

Diseases of the Ears, Nose, and Throat

National EMS Education Standard Competencies

Diseases of the Ears, Nose, and Throat

Knowledge of the anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of

- Common or major diseases of the ears, nose, and throat, including nose bleed



Introduction

- Calls may involve disorders of the ears, nose, and throat (ENT).
 - Patients may need to be transported to an emergency department with access to a specialist.

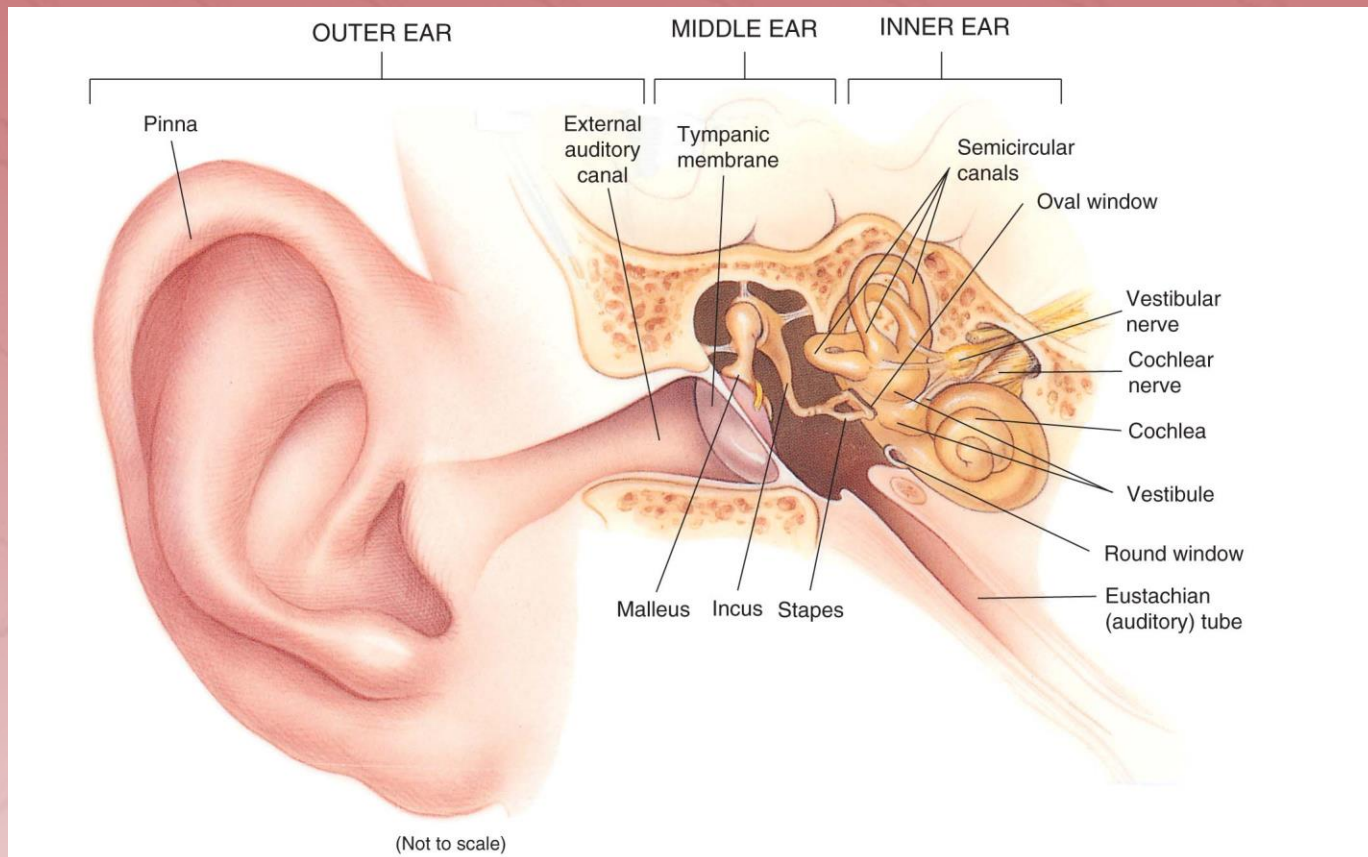


The Ear

- The ear is the primary structure for hearing and balance.
 - Disorders and injuries can leave a person unable to:
 - Communicate
 - React
 - Maintain equilibrium

Anatomy and Physiology of the Ear

- Divided into three anatomic parts





Anatomy and Physiology of the Ear

- Sound waves enter the ear.
 - Travel to the tympanic membrane.
 - Sound waves set up vibration in the ossicles.
 - Vibrations transmit to the cochlear duct.
 - At organ of Corti, vibrations form impulses.
 - Travel to the brain via the auditory nerve.

Patient Assessment



- Observe the scene for hazards.
- As you approach, assess:
 - Age and sex of the patient
 - Environmental conditions
 - Degree of distress
 - Presence of hearing aid(s)

Patient Assessment

- Ensure ABCs and manage life threats.
- Take a complete history.
- Observe ears for:
 - Drainage
 - Excess cerumen
 - Inflammation
 - Swelling

Patient Assessment



- Have patient rate his or her pain.
- Ask about:
 - Changes in hearing
 - Tinnitus
 - Dizziness

- Inspect for:
 - Wounds
 - Swelling
 - Drainage
 - Mastoid process
- Transport.

Foreign Body



- Usually seen in pediatric patients
- Assessment and management
 - Determine the nature of the object.
 - Look for bleeding, redness, or inflammation.
 - Stabilize impaled objects in place.
 - Transport in a position of comfort.

Impacted Cerumen

- Yellowish oily substance found in outer ear
- May present as:
 - “Wet”: a sticky brown color
 - “Dry”: a grayish flaky substance
- Can become impacted

Impacted Cerumen

- Risk factors include:
 - Abnormal ear canal shape
 - Diseases that cause increased cerumen
 - Improper use of cotton swabs

Impacted Cerumen

- Assessment and management
 - Symptoms may include:
 - Pressure or fullness in the ears
 - Ringing in the ears
 - Loss of hearing

Impacted Cerumen

- Assessment and management (cont' d)
 - Prehospital treatment includes:
 - Thorough history
 - Visual inspection of the ear



Labyrinthitis

- Feeling of vertigo or loss of balance after an ear infection or upper respiratory infection
 - Other symptoms may include:
 - Ringing in the ears
 - Loss of hearing
 - Vomiting



Labyrinthitis

- Assessment and management
 - Prehospital treatment is directed at:
 - Reducing nausea and vomiting
 - Transporting the patient in a position of comfort
 - Serious disorders will need to be ruled out by a CT scan and an MRI.

Meniere Disease

- Endolymphatic rupture creates increased pressure in the cochlear duct
 - Damages organ of Corti and semicircular canal
 - Patients will likely experience:
 - Severe vertigo
 - Tinnitus
 - Sensorineuronal hearing loss



Meniere Disease

- Assessment and management
 - Prehospital care includes an antiemetic.
 - Physician may treat with diuretics and an antiemetic.



Otitis Externa and Media

- Infection resulting from bacterial growth in the ear canal
 - Externa: outer ear
 - Media: middle ear
- More common in children than adults

A photograph of an emergency scene, likely a fire or accident, with a person in a red jacket and medical equipment visible in the background.

Otitis Externa and Media

- Assessment and management
 - Signs and symptoms may include:
 - Edema and erythema
 - Diminished hearing acuity
 - Inflamed, bulging tympanic membrane
 - Prehospital treatment: relieving unbearable symptoms



Perforated Tympanic Membrane

- Ruptured eardrum
- Results from:
 - Foreign bodies in the ear
 - Pressure-related injuries
 - Diving-related injuries

A photograph in the top-left corner shows a person in a red jacket and yellow gloves attending to medical equipment, including a red bag and a yellow tube, on a stretcher.

Perforated Tympanic Membrane

- Assessment and management
 - Signs and symptoms include:
 - Loss of hearing
 - Blood drainage from the ear
 - Pain
 - Assess and treat other injuries.
 - Transport for evaluation.

The Nose



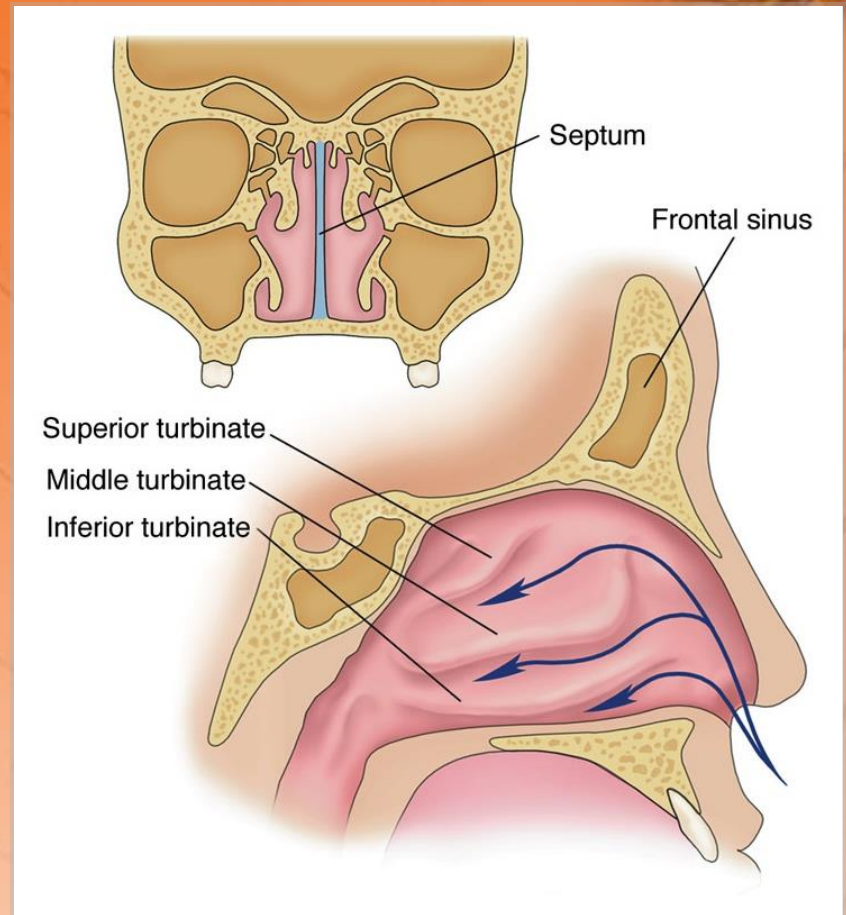
- Susceptible to injury because of prominence
 - Allergens, particles, and chemicals can cause inflammation, infection, and injury.
- Inside of the nose is extremely vascular.
 - Excellent route for some medicines.

The Nose

- Smelling disorders include:
 - Anosmia: total loss of sense of smell
 - Dysosmia: distorted sense of smell
 - Hyperosmia: increased sensitivity to smell
 - Presbyosmia: loss of smell from normal aging

Anatomy and Physiology of the Nose

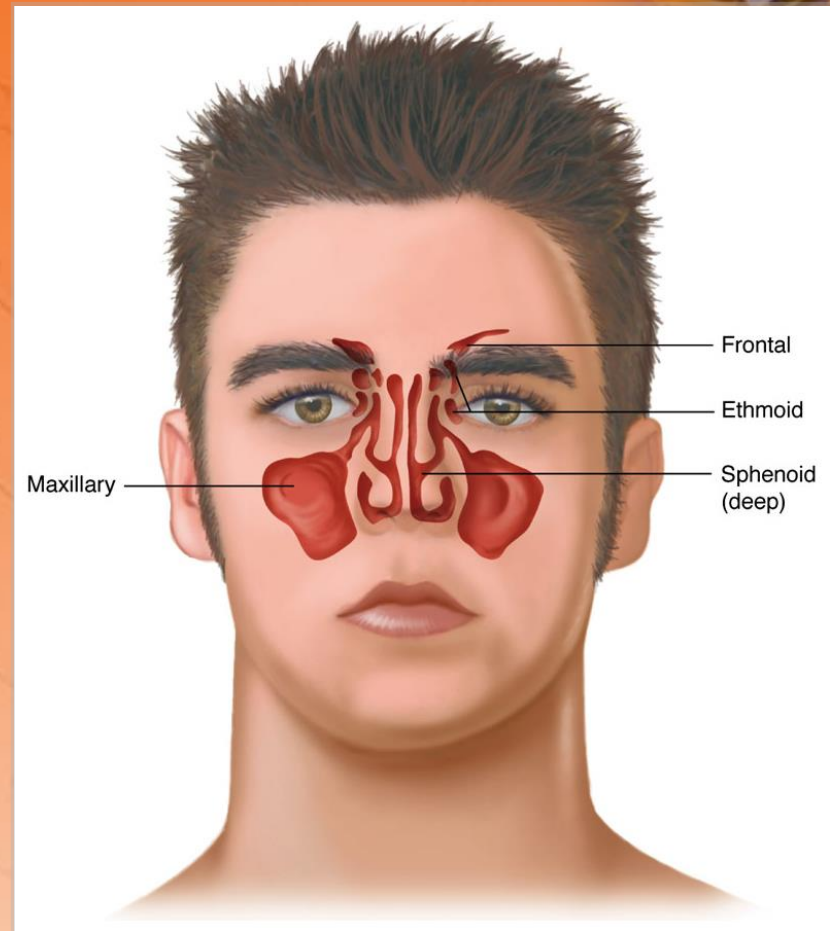
- One of two primary entry points for oxygen
- Nasal septum: separation between the nostrils
- Turbinates: layers of bone within each nasal chamber



© Jones & Bartlett Learning

Anatomy and Physiology of the Nose

- Frontal sinuses are above the nose.
- Paranasal sinuses
 - Cavities within several bones associated with the nose



Patient Assessment

- Look for environmental clues.
- Ensure scene safety.
- Assess airway and breathing.
- Determine level of distress.

Patient Assessment

- Insert an airway adjunct as needed.
 - Do not insert a nasopharyngeal airway or attempt nasotracheal intubation with:
 - Suspected nasal fractures
 - CSF or blood leakage from the nose
 - Inquire about history of nose conditions.

Epistaxis

- Nosebleed

- Anterior

- Bleed fairly slowly
 - Self-limiting and resolve quickly

- Posterior

- More severe
 - Often cause blood to drain into the throat, causing nausea and vomiting

Epistaxis

- Assessment and management:
 - Place a nontrauma patient in a sitting position, and pinch nostrils together.
 - Direct the patient not to sniff or blow his or her nose.





Foreign Body

- Most likely to be seen in pediatric patients
- Pressure in the nasal passage can cause:
 - Tissue necrosis
 - Inflammation
 - Swelling

A photograph in the top-left corner shows a person in a red jacket and yellow safety vest, likely a paramedic, attending to medical equipment on a stretcher. The equipment includes a red bag and various tubes and monitors.

Foreign Body

- Assessment and management
 - Determine life threats.
 - Any persistent, foul-smelling, purulent discharge should lead to suspicion.
 - Let discharge drain.
 - Transport the patient in a position of comfort.



Rhinitis

- A nasal disorder that is most common during childhood and adolescence
 - Generally caused by allergens

A blurred background image showing an emergency medical scene. In the upper left, a person in a red jacket is visible. Next to them is a red medical bag or equipment. In the center, a person is lying on a stretcher, partially covered by a yellow blanket. The background is a solid red color.

Rhinitis

- Assessment and treatment
 - Signs and symptoms may include:
 - Nasal congestion
 - Itchy runny nose and eyes
 - Postnasal drip
 - Keep the patient in the Fowler position.

Sinusitis

- Patients experience thick nasal discharge, sinus and facial pressure, headache, and fever.
- Infection occurs when an obstruction or growth blocks the paranasal sinus.

Sinusitis

- Assessment and management
 - Condition can be chronic, acute, or recurrent
 - Treatment: reduce inflammation and drain sinuses.
 - Complications occur when the infection moves into the brain or bone.

The Throat

- Disorders of the pharynx and larynx may include inflammation, infections, or abnormal growths.

The Throat

- Esophageal disorders can affect the throat.
- Esophageal reflux: valve only partially closes or opens too much
 - Symptoms include:
 - Burning sensation in the chest
 - Indigestion
 - Change in voice tone



Anatomy and Physiology of the Throat

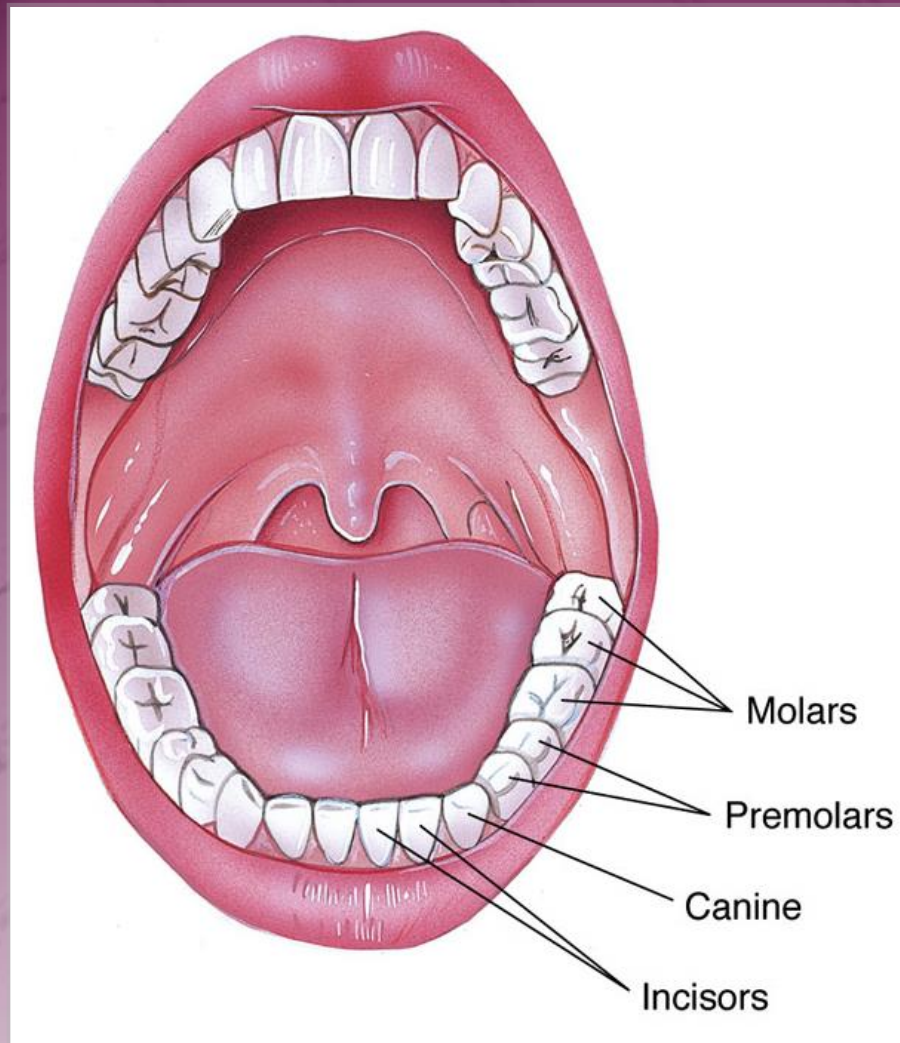
- 32 teeth distributed about the maxillary and mandibular arches
 - Each side of the arch form 4 quadrants
 - One central incisor
 - One lateral incisor
 - One canine
 - Two premolars
 - Three molars



Anatomy and Physiology of the Throat

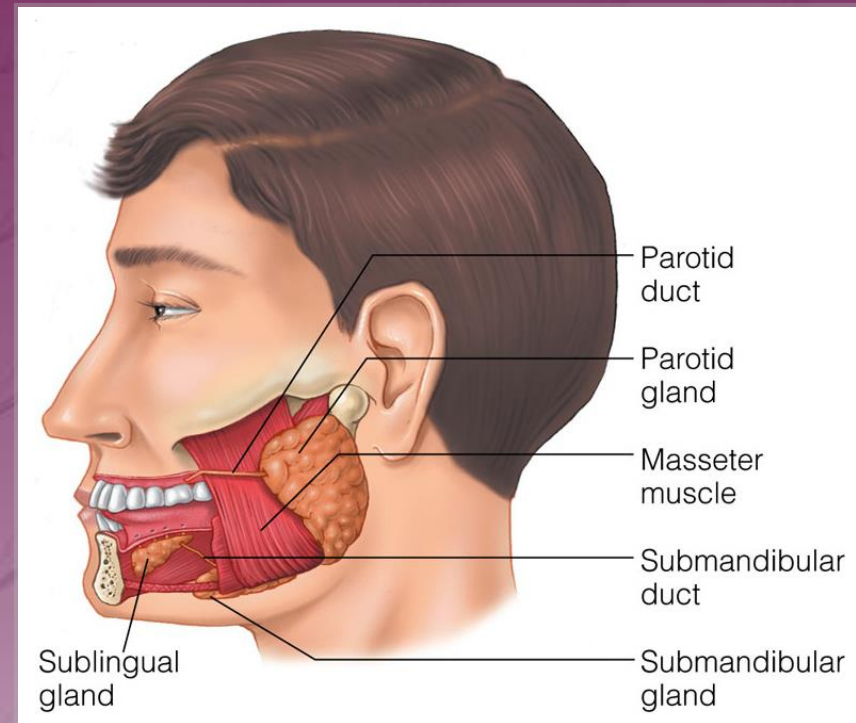
- The top portion of the tooth is the crown.
 - The pulp cavity fills the center of the tooth.
 - Dentin forms the principal mass of the tooth.
- Alveoli are the bony sockets for the teeth.
 - Alveolar ridges: ridges between the teeth that are covered by gums

Anatomy and Physiology of the Throat



The Mouth

- Digestion begins with mastication.
- Tongue: the primary organ of taste
 - Attached at mandible and hyoid bone
 - Covered by a mucous membrane



The Mouth



• Nerves:

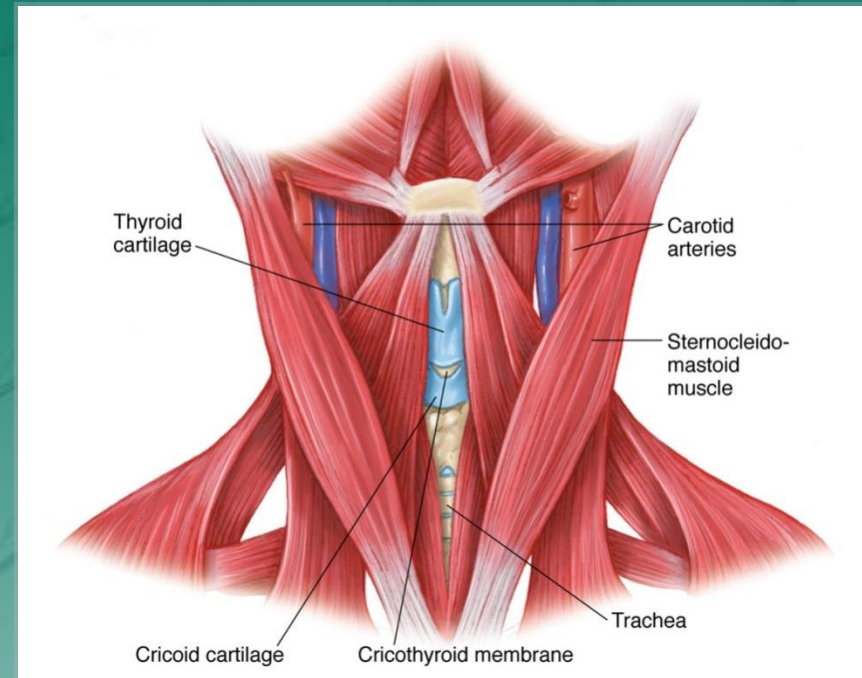
- Hypoglossal
 - Provides motor function to the tongue
- Glossopharyngeal
 - Provides taste sensation
- Trigeminal
 - Provides motor innervation to the muscles of mastication

– Facial

- Supplies motor activity of facial expression
- Provides taste sensation
- Provides cutaneous sensations to the tongue and palate

The Neck

- Anterior part of the neck include:
 - Thyroid and cricoid cartilage
 - Trachea
 - Muscles and nerves
 - Major blood vessels



The Neck

- Other structures:
 - Vagus nerves
 - Thoracic duct
 - Esophagus
 - Thyroid and parathyroid glands
 - Lower cranial nerves
 - Brachial plexus
 - Soft tissue and fascia
 - Various muscles

Patient Assessment

- Swallowing abnormalities require a position to allow drainage.
- Assessments should consider epiglottitis if:
 - Sore throat
 - Drooling
 - Head that is hung forward

Dentalgia and Dental Abscess

- Dentalgia:
toothache
- Dental abscess
 - Occurs when a bacteria growth spreads into the gums, facial tissue, bones, and/or neck



© Dr. P. Marazzi/Photo Researchers, Inc.

Dentalgia and Dental Abscess

- Assessment and management
 - Infection may become systemic.
 - An abscess in the throat, neck, or under the tongue can affect the ability to breathe.
 - Prehospital treatment is aimed at relieving symptoms.



Diseases of Oral Soft Tissue

- Can be the root cause to other health problems
- Include:
 - Cold sores
 - Canker sores
 - Thrush
 - Leukoplakia
 - Gingivitis
 - Bad breath

A blurred background image showing an emergency scene. A person is lying on a stretcher, and medical equipment is visible. The scene is outdoors, possibly on a street or in a public area. The image is slightly out of focus, emphasizing the text in the foreground.

Diseases of Oral Soft Tissue

- Assessment and management
 - Rule out urticaria and allergic reactions.

Oral Candidiasis (Thrush)

- *Candida albicans* accumulates on the lining of the mouth.
- Patient will have creamy white lesions.
 - May be painful and may bleed



© Biophoto Associates/Photo Researchers, Inc.

A blurred background image showing paramedics in red uniforms attending to a patient on a stretcher. The scene is outdoors, possibly on a street or in a vehicle's vicinity.

Oral Candidiasis (Thrush)

- Assessment and management
 - Most likely to be found in:
 - Babies
 - Patients with compromised immune systems
 - Patients who wear dentures
 - Patients who use inhaled corticosteroids



Oral Candidiasis (Thrush)

- Assessment and management (cont' d)
 - Additional symptoms may include:
 - Cracking and redness at the corners of the mouth
 - A “cottony” feeling in the mouth
 - Sensation of food stuck in the throat



Oral Candidiasis (Thrush)

- Assessment and management (cont' d)
 - Patients at increased risk:
 - HIV/AIDS
 - Cancer
 - Diabetes
 - Vaginal yeast infections
 - Treat higher priorities.
 - Make the patient comfortable.

Ludwig Angina



- Cellulitis caused by bacteria from an infected tooth root or mouth injury
- Physical exam may show redness and swelling of the neck or under the chin.

Ludwig Angina



- Assessment and management
 - Symptoms may include:
 - Difficulty breathing
 - Neck pain and swelling
 - Altered speech sounds

Ludwig Angina



- Assessment and management (cont' d)
 - Prehospital treatment requires aggressive management of the airway in severe cases.
 - Contact medical control physician early on.
 - Attend to basic ABCs.

Foreign Body in the Throat

- Assessment and management
 - Keep the patient calm.
 - Transport in a position where if the object becomes dislodged, gravity will allow it to fall out.



Epiglottitis

- Inflammation of the epiglottis
 - Blocks the trachea and obstructs the airway
 - Often a result of the *H. influenzae* type b virus

Epiglottitis

- Assessment and management
 - Symptoms may include:
 - Fever
 - Painful swallowing
 - Stridor

- Signs may include:
 - Sick and anxious
 - “Tripod” position or sniffing position
 - Pallor or cyanosis

Epiglottitis

- Assessment and management (cont' d)
 - Transport to an appropriate hospital.
 - Minimize scene time.
 - Do not agitate the patient.
 - Do not attempt to look in the mouth.
 - Alert receiving personnel.



Laryngitis

- Swelling and inflammation of the larynx
- Causes may include:
 - Pneumonia
 - Irritants and chemicals
 - Bronchitis
 - Allergies



Laryngitis

- Assessment and management
 - Symptoms include:
 - Fever
 - Hoarseness
 - Swollen lymph nodes or glands
 - Have the patient follow up with a physician.

Tracheitis

- A bacterial infection of the trachea caused by *Staphylococcus aureus*
 - Frequently occurs in children following URI
 - Trachea is easily blocked by swelling
 - Can be life-threatening

Tracheitis

- Assessment and management
 - Symptoms:
 - “Croup-like” cough
 - Difficulty breathing
 - High fever

- Signs:
 - Tripod positioning
 - Intercostal retractions

Tracheitis

- Assessment and management (cont' d)
 - Minimize stress to the patient.
 - Administer 100% oxygen.
 - Use pulse oximetry.
 - Monitor vital signs.
 - Be prepared for difficult intubation.
 - Transport promptly.

Tonsillitis

- Swelling and inflammation of the tonsils
- Usually caused by viral infections
 - Can also be caused by bacteria



© Biophoto Associates/Photo Researchers, Inc.

Tonsillitis

- Assessment and management
 - Symptoms:
 - Swollen tonsils
 - Sore throat
 - Difficulty swallowing

- Signs:
 - White or yellow coating or patches
 - Fever
 - Sore throat

Pharyngitis

- Inflammation of the pharynx
- Often due to a rapid onset of sore throat
 - Without discomfort or pain with swallowing



© BSIP/Photo Researchers, Inc.

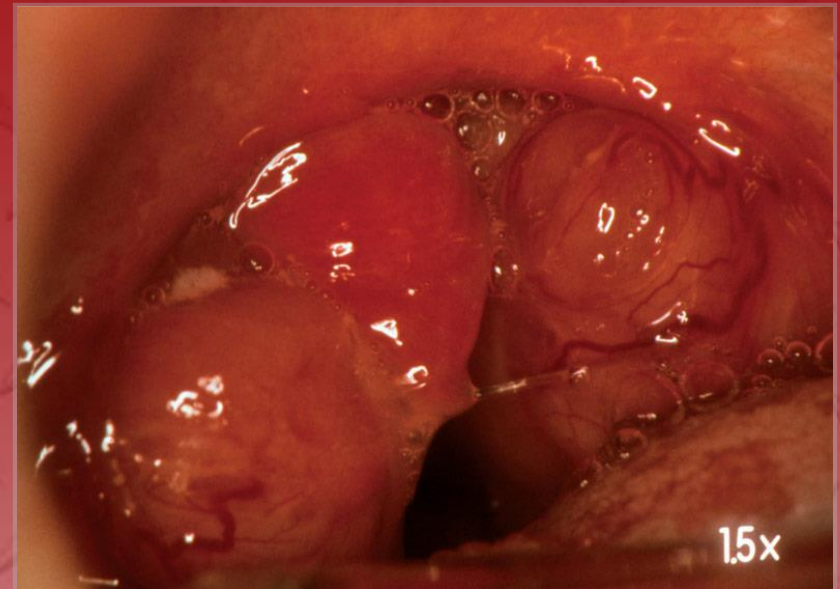
A blurred background image showing an emergency medical scene. In the upper left, a person in a red jacket is visible. In the center, there is a red medical bag or equipment. The overall scene is out of focus, emphasizing the text in the foreground.

Pharyngitis

- Assessment and management
 - Symptoms may include:
 - Discomfort or pain on swallowing
 - Pharyngeal erythema
 - Purulent patchy yellow, gray, or white exudate
 - Ulcers on the soft palate

Peritonsillar Abscess

- Collection of infected material around the tonsils
- Complication of tonsillitis



© Dr. P. Marazzi/Photo Researchers, Inc.

Peritonsillar Abscess

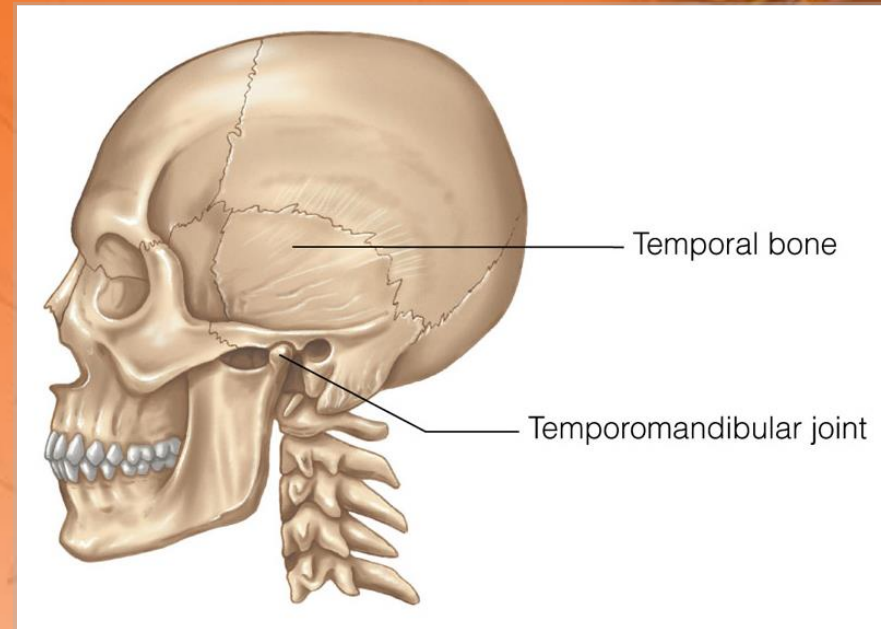
- Assessment and management
 - Symptoms may include:
 - Facial swelling
 - Inability to swallow
 - Tender glands of jaw and throat

Peritonsillar Abscess

- Assessment and management (cont' d)
 - Treatment involves antibiotics and draining the abscess.
 - Transport patient to the hospital.

Temporomandibular Joint Disorders

- Causes include:
 - Arthritis damage to the joint's cartilage
 - Jaw injury
 - Jaw muscle fatigue from grinding or clenching of the teeth



Temporomandibular Joint Disorders

- Assessment and management
 - Symptoms may include:
 - Jaw pain
 - Difficulty chewing
 - Locking of the joint



Summary

- Paramedics may encounter emergencies related to disorders of the ear, nose, or throat (ENT) or may discover these disorders while assessing an unrelated emergency.
- Assess the eye for pain, tenderness, swelling, abnormal or loss of movement, sensation changes, circulatory changes, deformity, and visual changes.

Summary

- The ear is the primary structure for hearing and balance.

Summary

- Adequate assessment of the external ear canal and middle ear cannot be performed in the field.
- Specific conditions of the ear include foreign body, impacted cerumen, labyrinthitis, Meniere disease, otitis, and perforated tympanic membrane.

Summary

- The nose is a vascular structure and contains nasal mucosa that is a short route to the brain.
- Never insert a nasopharyngeal airway or attempt nasotracheal intubation in any patient with suspected nasal fractures or in patients with CSF or blood leakage from the nose.

Summary

- Specific problems related to the nose include epistaxis, foreign body, rhinitis, and sinusitis.
- Disorders of the throat may represent acute inflammation and infections, chronic inflammation, or abnormal growths.

Summary

- When assessing a patient with a throat complaint, note whether the patient is able to swallow.
- Specific disorders include dentalgia, dental abscess, Ludwig angina, foreign body, epiglottitis, laryngitis, tracheitis, oral candidiasis, peritonsillar abscess, pharyngitis/tonsillitis, and temporomandibular joint disorders.

Credits

- **Chapter opener:** © Biophoto Associates/Photo Researchers, Inc.
- **Backgrounds:** Green—Jones & Bartlett Learning; Purple—Courtesy of Rhonda Beck; Red—© Margo Harrison/Shutterstock, Inc.; Orange—© Keith Brofsky/Photodisc/Getty Images.
- *Unless otherwise indicated, all photographs and illustrations are under copyright of Jones & Bartlett Learning, courtesy of Maryland Institute for Emergency Medical Services Systems, or have been provided by the American Academy of Orthopaedic Surgeons.*