*, *Streptococcus pyogenes*, viruses, fungi

Predisposing Factors

- Common cold
- Allergies
- Deviated nasal septum
- Smoking
- Adenoidal hypertrophy
- Dental abscess
- Nasal polyps
- Trauma
- Foreign body
- Diving or swimming
- Neoplasms
- Cystic fibrosis

HISTORY

- Exposure to one or more of the predisposing factors
- Headache
- Facial pain
- Nasal congestion
- Pressure over involved sinuses increases when bending forward
- Purulent nasal discharge, which may be tinged with blood, can be present
- Dental pain, especially of upper incisor and canine teeth
- General malaise may be present
- Fever may be present
- Postnasal drainage
- Hyposmia/anosmia
- Ear pressure/fullness

PHYSICAL FINDINGS

- Temperature may be mildly elevated
- Client appears mildly to moderately ill
- Irritation of skin around nares
- Swollen nasal mucosa may be pale or dull red
- Nasal polyp may be present
- Dental abscess may be present
- Tenderness over involved sinuses
- Poor transillumination of sinuses
- Tenderness over a tooth
- Anterior cervical nodes may be enlarged and tender
- Cough may be present

DIFFERENTIAL DIAGNOSIS

- Dental abscess
- Nasal polyp(s)
- Tumour
- Presence of foreign bodies
- Periorbital cellulitis
- Infection of upper respiratory tract
- Allergic rhinitis
- Vasomotor rhinitis
- Cluster headache
- Migraine headache

COMPLICATIONS

- Contiguous spread of infection to intraorbital or intracranial structures
- Chronic sinusitis
- Periorbital cellulitis

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Make the correct diagnosis
- Identify predisposing factors and treat the conditions
- Treat the infection as indicated
- Identify any underlying dental abscess
- Relieve symptoms

Appropriate Consultation

Usually not necessary unless does not resolve with treatment, symptoms progress within 2–3 days or complications arise.

Nonpharmacologic Interventions

Apply moist heat (such as with steam inhalation or warm compresses) to sinuses to help relieve pressure by loosening and liquefying thickened secretions. Saline nose drops also help to do this.

Client Education

- Recommend increased rest during acute phase
- Recommend increasing hydration (6–8 glasses of fluid per day)
- Counsel client about appropriate use of medications (dose, frequency, side effects)

- Recommend avoidance of irritants (for example, smoke)
- Recommend avoidance of swimming, diving or flying during acute phase

Pharmacologic Interventions⁷

Saline nasal drops/salinex nasal spray, prn may be helpful.

Nasal decongestant sprays or drops may be used for the first 24–48 hours if congestion is marked. Topical decongestants are more effective than oral ones. Client should not use antihistamines because these dry and thicken the secretions:

xylometazoline (Otrivin), 0.1% nasal drops, 1–3 drops q8-12h prn for a maximum of 4 days

It is very important to limit the use of a topical nasal decongestant to a period of 3 or 4 days to prevent development of “rebound” nasal congestion when the nasal spray is withdrawn (a complication called rhinitis medicamentosa).

Manage pain and fever with simple analgesics:

acetaminophen (Tylenol), 325 mg, 1–2 tabs PO q4h prn

or

ibuprofen (Motrin), 200 mg, 1–2 tabs PO q4h prn

Approximately 70% of cases of acute sinusitis will resolve without antibiotic treatment. However, if symptoms continue for longer than 10 days or worsen after 5 days, consider antibiotic therapy.

Oral antibiotics:

amoxicillin (Amoxil), 500 mg PO tid for 10 days

or if allergy to penicillin:

doxycycline 200 mg po once, then 100 mg po bid for 10 days

Monitoring and Follow-Up

Follow up in 3–4 days or sooner if symptoms progress despite therapy or if symptoms fail to respond to therapy.

RHINOSINUSITIS, CHRONIC¹⁰

Inflammation of the mucosal lining of the the paranasal sinuses lasting 12 weeks or more.

CAUSES

- Infection (bacterial anaerobes, *Staphylococcus aureus*, viruses)
- Structural abnormalities

HISTORY

- Prolonged nasal congestion (more than 12 weeks)
- Nasal discharge, intermittently purulent
- Postnasal drip may be present
- Early morning hoarseness may be present
- Sinus pain or pressure across the middle of the face
- Headache may be present
- Popping of ears
- Eye pain
- Halitosis
- Chronic cough
- Fatigue
- No fever
- Decreased sense of smell
- History of underlying risk factors such as allergic rhinitis, GERD, cystic fibrosis, immunodeficiency, structural abnormalities, eosinophilic nonallergic rhinitis

PHYSICAL FINDINGS

- Client appears well
- Nasal mucous membranes may appear pale and “boggy”
- Tenderness may be present over sinuses

DIFFERENTIAL DIAGNOSIS

- Allergic rhinitis
- Vasomotor rhinitis
- Nasal polyp
- Infection of upper respiratory tract
- Tumour
- Migraine headache
- Cluster headache
- Dental abscess

COMPLICATIONS

- Recurrent acute sinusitis
- Spread of infection to the intraorbital or intracranial structures

DIAGNOSTIC TESTS

None initially. Consider diagnostic tests such as sinus x-ray or computed tomography (CT) scan of sinuses if initial therapy fails; discuss these diagnostic tests with a physician.

MANAGEMENT**Goals of Treatment**

- Relieve symptoms
- Identify predisposing or underlying factors
- Prevent spread of infection to other structures

Appropriate Consultation

A physician should be consulted for these patients. Specialist consult may also be necessary if anatomical abnormalities are suspected or it is not resolving.

Chronic rhinosinusitis is a complex condition which often requires a combination of topical or oral glucocorticoids, antibiotics and nasal irrigation.

Nonpharmacologic Interventions**Client Education**

- Recommend increasing hydration (6–8 glasses of fluid per day)
- Recommend inhalation of steam or use of warm compresses to relieve pressure on sinuses
- Counsel client about appropriate use of medications (dosage and side effects)
- Recommend avoidance of irritants (for example, smoke) and allergens
- Recommend avoidance of diving, swimming or flying if symptoms are acute

Pharmacologic Interventions⁷

Manage current symptoms with oral antibiotics; a longer course of therapy than for acute sinusitis is usually needed (that is, 3 weeks). Repeated courses of antibiotics are not recommended:

amoxicillin/clavulanate (Clavulin), 875 mg PO bid for 21 days

or

clindamycin (Dalacin C), 300 mg PO qid for 21 days

Monitoring and Follow-Up

Follow up in 2 weeks.

Referral

Refer to a physician if symptoms do not improve after 4 weeks of continuous antibiotic therapy to rule out underlying pathology (for example, nasal polyps, deviated nasal septum, chronic allergies). Refer to a dentist if underlying dental disease is suspected.

COMMON PROBLEMS OF THE THROAT

LARYNGITIS

Laryngitis is an inflammation of the voice box (larynx) due to overuse, irritation or infection.

CAUSES

- Viral infection (common cold)
- Bacterial infection (Streptococcus)
- Chronic mouth breathing
- Overuse of voice
- Chronic sinusitis
- Excessive smoking (or exposure to second-hand smoke)
- Aspiration of caustic chemical
- Gastroesophageal reflux
- Changes due to aging (for example, muscle atrophy, bowing of cords)
- Alcohol abuse
- Long-term exposure to dust or other irritants

HISTORY

- Presence of risk factors (see “Causes”)
- Concurrent infection of the upper respiratory tract may be present
- Hoarseness or loss of voice, abnormal-sounding voice
- Throat pain, tickle or rawness
- Aphony (no sound is emanated from vocal folds)
- Dysphonia (a general alteration in voice quality)
- Cough
- Fever
- Malaise

PHYSICAL FINDINGS

- Temperature may be elevated
- Client appears mildly ill
- Throat may be mildly to moderately injected
- No exudate
- Lymph nodes may be enlarged

DIFFERENTIAL DIAGNOSIS

- Cancer of the throat or larynx (if condition prolonged or recurrent)
- Polyps of vocal cords
- Gastroesophageal reflux disease (GERD)

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Relieve symptoms
- Identify and remove contributing factors (for example, smoking)

Appropriate Consultation

Consult a physician immediately if client has stridor and shortness of breath.

Nonpharmacologic Interventions

- Voice rest is the mainstay of treatment (including, throat clearing)¹²
- Removal of contributing factors (for example, smoking and alcohol) is also important
- Increase humidity of room air
- Increase fluid intake if febrile
- Increase rest until any fever settles

Client Education

- Explain disease course and expected outcomes
- Counsel client about appropriate use of medications (dosage and side effects)
- Stress importance of follow-up if not resolved in 1 week

Pharmacologic Interventions

Usually none.

Monitoring and Follow-Up

Follow up in 7 days if not resolved, (sooner if symptoms worsen).

Referral

Refer to a physician if symptoms persist for longer than 2 weeks.

BACTERIAL PHARYNGOTONSILLITIS

OVERVIEW

Please refer to provincial/territorial guidelines for Bacterial Pharyngotonsillitis where available.

Pharyngotonsillitis is a painful condition of the oropharynx associated with infection and inflammation of the mucous membranes of the pharynx and palatine tonsils. The condition may be caused by a bacterium or virus, and a clinician cannot definitively differentiate between these two forms clinically.⁽²⁾

CAUSES

- Group A *Streptococci* (GAS) is the most common cause of bacterial pharyngitis, accounting for between 5% and 15% of cases of acute pharyngotonsillitis in adults⁽²⁾
- *Group C and Group G Streptococci*⁽²⁾
- *Anaerobic organisms of the mouth (including Arcanobacterium)*⁽²⁾
- *Neisseria gonorrhoeae* for those engaging in oral sex^(2, 3)
- *Mycoplasma pneumoniae*⁽²⁾
- *Chlamydia pneumoniae*⁽²⁾
- Diphtheria for those with inadequate diphtheria immunization⁽²⁾

Incubation, transmission and communicability vary depending on the cause of bacterial pharyngitis.

TRANSMISSION

- The most common method of transmission of GAS pharyngitis is person-to-person, spread by respiratory droplets.⁽⁴⁾
- Other transmission methods include direct contact with infected individuals or carriers.⁽⁴⁾
- Foodborne outbreaks of GAS pharyngitis rarely occur and are a consequence of:
 - Human contamination of food by infected or colonized food handlers
 - Improper food preparation or refrigeration⁽⁵⁾

INCUBATION PERIOD

The incubation period for GAS pharyngitis is 1 to 3 days after exposure.⁽⁶⁾

COMMUNICABILITY

- If untreated, a client with GAS pharyngitis is usually infectious during the acute phase of the illness (typically 7 to 10 days), and much less infectious 1 week after the acute phase.
- If antibiotics are used, the infectious period is reduced to 24 hours.⁽⁴⁾
- The bacterium can remain in the body in its carrier state without causing illness in the host for weeks or months and is transmissible in this state.⁽⁴⁾ Treating carriers with penicillin has been shown to reduce the number of people infected during an outbreak of streptococcal sore throat.⁽⁴⁾

ASSESSMENT

Medication review: Review current medications, including over-the-counter, complementary and alternative medicines, as well as any chemical or substance intake that may impact management.

Allergy history: Screen for medication, latex, environmental or other allergies and determine approximately when and what type of reaction occurred.

RISK FACTORS

- Age: GAS pharyngitis occurs predominantly in school-age children who are between 5 and 15 years of age (although it can occur in both younger and older individuals)⁽²⁾
- Overcrowding⁽⁷⁾
- Previous episodes of GAS pharyngitis⁽²⁾
- A history of GAS pharyngitis in the household, community, neighborhood, or school⁽⁸⁾

HISTORY OF PRESENT ILLNESS

- The general history for bacterial pharyngitis may vary depending on the bacterial etiology.
- The optimal approach for differentiating among various causes of pharyngitis requires a problem-focused history, physical examination and appropriate lab testing.⁽⁹⁾
- There is a broad overlap between the signs and symptoms of GAS and the signs and symptoms of non-GAS pharyngitis.⁽²⁾

- Important historical factors include the onset, duration, progression and severity of associated symptoms (e.g., fever, cough, dysphagia, respiratory difficulty and swollen lymph nodes⁽⁹⁾).
- For an overview of the epidemiologic and clinical features of GAS and non-GAS (viral) pharyngitis, see *Table 1: Epidemiologic and Clinical Features of GAS and non-GAS (Viral) Pharyngitis* of this guide.

TABLE 1Epidemiologic and Clinical Features of GAS and non-GAS (Viral) Pharyngitis⁽²⁾

GAS PHARYNGITIS	VIRAL PHARYNGITIS
<ul style="list-style-type: none"> - Sudden (acute) onset of sore throat - Fever - Absence of cough or rhinorrhea - Patchy tonsillopharyngeal exudates - Tonsillopharyngeal inflammation - Palatal petechiae - Anterior cervical adenitis (tender nodes) - Headache - Nausea, vomiting, abdominal pain - History of exposure to GAS pharyngitis - Scarlatiniform rash - Late fall, winter and early spring presentation - Age 5 to 15 years (although it can occur in both younger and older individuals) 	<ul style="list-style-type: none"> - Sore throat - Cough - Conjunctivitis - Hoarseness - Coryza (rhinorrhea) - Discrete ulcerative stomatitis - Viral exanthema - Diarrhea

Note: None of these findings are specific for GAS pharyngitis and the diagnosis cannot be reliably made without a rapid antigen detection test (RADT) and/or throat culture.

Social

A history of recent exposure and prevalence of GAS infections in the community.⁽⁸⁾

PHYSICAL FINDINGS

Findings that suggest more of a viral etiology include:

- Cough
- Coryza (rhinorrhea)
- Scleral conjunctival inflammation (pink eye)
- Hoarseness
- Pharyngeal ulcerations
- Classic viral exanthema (such as vesicles or maculopapular rashes)⁽¹⁰⁾

Although the signs and symptoms accompanying acute pharyngitis are not reliable predictors of the etiologic agent, the predisposing risk factors, history and clinical presentation occasionally suggest that one etiology is more likely than another.⁽¹¹⁾

The physical findings for bacterial pharyngotonsillitis vary depending on the bacterial etiology. For the general physical findings of non-GAS bacterial pharyngotonsillitis by bacterial etiology, see *Table 3: Clinical features of non-GAS Bacterial Pharyngotonsillitis* in *Appendix, Section A* of this guide.

GAS Pharyngitis

No single element in the history or physical examination is sensitive or specific enough to exclude or diagnose GAS pharyngitis.⁽⁹⁾

The constellation of the following symptoms indicates a higher probability of GAS pharyngitis for both adults and children:⁽²⁾

- Severe, sudden sore throat (especially with pain upon swallowing)
- Headache
- Fever
- Tender anterior cervical lymphadenopathy
- Petechiae of the soft palate
- Red pharynx with tonsillar swelling with or without exudate

- Absence of cough
- Abdominal pain, nausea and vomiting
- Scarlatiniform rash

DIFFERENTIAL DIAGNOSIS

Consult physician/nurse practitioner when practice is outside legislated scope and without authorized delegation.

- Viruses (for example, rhinovirus, adenovirus, coronavirus, parainfluenza, influenza, coxsackievirus, herpes virus and Epstein-barr virus)⁽²⁾
- Epiglottitis
 - **Note:** If epiglottitis is suspected, consult physician/nurse practitioner immediately (for more information on epiglottitis, see *FNIHB Adult Care Clinical Practice Guidelines – Chapter 10 – Respiratory System – Tuberculosis – Epiglottitis*).
- Gonococcal pharyngitis (in sexually-active individuals)^(2; 3)
- Diphtheria⁽²⁾
- Non-infectious causes of pharyngitis (e.g., gastroesophageal reflux, postnasal drip from allergic rhinitis or sinusitis, thyroiditis, allergies, persistent cough, foreign body, smoking)⁽⁹⁾

COMPLICATIONS

- GAS complications can be either non-suppurative or suppurative (for more information on these types of complications, see *Table 2* in this guide).
- GAS can also cause invasive infections such as necrotizing fasciitis, myositis and streptococcal toxic shock syndrome.
- Although the skin is the most common portal of entry for these invasive infections, in some cases, the pharynx has been documented as the point of entry.⁽⁷⁾

Note: Adults with GAS pharyngitis are at very low risk of developing acute rheumatic fever or rheumatic heart disease.⁽²⁾

TABLE 2Non-suppurative and Suppurative Complications⁽¹²⁾

NON-SUPPURATIVE COMPLICATIONS	SUPPURATIVE COMPLICATIONS
<ul style="list-style-type: none"> - Acute rheumatic fever - Rheumatic heart (valvular) disease - Scarlet fever - Streptococcal toxic shock syndrome - Acute glomerulonephritis (may occur an average of 10 days following infection) 	<ul style="list-style-type: none"> - Tonsillopharyngeal cellulitis or abscess - Otitis media - Sinusitis - Necrotizing fasciitis - Streptococcal bacteremia (rare) - Meningitis or brain abscess (complication resulting from direct extension of an ear or sinus infection or from bacteremic spread)

DIAGNOSTIC TESTS

Consult physician/nurse practitioner when practice is outside legislated scope and without authorized delegation.

- Diagnostic testing is based on client history, risk factors, physical examination findings and test availability. Testing should be carried out as per provincial/territorial policies and procedures.
- Laboratory diagnosis of GAS pharyngitis is important because it is often impossible to clinically distinguish between bacterial and viral pharyngitis.

Laboratory

- Rapid Antigen Detection Test (RADT) (if available)
 - A Positive RADT is considered definitive for GAS.⁽²⁾
- Throat swab for C+S (if RADT is negative or unavailable) to enhance diagnostic sensitivity.⁽²⁾

Sampling Technique

Since an inadequate specimen collection process can result in a false negative culture, it is important to follow proper sampling collection techniques:⁽¹⁰⁾

Swabbing

- Correct swabbing of the oropharynx is of paramount importance.
- Vigorously swab tonsillar fauci and posterior oropharynx.

Sampling

- Proper technique includes sampling the tonsils and peritonsillar pillars, as cultures of saliva and buccal mucosa often yield a negative result.⁽¹⁾
- Sample any purulent, ulcerated or inflamed areas in the back of the throat.
 - Do not touch the teeth, cheeks, gums, or tongue when inserting or removing the swab.⁽¹³⁾
- For a throat culture diagram, see *Throat Swabs* at: <https://medlineplus.gov/ency/imagepages/9950.htm>.⁽¹⁴⁾

Lab Testing of Close Contacts

- Routine testing of, or treatment of asymptomatic close contacts of patients with GAS pharyngitis is not warranted.⁽²⁾
- Lab testing of asymptomatic close contacts should occur under the following high-risk circumstances:⁽¹⁾
 - Client has had 3 or more episodes of GAS pharyngitis in the last year

- Client has a family or household member with rheumatic fever or post-streptococcal glomerulonephritis
- Client has been exposed to an outbreak of rheumatic fever
- Members of the client's family have undergone repeat transmission.
- In an outbreak of GAS pharyngitis in a closed or semi-closed setting (e.g., a classroom or school), consider consultation with public health physician to determine if wider testing is required beyond the family.

Note: Treat all close contacts who test positive for GAS pharyngitis if any of the above high-risk circumstances are present.

MANAGEMENT

Consult physician/nurse practitioner when practice is outside legislated scope and without authorized delegation.

GOALS OF TREATMENT

- Prevent suppurative complications⁽²⁾
- Prevent spread of GAS infection to others⁽²⁾
- Relieve symptoms⁽²⁾

NON-PHARMACOLOGICAL INTERVENTIONS

Interventions

- Gargling with warm salt water to relieve pain of sore throat

Client Education

- Encourage rest.
- Encourage fluid intake in adequate amounts to maintain hydration.
- To minimize the risk of transmission, advise client to:
 - Wash hands regularly
 - Avoid sharing eating or drinking utensils
 - Use tissues to cover the mouth and nose if coughing or sneezing
 - Dispose of used tissues immediately after use to prevent contamination⁽¹⁵⁾

- Counsel client about appropriate use of medications; dose, frequency, importance of adherence, potential side effects and interactions.
- Advise client that he or she must complete the entire course of antibiotics, even if symptoms resolve.
- If a client with confirmed GAS pharyngitis remains symptomatic on appropriate antibiotic therapy after 48 hours, the client should be reassessed for such factors as acute complications of GAS pharyngitis (e.g., peritonsillar abscess, concurrent viral infections and antibiotic adherence or antibiotic failure).

PHARMACOLOGICAL INTERVENTIONS

In addition to consulting a physician/nurse practitioner, review the drug monograph and the FNIHB Nursing Station Formulary or provincial/territorial formulary before initiating treatment.

Antibiotic Therapy

GAS pharyngitis is the only commonly-occurring form of acute pharyngitis for which antibiotic therapy is definitely indicated.⁽²⁾

Indications for Empiric Therapy

- Empiric therapy should be started for clients:
 - Who are symptomatic and have been in contact with a documented case of GAS pharyngitis
 - Who experience pharyngitis complications (e.g., early peritonsillar abscess)
 - Who may be difficult to contact for follow-up
 - Whose RADT test results are positive

Indications to Delay Therapy Pending Culture Results

If empiric therapy is not indicated, it is reasonable to delay antibiotic therapy until infection is confirmed. This approach also minimizes the number of clients being treated unnecessarily before the test results are available.⁽¹⁾

Preferred Treatment:

- Treat with antibiotics if GAS pharyngitis has been confirmed by RADT or culture:

Penicillin

- Penicillin V 300 mg PO tid or 600 mg PO bid for 10 days

or

Amoxicillin⁽¹⁹⁾

- Amoxicillin 500 mg bid for 10 days

Alternate Treatments⁽¹⁹⁾

If Known or Suspected Non-Anaphylactic Allergy to Penicillin:

Cefadroxil

- Cefadroxil 1,000 mg daily for 10 days

or

Cephalexin

- Cephalexin 250 mg PO qid or 500 mg bid for 10 days

If Known or Suspected Anaphylactic Allergy to Penicillin or Cephalosporin:

Clarithromycin

- Clarithromycin 250 mg bid for 10 days

or

Azithromycin⁽²⁰⁾:

- Five day course, 500 mg on day 1 and 250 mg on days 2 to 5
- Three day course, 500 mg daily for 3 days

or

Clindamycin

- Clindamycin 300 mg tid for 10 days

If Medication Compliance or Follow-up is a Concern:⁽²⁰⁾

Benzathine penicillin G

- Benzathine penicillin G 1.2 million units IM for 1 dose may be given.
 - Benzathine penicillin G may be obtained through the Non-Insured Health Benefits Program, if not available through provincial/territorial formulary. It is not listed in the FNIHB Nursing Station Formulary.

Recurrent Infection

A client who experiences a recurrence of GAS pharyngitis shortly after completing a course of an oral antimicrobial agent can be re-treated with the same agent or given an alternative oral medication⁽¹⁰⁾ in consultation with the physician/nurse practitioner.

Fever and/or Pain Management**Acetaminophen**

- Acetaminophen 650 mg PO q4-6h PRN
- Maximum from all sources: acetaminophen 4,000 mg in 24 hours⁽¹⁶⁾

Ibuprofen

- Ibuprofen 400 mg PO q4-6h PRN
- Maximum from all sources: ibuprofen 2,400 mg in 24 hours⁽¹⁷⁾

MONITORING AND FOLLOW-UP

Consult physician/nurse practitioner when practice is outside legislated scope and without authorized delegation.

MONITORING

- If administering an agent with risk of anaphylaxis, monitor the client closely for 30 minutes
- Monitor vital signs as indicated by client's condition
- Monitor for symptoms of airway distress or airway obstruction, tripod positioning, stridor, dysphagia or anxiety

FOLLOW-UP

The client diagnosed with GAS pharyngitis will be assessed as follows to monitor response to therapy and to monitor for complications.

For All Clients

Follow up should occur:

- At any time if the client is getting worse
- In 2 to 3 days to monitor for medication adherence and clinical response to therapy, or to check for throat C+S test result
- If client is identified as being at increased risk of any complications
- Following a course of antimicrobial therapy (if there is a recurrence of symptoms compatible with GAS pharyngitis)

Note: Clinical response to appropriate antimicrobial treatment is usually evident within 24-48 hours. Persistence of high fever and severe symptoms beyond this period indicates the need for reassessment and is suggestive of the development of complication(s) or another underlying disease. Antibiotic failure is also a possibility.

Referrals

Arrange for medical evacuation if clinically indicated.

APPENDIX FOR BACTERIAL PHARYNGOTONSILLITIS

SECTION A: SUPPLEMENTAL CLINICAL MANAGEMENT INFORMATION

General Clinical Findings of non-GAS Bacterial Pharyngotonsillitis by Bacterial Etiology (see Table 3)

TABLE 3

Clinical features of non-GAS Bacterial Pharyngotonsillitis^(3; 11; 18)

N. GONORRHEAE	DIPHTHERIA	M. PNEUMONIAE
<ul style="list-style-type: none"> - Pharyngeal infections caused by <i>N. gonorrhoeae</i> usually occur after orogenital exposure. - Symptoms are mild or absent. - On physical examination, the pharynx may be erythematous or have exudates. - Anterior cervical lymphadenopathy may also be present. - Pharyngeal infections caused by <i>N. gonorrhoeae</i> may be considered in clients who are sexually active. 	<ul style="list-style-type: none"> - A rare, vaccine-preventable cause of life-threatening pharyngotonsillitis. - Presents with cervical lymphadenopathy and a thick, adherent greyish-white nasal and/or pharyngeal membrane. - Membranes may extend into the airway and cause airway compromise. Removal of the membrane results in bleeding. - Notable swelling of the neck area, giving the characteristic bull neck appearance, is characteristic of severe disease. 	<ul style="list-style-type: none"> - Generally manifests as pharyngitis, tracheobronchitis, reactive airway disease/ wheezing, or a non-specific upper respiratory syndrome. - Although <i>M. pneumoniae</i> may begin with a sore throat, the most common presenting symptom is a cough. The cough is typically non-productive, but some clients may produce sputum. - Headache, malaise, chills, and fever are also characteristic of <i>M. pneumoniae</i> infection. - Particularly in the absence of lower respiratory tract disease, the role of <i>M. pneumoniae</i> as a cause of acute pharyngitis remains somewhat uncertain.⁽¹⁰⁾

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COMMON PROBLEMS OF THE MOUTH

ANGULAR CHEILITIS¹⁷

Cracks or lines at the corners of the mouth.

CAUSES

- Bacteria: *Staphylococcus aureus*
- Fungus: *Candida*

Predisposing Factors

- Increased moisture at corners of mouth
- Sagging face and loss of teeth (particularly back teeth) in older adults
- Fungal infection

PHYSICAL EXAMINATION

- Erythema, maceration at corners of mouth
- White coating

DIAGNOSTIC TESTS

- Swab for culture
- KOH test for candidiasis

MANAGEMENT

The key to treating angular cheilitis is to identify and treat the cause.

APHTHOUS STOMATITIS^{18,19}

Ulcers and inflammation of the tissues of the mouth, including the lips, buccal mucosa, tongue, gingiva and posterior pharyngeal wall that are recurrent and painful. After mucosal breakdown, lesions become secondarily infected by mouth flora. It is less prevalent in men and chronic smokers.²⁰ It is the most common cause of oral ulcers, occurring in up to 30% of otherwise healthy individuals.

CAUSES

- Herpes simplex virus
- Coxsackievirus
- Oral candida

Predisposing Factors

- Immunocompromised status
- Autoimmune disease (for example, Crohn's disease)

Contributing Factors

- Allergies (coffee, chocolate, potatoes, cheese, figs, nuts, citrus fruits and gluten)
- Stress
- Exposure to sunlight
- Generalized physical debility
- Trauma
- Nutritional deficiencies (Vitamin B12, folate, iron)
- Hormones
- Medications (antihypertensives, antineoplastics, gold salts, nonsteroidal anti-inflammatories)

HISTORY

- Onset and duration of symptoms
- Previous history of the same and treatment
- Fever
- Burning or tingling before ulceration
- Pain
- Drooling
- Difficulty swallowing
- Decreased nutritional intake
- Associated respiratory or gastrointestinal symptoms
- Associated skin rash
- Nutritional deficiencies, stressors, allergies, recent mouth trauma, infections, risk factors for STIs
- Medications
- Weight loss (if severe ulcers)
- Systemic diseases
- Recent dental treatment
- Smoking or alcohol use

PHYSICAL FINDINGS

- Temperature may be increased in infectious types
- Check weight, record as baseline
- Hydration status
- Assess for lymphadenopathy
- Assess for lesions on body
- Auscultate chest
- Complete physical if systemic disease is suspected

Examine outside of lips first. Next, gently retract the lips with a tongue depressor to examine the anterior buccal mucosa and gingiva. Then gently depress the tongue. Note location, number and distribution

of lesions. Also note colour(s), borders (distinct or diffuse), texture (firm or fluctuant), discharge and size of lesions.

Look for the following features:

- Erythema (herpangina)
- Vesicles (early stages of all infectious types)
- Ulcers: check distribution (confluent ulcers may appear as large, irregular white areas)
- Submandibular lymph nodes (most prominent in herpes)

See Table 1, “Features of Common Forms of Stomatitis”.

Table 1 – Features of Common Forms of Stomatitis

Disease	Cause	Type of Lesions	Site	Diameter	Other Features
Herpangina or hand-foot-and-mouth disease	Coxsackievirus, echovirus, enterovirus 71	Vesicles and ulcers with erythema	Anterior pillars, posterior palate, pharynx and buccal mucosa	1–3 mm	Dysphagia, vesicles on palms of hands and soles of feet and in mouth
Herpes stomatitis	Herpes simplex virus	Vesicles and shallow ulcers (round or oval), which may be confluent	Gingiva, buccal mucosa, tongue, lips	> 5 mm	Drooling, coalescence of lesions Duration about 10 days
Aphthous stomatitis (minor or major)	Unknown	Ulcers with exudate	Buccal mucosa, lateral tongue	Minor < 10 mm Major > 10 mm	Pain, no fever Usually only one or two lesions

DIFFERENTIAL DIAGNOSIS

- Immunologic: gingival hyperplasia
- Systemic lupus erythematosus
- Erythema multiforme
- Oral cancer (suspect if lesions present more than 3–6 weeks and are unresponsive to treatment)
- Oral candidiasis
- Lichen planus
- Leukoplakia (chronic irritation)
- Hand-foot-and-mouth disease
- Herpes simplex virus
- Herpangina
- Primary HIV/AIDS infection
- Syphilis
- Vincent’s stomatitis
- Trauma
- Pemphigus
- Denture stomatitis (red palate under denture)

- Mucus retention cyst (a normal-coloured, fluid-filled cyst on the inner portion of the lip). It will resolve normally by itself
- Adverse drug reaction

COMPLICATIONS

- Dehydration
- Secondary infection (for example, gangrenous stomatitis)
- Ludwig’s angina

DIAGNOSTIC TESTS

- Usually none
- Vitamin B12, folate and iron if nutritional deficiencies are suspected
- CBC to rule out anemias
- Tzank smear (for herpetic stomatitis)
- Biopsy (for oral cancer)

MANAGEMENT

There are as yet no specific treatments for any of these conditions. Herpes stomatitis usually lasts 10 days. Herpangina lasts for only a few days and has few complications. Aphthous stomatitis requires no treatment.

Goals of Treatment

- Relieve symptoms
- Prevent complications

Appropriate Consultation

The disease is self-limiting, so consultation is usually unnecessary, unless there are complications.

Nonpharmacologic Interventions

Maintenance of hydration is important. Increase oral intake of fluids (that is, maintenance requirements + fluid deficits caused by fever).

Client Education

- Counsel clients about the expected duration of this illness and the signs and symptoms of dehydration
- Recommend dietary adjustments: bland, non-acidic fluids (such as milk and water); popsicles, ice cream and similar food items; avoid citrus foods such as orange juice
- Recommend local mouthwashes (1:1 hydrogen peroxide and water), especially after eating
- Warm saline rinse 4 times daily for traumatic or viral ulcers
- To prevent spread of infection, recommend avoidance of direct contact with infected individuals (for example, kissing, sharing glasses and utensils, hand contact)
- Educate clients that the herpes virus can spread even when sores are not present

Pharmacologic Interventions⁷

Antipyretic and analgesic for fever and pain:

acetaminophen (Tylenol), 325–650 mg PO or PR q4-6h prn

A topical anesthetic containing benzocaine (for example, Anbesol) can be obtained from a retail pharmacy.

Do not treat this condition with antibiotics, as they are not indicated and are not helpful.

Herpetic lesions on the lips

If the lesions are herpetic, consult a physician who may suggest oral antiviral therapy depending on severity/recurrence. Topical antivirals such as acyclovir (for example, Zovirax) are sometimes used but must be started before lesions appear.²²

Oral Candidiasis

Antifungal:

nystatin oral suspension 500,000 units (5 mL) swish and swallow qid

If large (> 1 cm), persistent and painful lesions interfere with nutrition where there is no possibility of infection, consult a physician who may suggest a brief course of prednisone: 60 mg PO tapered by 5 mg/day over two weeks.²³

Monitoring and Follow-Up

- If lesions are severe, follow up in 2–3 days
- For lesions of unknown origin, follow up in 7 days
- Have client return if lesions persist after 3 weeks despite treatment, if they are unable to eat or if they are losing weight

Referral

Refer to a physician, for lesions that are not resolving after 3 weeks.

DENTAL ABSCESS

Infection of the soft tissue surrounding tooth or gums due to infection of a tooth or the structures supporting the tooth.

CAUSES

- Progressive dental decay causing pulpitis from gram-positive anaerobes and *Bacteroides*
- Foreign body impaction around the tooth
- Predisposing factors: deep caries, poor dental hygiene, dental trauma

HISTORY

- Localized tooth pain
- Constant, deep, throbbing pain
- Pain worsens with mastication or exposure to extreme temperatures
- Tooth may be mobile
- Gingival or facial swelling (or both) may be present

PHYSICAL FINDINGS

- Fever may or may not be present
- Facial swelling may be present
- Carious tooth
- Gingival edema and erythema
- Tooth may be loose
- Localized tenderness over affected area of jaw
- Anterior cervical nodes enlarged and tender
- Localized tooth pain

DIFFERENTIAL DIAGNOSIS

- Disease of the salivary gland (for example, mumps)
- Sinusitis
- Cellulitis

COMPLICATIONS

- Cellulitis
- Recurrent abscess formation

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Relieve symptoms
- Prevent spread of infection

Appropriate Consultation

Consult a physician if a large fluctuant abscess is present, if client is acutely ill, if the infection has spread to the soft tissues of the neck or if there is no response to initial treatment in 48–72 hours.

Nonpharmacologic Interventions

Warm saline oral rinses qid.

Client Education

- Counsel client about appropriate use of medications (dosage and side effects)
- Recommend dietary modifications (liquids or soft diet)
- Recommend improvements to dental hygiene

Pharmacologic Interventions⁷

Oral antibiotics (only if lymph node involvement):

amoxicillin 500 mg PO tid for 10 days

For clients with penicillin allergy:

clindamycin (Dalacin C), 150–300 mg PO qid for 7 days

For spreading infections involving facial swelling:

amoxicillin/clavulanate (Clavulin), 875 mg (of amoxicillin) PO bid for 10 days

For clients with penicillin allergy:

clindamycin (Dalacin C), 300 mg PO qid for 7 days

Simple analgesics for mild to moderate dental pain:

ibuprofen (Motrin), 200 mg, 1–2 tabs PO q4h prn to a maximum of ibuprofen 800 mg PO tid. Ensure patient is aware this is the maximum daily dose.

or if unable to take ibuprofen:

acetaminophen (Tylenol), 325 mg 1–2 tabs PO q4-6h prn

If the patient cannot take ibuprofen and is experiencing severe pain contact a physician for a codeine-containing product:

acetaminophen with codeine (Tylenol #3), 1–2 tabs PO q4-6h prn

Monitoring and Follow-Up

Follow up in 48–72 hours. If unresolved, consult with a physician who may suggest changes to the antimicrobial therapy such as the addition of metronidazole.

Referral

Refer to a dentist for definitive therapy.

DENTAL DECAY²⁴

Dental decay is a multifactorial disease. In general, bacterial colonies (dental plaque) convert the sugar in fermentable carbohydrates into an acid that demineralizes the dental enamel. When demineralization is not occurring, protective factors such as from the saliva or fluoride exposures result in remineralization of the enamel. Decay occurs when the balance tilts toward demineralization exceeding remineralization over an extended period of time. In the early stages of decay, the enamel takes on a dull white appearance; however the decay can still be halted or reversed at this stage. It is usually asymptomatic. If demineralization is allowed to continue, eventually the enamel breaks down and cavitation occurs, at which time the process becomes less reversible.

As decay progresses into the dentine, the tooth becomes more sensitive to sweet and cold. When it approaches the pulp of the tooth, the pulp becomes hyperaemic (engorged), reacting more strongly to temperature change and other stimuli. Once bacteria have entered the pulp the process of a dental abscess begins. With destruction of the pulp, pressure builds at the apex (root end) and the tooth throbs constantly, becoming worse with hot temperatures and pressure.

CAUSES

- Bacteria, carbohydrate sugar and saliva in combination

Table 2 – Pathology, Signs and Symptoms of Dental Decay (along its course of progression)

Tooth or Soft Tissue Condition	Pathology / Reversibility	Explanation	Discomfort – Presenting Symptoms
Asymptomatic (Normal – no decay)	None		Normal – slight sensitivity to hot and cold
Asymptomatic (Normal – minor decay or trauma)	Minor decay or trauma Reversible	Remaining hard tooth structure insulates pulp tissue.	Normal (as above) No long-lasting pain
Mild pulpal involvement - cavity - deep filling - trauma - recent dental treatment	Hypaemia of pulpal tissue Reversible	Cold contracts hard tissue, putting pressure on hyperaemic tissue; sweet causes osmotic ion movement.	Increased sensitivity to cold and sweet. Occasional sharp pain to insult, but short lasting.
Severe pulpal involvement - deep decay - deep filling - recent severe trauma	Necrosis of pulp tissue Irreversible	Heat expands gas produced by necrotic tissue.	Increased sensitivity to heat. Sensitivity to percussion (tapping, biting). Spontaneous pain, throbbing, moderate duration.
Involvement of soft tissue surrounding tip of root	Chronic inflammatory response outside of tooth Irreversible	Soft tissue supporting tooth is stretched, swelling confined by bone.	Very sensitive to percussion. Tooth is extruded. Mobility of tooth. Long-lasting pain.
Expansion of apical pathology beyond nearest bony cortex	“Gum boil” or facial swelling (depends on length of root) Irreversible	Chronic suppuration – body cannot get to source of problem. If there is a draining fistula, there is no intrabony pressure, so no pain.	Pain decreases but an obvious sign is present: gum boil or facial swelling. Oral soft tissue may look normal. Pain originates from stretched soft tissue of face. Trismus of musculature (lockjaw) may limit opening of the mouth.

PHYSICAL EXAMINATION

To assist with staging the progression of dental decay see Table 2, “*Pathology, signs and Symptoms of Dental decay*”. Assess for:

- General appearance
- Pain
- Temperature (client should not be febrile, unless an abscess is present)

HISTORY

For explanation of the progression of dental decay, its pathology, signs and symptoms see Table 2, “*Pathology, signs and Symptoms of Dental decay*”.

- Sensitivity of tooth/teeth to sweets, cold or hot food and liquids and pressure
- History of dental caries, abscess(es)
- Pain, particularly when eating
- Dental care routine
- Recent dental treatments

DIFFERENTIAL DIAGNOSIS

- Dental abscess

COMPLICATIONS

- Dental abscess
- Chronic discomfort in the mouth
- Exposure of the bone in the socket after a lower back tooth has been removed (dry socket)
- Fractured tooth

MANAGEMENT***Appropriate Consultation***

A physician should be consulted if:

- the client has facial swelling
- the client is immunocompromised (for example, has diabetes mellitus)
- the client has pain not relieved by treatment
- the condition is not resolving after one course of treatment
- the client is febrile
- the client has difficulty opening mouth

Nonpharmacologic Interventions

Encourage regular dental hygiene.

Mild pulpal involvement:

Allow time for healing if there has been recent dental treatment.

Pharmacologic Interventions

Refer to Table 2, “*Pathology, signs and Symptoms of Dental decay*” for presenting symptoms.

Mild pulpal involvement:

- Antibiotics not necessary

Simple analgesics for mild to moderate dental pain:

ibuprofen (Motrin), 200 mg, 1–2 tabs PO q4h prn

or

acetaminophen (Tylenol), 325 mg 1–2 tabs
PO q4-6h prn

For moderately severe dental pain, codeine may be required:

acetaminophen with codeine (Tylenol #3), 1–2 tabs
PO q4-6h prn

Severe pulpal involvement:

- Antibiotic (lower dose) (for example, Penicillin VK [Pen V] 300 mg qid)
- Analgesic as required

Involvement of soft tissue surrounding tip of root:

Oral antibiotics and analgesia. Antibiotics as follows:
penicillin V potassium (Penicillin V) 300–600 mg
PO qid for 7 days

Metronidazole should be added to penicillin if infection spreads or systemic symptoms present:

metronidazole (Flagyl), 500 mg po bid for 7 days

For clients with penicillin allergy or in areas of significant penicillin resistance:

clindamycin (Dalacin C), 150–300 mg PO qid for 7 days

Expansion of apical pathology beyond nearest bony cortex:

- None if draining intraorally
- With facial swelling, oral/IV antibiotic, and analgesics if required. Consult the physician if intravenous antibiotics are deemed necessary. Otherwise, oral antibiotics as used for involvement of soft tissue surrounding tip of root can be used

Monitoring and Follow-up

- Clients with facial swelling should be seen daily until it resolves
- Instruct client to return for reassessment immediately if lesion develops, if pain increases or if fever develops

Referral

If a client presents with severe facial swelling or has difficulty opening their mouth, referral to a physician may be warranted. This decision should be made in consultation with a physician.

Referral to a dentist is warranted in the following situations for treatment:

- Asymptomatic with minor decay or trauma for dental restorations
- Mild pulpal involvement for temporary filling if cavity present
- Severe pulpal involvement for removal of necrotic tissue in tooth by extraction or root canal treatment (temporary or permanent filling will not work and may increase pain)

- Involvement of soft tissue surrounding tip of root for drainage of area by extraction or root canal treatment
- When an expansion of apical pathology beyond nearest bony cortex requires an extraction of tooth, possibly with curettage. If intraoral gum boil only, immediate treatment is often not necessary

DISCOLOURED (NON-VITAL) PERMANENT TOOTH

See the section “*Discoloured (non-vital) Permanent Tooth*” in the chapter “*Ears, Nose, Throat and Mouth*” in the pediatric clinical practice guidelines for detailed information on the clinical presentation and treatment of a discoloured permanent tooth. Treatment is the same for children and adults.

GINGIVITIS

Gingivitis is inflammation of the unattached gingival tissue around a tooth.

HISTORY AND PHYSICAL FINDINGS

The tissues are red in colour, slightly swollen, and bleed with slight manipulation (such as toothbrushing).

MANAGEMENT

Nonpharmacologic Interventions

Gingivitis is reversible with thorough brushing and flossing. The client should be advised that the tissues will bleed upon brushing for the first few days, but with thorough self-care, this bleeding will stop and the tissues will return to health in a few days.

MIGRATORY GLOSSITIS (GEOGRAPHIC TONGUE)

Tongue demonstrates several smooth, red areas outlined by elevated gray margins of epithelial tissue. Migratory glossitis is not a pathological condition and no treatment is indicated.

CAUSES

Unknown.

MANAGEMENT

Nonpharmacologic Interventions

Reassure client.

PERICORONITIS

Pericoronitis is infection and inflammation of the gingival tissues around a partially erupted tooth. It is most common around a mandibular wisdom tooth.

CAUSES

- Bacterial (often spirochete) infection

HISTORY

- Newly erupting tooth
- Smoking is often a factor

PHYSICAL FINDINGS

- Redness and swelling of soft tissues surrounding a partially erupted tooth
- The opposing tooth may be occluding on the swollen tissues around the affected tooth
- Possible swelling of the submandibular lymph nodes
- There might be limited opening of the mandible

COMPLICATIONS

- More generalized infection

MANAGEMENT

Goals of Treatment

- Prevent broader infection of the area
- Reduce discomfort

Appropriate Consultation

Consultation with a physician is not normally warranted, unless complications arise.

Nonpharmacologic Interventions

- Warm saline rinses, four times daily until condition resolves
- Avoid spicy foods
- Avoid smoking

Client Education

- Condition will usually resolve itself
- Stress meticulous oral hygiene of other teeth

Pharmacologic Interventions

Pericoronal infection (pericoronitis) does not require antibiotics, unless there is lymph node involvement and facial swelling, or restricted opening.

If needed, oral antibiotics:

amoxicillin 250–500 mg po tid for 7 days

Metronidazole should be added to penicillin if infection spreads or systemic symptoms present:

metronidazole (Flagyl), 500 mg po bid x 7 days

For clients with penicillin allergy or in areas of significant penicillin resistance:

clindamycin (Dalacin C), 150–300 mg PO qid for 7 days

Simple analgesics for mild to moderate dental pain:

ibuprofen (Motrin), 200 mg, 1–2 tabs PO q4h prn

or

acetaminophen (Tylenol), 325 mg, 1–2 tabs PO q4-6h prn

For moderately severe dental pain, codeine may be required:

acetaminophen with codeine (Tylenol #3), 1–2 tabs PO q4-6h prn

Referral

Refer to a dentist for follow-up.

PERIODONTITIS

Periodontitis is inflammation of the periodontal tissues around the teeth, and subsequent loss of supporting structures (periodontal ligament and alveolar bone). In the adult a common form of periodontitis will manifest with a slow progression of tissue destruction which may result in a loose tooth or the loss of teeth.

CAUSES

- Inflammation of the gingiva (gingivitis)
- Build-up of calculus (tartar)

Periodontitis is influenced by general health issues such as diabetes, and local irritants such as smoking.

HISTORY

- Medical conditions such as diabetes
- Smoking is often a factor
- Rate of build-up of calculus

PHYSICAL FINDINGS

- There may not be easily detectable signs of periodontitis (calculus might be subgingival; bone loss not evident)
- Heavy calculus accumulations
- Usually no discomfort – patient might complain of “itchy” or “uncomfortable” feeling in gums
- Mouth odour
- In advanced stages, teeth may be mobile

COMPLICATIONS

- Progression of periodontal disease will lead to tooth loss
- There is growing evidence of links between periodontal disease and other medical conditions such as cardiovascular disease, respiratory diseases and diabetes

MANAGEMENT

- Thorough, regular oral hygiene
- Regular professional care by dentists, dental hygienists and/or dental therapists

Goals of Treatment

- Prevent or slow down the loss of supporting tissues
- Reduce the inflammation

Nonpharmacologic Interventions

- Thorough brushing and flossing on a regular basis
- Avoid smoking

Client Education

- Need for thorough and regular oral hygiene
- Need for regular professional care (with frequency based on individual needs)

Referral

Refer to a dental professional for follow-up.

TOOTHACHE

See “Toothache” in “Ears, Nose, Throat and Mouth”, in the pediatric clinical practice guidelines for detailed information on the clinical presentation and treatment of a toothache. Treatment is the same for children and adults.

XEROSTOMIA (DRY MOUTH)^{25,26}

Everyone's mouth is dry now and then, but for many adults, dry mouth (xerostomia) is a chronic condition that leaves the mouth dry, sore and sticky. Some patients have difficulties eating, swallowing, talking or wearing dentures (due to loss of suction). They may be vulnerable to sores and yeast infections, and their teeth are more prone to decay.

CAUSES

- Side effect of medications such as tricyclic antidepressants, benzodiazepines, isotretinoin
- Medical conditions – diabetes, Sjogren's syndrome, Parkinson's disease
- Therapeutic radiation or chemotherapy
- Alcohol
- Head injury

HISTORY

- Medications
- Other medical conditions such as diabetes, Parkinson's disease
- Smoking and alcohol use

PHYSICAL FINDINGS

- Oral mucosa and tongue very dry
- Loose dentures
- Candidiasis
- Alteration in speech

DIFFERENTIAL DIAGNOSIS

- Chronic xerostomia
- Short-term reaction to temporary medications

COMPLICATIONS

- Increased dental decay
- Sores
- Fungal infections
- Nutritional deficiencies (difficulty eating certain foods)

MANAGEMENT

Goals of Treatment

- Prevent dental decay, fungal infections
- Improve comfort

Nonpharmacologic Interventions

- Increase fluid intake, particularly water or carbonated water
- Avoid acidic fluids – pop, energy drinks
- Avoid drinks with caffeine – coffee, tea, some sodas
- Encourage use of a humidifier
- Sugar free gum – sweetened with xylitol
- Xylitol sweetened candies
- Avoid spicy foods
- Avoid smoking and alcohol

Client Education

- Discuss causes of dry mouth
- Stress fluid intake
- Stress oral hygiene
- Share interventions above to help decrease xerostomia

Referral

- Refer to a physician for review of medications
- Refer to a dentist for monitoring caries and oral health

EMERGENCY PROBLEMS OF THE NOSE, THROAT AND MOUTH

AVULSED TOOTH

See the section “Avulsed Tooth” in the chapter “Ears, Nose, Throat and Mouth,” in the pediatric clinical practice guidelines for detailed information on the clinical presentation and treatment of an avulsed tooth. Treatment is the same for children and adults.

FRACTURED TOOTH

See the section “Fractured Tooth” in the chapter “Ears, Nose, Throat and Mouth,” in the pediatric clinical practice guidelines for detailed information on the clinical presentation and treatment of a fractured tooth. Treatment is the same for children and adults.

MASTOIDITIS

Suppurative (bacterial) inflammation/infection of mastoid antrum and air cells. Can be acute or chronic.

CAUSES

- Acute mastoiditis is a rare complication of acute otitis media
- Chronic mastoiditis is more commonly associated with cholesteatoma (cyst of the middle ear) or chronic suppurative otitis media (tympanic perforation with chronic drainage)
- Most common organisms: *Haemophilus influenzae*, group A Streptococcus, *Streptococcus pneumoniae*

Risk Factors

- Recurrent otitis
- Cholesteatoma
- Immunocompromised status

HISTORY

- Ear pain
- Nonresolving otitis media
- Spiking fever
- Tinnitus
- Otorrhea if ear drum is perforated

PHYSICAL FINDINGS

- Temperature moderately to severely elevated
- Client appears moderately ill
- Hearing loss
- Posterior auricular swelling and erythema

- Pinna may be displaced anteriorly if edema severe
- Manipulation of pinna and otoscopic exam of the ear causes acute pain
- Purulent drainage if tympanic membrane ruptured
- Posterior auricular warmth
- Tenderness over mastoid process
- Anterior cervical and peri-auricular nodes enlarged and tender

DIFFERENTIAL DIAGNOSIS

- Severe otitis externa
- Posterior auricular cellulitis
- Benign or malignant neoplasm
- Infection of deep neck space (Ludwig’s angina)

COMPLICATIONS

- Residual hearing loss
- Meningitis
- Intracranial abscess
- Subperiosteal abscess

DIAGNOSTIC TESTS

Swab for culture and sensitivity if ear is draining.

MANAGEMENT

Goals of Treatment

- Relieve pain and swelling
- Prevent spread of infection

Appropriate Consultation

Consult a physician concerning intravenous (IV) antibiotic therapy.

Adjuvant Therapy

Start IV therapy with normal saline. Adjust rate according to state of hydration.

Pharmacologic Interventions

Consult a physician for prescription of IV antibiotics. Polymicrobial coverage is necessary (for example, cefuroxime [Zinacef]). Analgesics for pain and fever:

acetaminophen (Tylenol), 325 or 500 mg, 1–2 tabs PO q4-6h

Referral

Medevac to hospital as soon as possible; client will need an urgent ENT consultation. Client may need several days of IV drug therapy and possibly surgery.

ORAL TRAUMA

With trauma, a tooth may fracture, become displaced or become non-vital (and abscess) or oral mucosa may be damaged or ulcerated.

MANAGEMENT

Nonpharmacologic Interventions

- Warm saline rinse 4 times daily for traumatic ulcers

Referral

Any problems resulting from trauma should be referred to a dentist for monitoring and/or treatment.

PERITONSILLAR ABSCESS

Cellulitis of the space behind the tonsillar capsule extending onto the soft palate, leading to an abscess. It is most common in 15–30 year olds. It is considered moderate to severe if the patient has any of the following symptoms: appears acutely ill, drooling, difficulty swallowing, difficulty breathing and/or inability to open mouth. Otherwise it is considered mild to moderate.

CAUSES

Bacterial infection, usually related to group A *Streptococcus* (GAS) (50%), *S. pyogenes*, *S. aureus*, *H. influenza*.

HISTORY

- Recent episode of pharyngitis
- Gradually increasing unilateral ear and throat pain
- Fever
- Malaise
- Dysphagia (difficulty swallowing)
- Dysphonia
- Drooling
- Trismus (difficulty opening mouth)

PHYSICAL FINDINGS

- Fever
- Heart rate increased
- Client may appear acutely ill or distressed
- Diaphoretic; flushed if feverish
- Affected tonsil grossly swollen medially and reddened
- Tonsil may displace uvula and soft palate to the opposite side of pharynx
- Swelling and redness of the soft palate
- Trismus (difficulty opening mouth)
- Increased salivation
- Dysphonia with (“hot potato” voice)
- Unilateral referred ear pain
- Tonsillar/cervical lymph nodes enlarged and very tender
- Fluctuance may be felt on affected side of palate

DIFFERENTIAL DIAGNOSIS

- Epiglottitis
- Gonococcal pharyngitis

COMPLICATIONS

- Obstruction of the airways
- Sepsis

DIAGNOSTIC TESTS

Swab any exudate for culture and sensitivity.

MANAGEMENT OF MILD-TO-MODERATE PERITONSILLAR ABSCESS

Treat on an outpatient basis.

Goals of Treatment

- Relieve symptoms
- Prevent complications

Nonpharmacologic Interventions

Client Education

- Advise client to return immediately if pain becomes worse or if drooling, difficulty swallowing, difficulty breathing or inability to open mouth develops
- Recommend increased fluid intake
- Recommend increased rest until fever settles
- Recommend frequent gargling with warm saline for 48 hours

Pharmacologic Interventions

Antibiotics:

penicillin V potassium (Penicillin V), 300 mg PO qid or 600 mg bid for 10 days

For clients with penicillin allergy:

clindamycin (Dalacin C), 300 mg PO tid for 10 days

Analgesics for pain and fever:

acetaminophen (Tylenol), 325 mg, 1–2 tabs PO q4h prn

or

ibuprofen (Motrin), 200 mg, 1–2 tabs PO q4h prn

Monitoring and Follow-Up

Follow up in 24 hours. If no improvement, consult with a physician. Needle aspiration, performed by a physician, may be required.

MANAGEMENT OF MODERATE-TO-SEVERE PERITONSILLAR ABSCESS

Client appears acutely ill and has difficulty swallowing.

Goals of Treatment

- Relieve symptoms
- Prevent complications

Appropriate Consultation

Consult a physician if the abscess is significant in size and the client appears acutely ill; immediate referral to hospital and examination by an ear, nose and throat (ENT) specialist are in order.

Adjuvant Therapy

Start IV therapy with normal saline; adjust rate according to age and state of hydration.

Nonpharmacologic Interventions

- Bed rest
- Give sips of cold liquids only
- Give nothing by mouth if drooling

Pharmacologic Interventions

Consult with a physician concerning choices for IV antibiotic treatment. Clindamycin (Dalacin) IV is often the drug of choice. In addition, one or two doses of dexamethasone IV can be used in conjunction with IV antibiotics.

Monitoring and Follow-Up

Monitor client to ensure adequate airway is maintained.

Referral

Medevac to hospital; client requires IV antibiotics and aspiration or surgical incision to drain abscess.

POSTERIOR EPISTAXIS

Source of bleeding appears to be from the posterior portion of the nose.

CAUSES

- Idiopathic (cause unknown)
- Hypertension
- Vascular abnormalities (hereditary hemorrhagic telangiectasia)
- Trauma: deviation or perforation of the septum
- Infection (for example, chronic sinusitis)
- Neoplasm (rare)

HISTORY

- Sudden onset of brisk, bright bleeding from nose
- May be unilateral or bilateral
- Blood running down back of throat
- May be a history of hematemesis if client has swallowed a large quantity of blood
- History of easy bruising, bleeding elsewhere (for example, melena, heavy menses), family history of bleeding tendencies, use of anticoagulants, use of acetylsalicylic acid (ASA) products

PHYSICAL FINDINGS

- Heart rate elevated
- Blood pressure may be reduced if loss of blood is significant
- Client appears anxious
- Client may be pale, sweaty if loss of blood is significant
- Bright red bleeding from nares (unilateral or bilateral)
- Bleeding site not visible
- Blood observed in pharynx

DIFFERENTIAL DIAGNOSIS

- Upper gastrointestinal bleed
- Post-tonsillectomy bleed
- Perforation of the septum

COMPLICATIONS

- Hypotension or shock (hypovolemic)
- Anemia, if bleeds are intermittent and frequent

DIAGNOSTIC TESTS

None.

MANAGEMENT

Goals of Treatment

- Stop bleeding
- Maintain circulating blood volume

Appropriate Consultation

Consult a physician if initial management fails to control bleeding, client is not stable or there is significant potential of underlying pathology.

Adjuvant Therapy

- Resuscitate patient as required
- Start IV therapy with normal saline or Ringer's lactate solution; adjust IV rate according to pulse, blood pressure and rate of bleeding

Nonpharmacologic Interventions

- Keep client at rest, sitting in most comfortable position for patient
- Apply pressure to the nose
- Insert a posterior nasal pack; use a posterior nasal pack balloon system if available; alternatively use a Foley catheter

Procedure for Foley catheter system:

1. Place a 12–16 French catheter with a 30-cc balloon into the nose along the floor of the nasopharynx, until the tip is visible in the posterior pharynx.

2. Slowly inflate the balloon with 15 mL of sterile water, pull it anteriorly until it firmly sets against the posterior choanae.

3. Maintain catheter traction and stretch slightly.

4. Insert an anterior nasal pack next (½ x 72 inch [1.25 x 180 cm] ribbon gauze impregnated with petroleum jelly).

5. Place an umbilical cord clamp across the nostril against the anterior pack so that the elasticity of the catheter compresses the balloon against the anterior pack.

6. Protect facial skin from clamp by padding with 2 x 2 inch (5 x 5 cm) gauze.

7. Drape rest of catheter over ear on same side and tape in place.

Bilateral packing is sometimes required to achieve adequate compression. The bleeding should stop after the nasal packs are in place.

Monitoring and Follow-Up

Monitor vital signs and loss of blood closely. Remove packs and balloons in 24–36 hours. There is a possibility that bleeding may continue or restart.

Referral

Medevac to hospital if bleeding does not stop, if hypovolemia is evident (hypotension, tachycardia) or if significant underlying pathology is suspected.

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