Chapter 23
Diseases of the Eyes, Ears, Nose, and Throat

Lesson 23.1
The Eyes and Ear
Learning Objectives

• Label diagram of the eye.
• Describe the pathophysiology, signs and symptoms, and specific management techniques for each of the following disorders of the eye: conjunctivitis, corneal abrasion, foreign body, inflammation (Chalazion and Hordeolum), glaucoma, iritis, papilledema, retinal detachment, central retinal artery occlusion, and orbital cellulitis.

Learning Objectives

• Label diagram of the ear.
• Describe the pathophysiology, signs and symptoms, and specific management techniques for each of the following conditions that affect the ear: foreign body; impacted cerumen; labyrinthitis, Meniere’s disease, otitis media, and perforated tympanic membrane.

Conditions of the Eye

• Eye composed of three layers
  — Fibrous tunic
    • Sclera
    • Cornea
  — Vascular tunic
    • Choroid
    • Ciliary body
    • Iris
  — Nervous tunic
    • Retina
Conditions of the Eye

- Accessory structures
  - Eyebrows
  - Eyelids
  - Conjunctiva
  - Lacrimal gland
- Purpose of accessory structures
  - Protect
  - Lubricate
  - Move
  - Aid in function

Which assessment will you perform on an unconscious patient to determine whether there is pressure on cranial nerve III?
Conjunctivitis

- Inflammation or infection of conjunctiva (membrane lining of eye)
- “Pink eye,” “Madras eye”
- Common causes
  - Bacterial infection
  - Viral infection
  - Allergic reaction
  - Incompletely opened tear duct (newborns)

Conjunctivitis

- Very contagious
  - Early diagnosis and treatment can prevent spread
- Can affect both eyes
- Often associated with a cold
- If viral cause
  - May be watery, mucous discharge
Conjunctivitis

- Bacterial cause
  - Discharge may be thick, yellow-green
  - Associated with respiratory infection or sore throat
  - More common in children

Conjunctivitis

- To prevent spread, instruct patient to
  - Avoid touching eyes with hands
  - Wash hands thoroughly, frequently
  - Change towel, washcloth daily, don’t share
  - Change pillowcase often
  - Discard eye cosmetics
  - Avoid other’s eye cosmetics, personal eye-care items
  - Follow eye doctor’s instructions on proper contact lens care

Conjunctivitis

- Can be caused by allergies
  - Exposure to pollen
  - Inflammation associated with
    - Watery, itchy eyes
    - Sneezing
    - Nasal discharge
Conjunctivitis

• Management
  – Rarely affects vision
  – Bacterial forms managed with antibiotic eye drops, ointment
  – Symptoms improve in 1 to 2 days
  – Viral and allergic forms managed with over-the-counter medicines
  – If severe, steroids and antiinflammatories may be prescribed
  – Symptoms may take several days to a week or longer to subside

Corneal Abrasion

• Painful scratch on cornea
• Causes
  – Trauma
    • Being struck by tree branch
  – Foreign bodies lodged under upper lid
    • Dust
    • Paint chips
    • Wind debris
  – Wearing contact lenses longer than recommended
    • Insertion
    • Removal if lens, fingers, or nails scratch eye

Corneal Abrasion

• Signs and symptoms
  – Pain (can be severe)
  – Sensation of foreign body
  – Tearing
  – Redness
  – Blurred vision
  – Muscle spasms around eye causing squinting
Corneal Abrasion

- Management considerations
  - Prehospital care usually limited to supportive measures
    - Relieve pain
    - Prevent further injury
    - Topical ophthalmic anesthetic (tetracaine)
    - Covering affected eye
  - See physician

Foreign Body

- Often irritating, seldom affects vision
  - Common complaints
    - Pain
    - Tearing
    - Sensation of fullness in eye

Foreign Body

- Management considerations
  - Small foreign bodies
    - Washed, irrigated using eye cups or saline solution attached to IV tubing
    - Do not rub affected lid, which could lead to corneal abrasion
  - Large or penetrating foreign bodies
    - Serious in nature
    - Managed as face trauma
Eyelid Inflammation

• Results from blockage of gland or bacterial infection
• Common conditions
  – Chalazion
  – Hordeolum

Eyelid Inflammation

• Chalazion
  – Small bump in eyelid
  – Appears localized and hard
  – May increase in size over days to weeks
  – Caused by blockage of tiny oil gland in upper or lower eyelid
    • Oil glands normally secrete oil into tears
Eyelid Inflammation

• Chalazion
  — Symptoms
  • Tenderness
  • Tearing
  • Painful swelling
  • Sensitivity to light (photophobia)

Eyelid Inflammation

• Hordeolum
  — Commonly known as sty
  — Acute infection of oil gland
  — More painful than chalazion caused by inflammation, may look infected
  — Pain can cause redness around
    • Eye
    • Eyelid
    • Cheek tissue
    • Can be limited to one eyelid or both
Eyelid Inflammation

- Management
  - Inflammation usually subsides without treatment within 5 to 7 days
  - Apply warm compresses 3 to 4 times/day
  - Gentle scrubbing with warm water and mild soap or shampoo
  - Do not squeeze or puncture inflamed area
  - Serious infection can result
  - Avoid eye makeup, lotions, creams until clear
  - If fever, headache develops, seek physician evaluation

Glaucoma

- Group of diseases that affect optic nerve
  - Develops when too much aqueous humor builds up in anterior chamber of eye, between cornea and iris
  - Fluid normally flows out of eye through mesh-like channel (trabecular channel)
    - If channel becomes blocked, increased intraocular pressure damages optic nerve
    - Can lead to vision loss
    - Can lead to permanent blindness without treatment
Glaucoma

• Usually occurs in both eyes
  – Affects one more than the other
• Direct cause of blockage is unknown
  – Seems to have heritable component

Glaucoma

• Other risk factors
  – Heritage
    • African-American
    • Hispanic
    • Inuit
    • Irish
    • Japanese
    • Russian
    • Scandinavian

Glaucoma

• Other risk factors
  – Age
    • Can occur at any age (including children and infants)
    • Occurs most often after age 40
  – Poor vision
  – Diabetes
  – Use of systemic corticosteroid drugs
    • Prednisone
Glaucoma

• May be no symptoms
• Early screening every 1 to 2 years important
• First sign, usually loss of peripheral vision
• Can go unnoticed until disease has progressed

Glaucoma

• If rise in intraocular pressure is severe
  – Patient may have sudden eye pain
  – Headache
  – Vomiting
  – Blurred vision
  – See halos around lights caused by swelling of cornea

If a patient presents with these signs and symptoms, what other conditions should you consider in your differential diagnosis?
Glaucoma

- Management
  - Prehospital care is primarily supportive
  - If symptoms are sudden in onset, rapid transport is indicated
  - Physician care
    - Eye drops to reduce fluid formation
    - Laser surgery to increase outflow of fluid
    - Microsurgery to create new channel to drain fluid from eye
    - In some cases, combination of therapies needed to prevent blindness

Iritis

- Inflammation of iris
- Serious disease, can cause blindness if not treated
Iritis

• Causes
  – Trauma
  – Inflammatory and autoimmune disorders
  – Infection
  – Cancer

Iritis

• Medical causes
  – Rheumatoid arthritis
  – Lupus
  – Crohn’s disease
  – Lyme disease
  – Herpes
  – Syphilis
  – Tuberculosis
  – Leukemia
Iritis

• Classified as acute or chronic
  – Acute form comes on suddenly
    • Usually heals within few weeks with treatment
  – Chronic form can exist for months or years
    • Associated with higher risk of vision impairment or blindness

Iritis

• Signs and symptoms
  – Can affect one or both eyes
  – Reddened eye
  – Ocular or periorbital pain
  – Photophobia
  – Blurred vision

Iritis

• Management
  – Prehospital care is primarily supportive
  – Physician care
    • Steroidal antiinflammatory eye drops
    • Pressure-reducing eye drops
    • Oral steroids
    • Injectable to reduce inflammation
Papilledema

- Swelling of head of optic disc
  - Usually bilateral
  - May be more severe in one eye
- Caused by rise in intracranial pressure (ICP)
  - Causes of elevated ICP
    - Cerebral edema
    - Bleeding within skull
    - Tumors
    - Encephalitis
    - Increased production of cerebral spinal fluid (CSP)

Papilledema

- Diagnosed using ophthalmoscope where visible signs may include
  - Venous engorgement (usually first sign)
  - Loss of venous pulsation
  - Hemorrhages over and/or adjacent to optic disc
  - Blurring of optic margins
  - Elevation of optic disc
  - Paton’s lines
    - Radial retinal lines cascading from optic disc
Papilledema

- Patient complaints
  - Headache usually worse on awakening
    - Made worse by coughing
    - Holding breath
    - Straining
  - Nausea
  - Vomiting
  - Vision disturbances
    - Double vision
    - Vision that temporarily flickers or grays

Papilledema

- Management
  - Prehospital care primarily supportive
  - Physician care depends on cause of disease
  - After underlying cause determined and treated, medical care may include
    - Diuretics to reduce increased CSF
    - Corticosteroids to reduce inflammation
  - If diagnosed and managed early, permanent vision damage can be prevented

Retinal Detachment

- Retina is light-sensitive tissue that lines inside of eye
  - Sends visual messages from optic nerve to brain
- If retina detaches, it is lifted or pulled from normal position
  - Small areas can also be torn
  - Retinal tears, breaks, or defects can lead to retinal detachment
Retinal Detachment

• True emergency
  – Can lead to permanent vision loss
• Can occur at any age

How would your life change if you were to lose your sight next week?

Retinal Detachment

• Patients with high risk
  – Nearsighted
  – Retinal detachment in other eye
  – Family history
  – Cataract surgery
  – Other eye diseases or disorders
  – Eye surgery
  – Diabetes
  – Sickle cell disease
Retinal Detachment

• Signs and symptoms
  – Sudden or gradual increase in either number of floaters and/or light flashes
    • Floaters are little “cobwebs” or specks that float about in field of vision
  – Appearance of curtain over field of vision

• Management
  – Prehospital care is primarily supportive
  – Rapid transport is key
  – Small tears may be repaired with laser surgery or freeze treatment to reattach
  – Full detachment requires advanced surgery
  – About 90 percent can be successfully treated if managed early
    • With varying degrees of visual outcome
    • Visual results best if detachment is repaired before macula detaches

Central Retinal Artery Occlusion

• Blockage of blood supply to arteries to retina
• Produces sudden, painless blindness, usually limited to one eye
• True ocular emergency
  – Retinal circulation must be reestablished within 60 to 90 minutes to prevent permanent vision loss
Central Retinal Artery Occlusion

• Occasionally, before total occlusion occurs
  – Patient may experience transient episodes of blindness (amaurosis fugax)
  • Equated to transient ischemia attack of retinal artery
  • Described as shade coming down over eye

• Causes
  – Embolus (carotid and cardiac)
  – Thrombosis
  – Hypertension
  – Simple angiospasm (rare)
    • Associated with migraine or atrial fibrillation

• Management
  – Prehospital care is primarily supportive
  – Requires rapid transport
  – Retinal perfusion needs to be reestablished rapidly to prevent permanent damage
  – In-hospital care
    • Vasodilation techniques
    • Ocular massage
    • Intraocular pressure-lowering drugs
  – None have been shown to be extremely beneficial
Orbital Cellulitis

- Acute infection of tissues surrounding eye
  - Eyelids
  - Eyebrow
  - Cheek

Orbital Cellulitis

- Dangerous infection that can have serious consequences if not treated
  - Can quickly lead to blindness, especially in children
  - Other complications
    - Hearing loss
    - Septicemia
    - Sinus thrombosis
    - Meningitis
Orbital Cellulitis

• Causes
  – *Haemophilus influenzae* bacteria from sinus infection
    • Common in children under age 6
    • Rate has decreased with HiB vaccine
  – *Staphylococcus aureus*
  – *Streptococcus pneumoniae*
  – *Beta-hemolytic streptococci*
  – Eyelid injury with inflammation, and sty

• Signs and symptoms
  – Fever, above 102°F
  – Painful swelling, upper and lower eyelids
  – Shiny, red, or purple eyelid
  – Eye pain
  – Decreased vision
  – Bulging eyes
  – General malaise
  – Painful or difficult eye movements

If a patient with orbital cellulitis has developed sepsis, what additional signs and symptoms should you anticipate?
Orbital Cellulitis

- **Management**
  - Prehospital care focused on recognition of signs and symptoms
  - Rapid transport for evaluation
  - Hospitalization for diagnostic tests
  - IV antibiotics
  - Surgery to drain any abscess associated with illness
  - With prompt treatment, most patients make full recovery

Ear Anatomy

- Ear can be divided into three portions
  - External ear, involved with hearing only
  - Middle ear, involved with hearing only
  - Inner ear, functions in hearing and balance
Foreign Body

- Fairly common occurrence, especially in toddlers
- Most lodged in ear canal
- Common lodged objects
  - Food material
  - Toys, usually inserted voluntarily
  - Insects entering ear canal during sleep

Foreign Body

- Easily detected by complaints
  - Pressure
  - Discomfort
  - Decreased hearing in affected ear
  - Bleeding if object is sharp or manipulated during removal attempts

What additional signs and symptoms might your patient experience if there is a live insect in their ear?
Foreign Body

• Undetected objects can cause serious infection
• Seldom a serious medical condition that requires emergency care
  – Most can be removed at doctor’s office
  – Some do require immediate removal at emergency department
    • Button-type batteries that can cause chemical burns
    • Food, plant material that can swell when moistened

Foreign Body

• Management
  – Prehospital care limited to gentle examination of external auditory canal
    • Gently pull back on ear’s pinna and view canal with penlight or ear speculum
  – Visible objects sometimes easily removed with alligator forceps
    • Take care to not push object deeper into canal
    • Can make object more difficult to retrieve
    • May damage eardrum

Foreign Body

• Management
  – Patients requiring physician evaluation advised not to eat or drink prior to exam
    • Sedation may be needed to remove foreign body
  – In-hospital care
    • Diagnostic imaging
    • Ear canal irrigation
    • Surgical removal
    • Prescribed antibiotics
Impacted Cerumen

• Cerumen (ear wax)
  – Produced normally by ceruminous glands located in external auditory canal
  – Protects, lubricates skin of ear canal
  – Provides protection from
    • Bacteria
    • Fungi
    • Insects
    • Water

Impacted Cerumen

• Cerumen (ear wax)
  – Yellowish-waxy substance, consistency of toothpaste
  – Excess cerumen can become impacted
    • Presses up against eardrum, creating foreign body in ear
    • Can impeded sound passage, causing hearing loss

Impacted Cerumen

• Signs and symptoms
  – Earache
  – Fullness in ear or sensation ear is plugged
  – Partial hearing loss, may be progressive
  – Tinnitus, ringing, or noises in ear
  – Itching, odor, or discharge
  – Coughing
Impacted Cerumen

• Many patients regularly clean excess cerumen with cotton-tipped swabs
  – Dangerous practice
  – Can push cerumen deeper into ear
  – Recommended to not be removed unless cerumen is impacted

Impacted Cerumen

• Most forms of ear blockage respond well to home treatments to soften wax
  – Irrigation with warm water or saline
  – Wax-dissolving drops
  • Mineral oil
  • Baby oil
  • Glycerin

Impacted Cerumen

• Management
  – Prehospital care is primarily supportive
  – Encourage patients to see physician for wax removal
  • Performed by otolaryngologist using special equipment and techniques
Labyrinths

- Ear disorder involving irritation and swelling of inner ear structure (labyrinth)
  - Inflammation of this balance-control area can cause sudden vertigo
  - May also cause temporary hearing loss and ringing sound (tinnitus)

Labyrinths

- Can result from viral infection
  - Bacterial infection (more rare)
- Common triggers
  - Upper respiratory tract infection
  - Middle ear infection

Labyrinths

- Management
  - Prehospital care is primarily supportive
  - Advise patients to be careful of falling and to have assistance when walking
  - Most cases resolve without treatment
  - Antibiotics may be prescribed for infection
  - Antiemetics prescribed for nausea and vomiting
Meniere’s Disease

- Abnormality of inner ear
- Causes vertigo, tinnitus
- Associated with fluctuations in hearing loss and sensation of pressure or pain
- Symptoms associated with change in fluid volume in labyrinth

What other conditions in addition to labyrinthitis and Meniere’s disease can cause vertigo?

Meniere’s Disease

- Causes may include
  - Environmental factors (noise pollution)
  - Viral infection
  - Biological factors
- About 615,000 Americans diagnosed
  - 45,500 new cases diagnosed each year
**Meniere’s Disease**

- **Classic presentation**
  - Combination of vertigo, tinnitus, and hearing loss that lasts several hours
  - Symptoms occur suddenly
  - Episodes can be as frequent as once a day or infrequent as once per year
  - Vertigo is often debilitating
    - Can lead to severe nausea and vomiting

- **Other symptoms**
  - Headache
  - Abdominal discomfort
  - Diarrhea

- **Management**
  - Prehospital care is primarily supportive
  - No cure
  - Physician care
    - Medications
    - Diet restrictions to reduce fluid retention
    - Drug therapy to improve blood circulation
  - Eliminate tobacco use
  - Reduce stress to help severity of symptoms
Otitis Media

- Infection or inflammation of inner ear
- Occurs between eardrum and inner ear, involves Eustachian tube
- Often begins with
  - Viral or bacterial infections that cause sore throats, colds, or other respiratory problems that spread to middle ear

Otitis Media

- Can be acute or chronic
- Commonly affects infants and young children
  - Can also occur in adults
Otitis Media

- Signs and symptoms
  - Chills
  - Diarrhea
  - Drainage from ear
  - Earache
  - Ear noise or buzzing
  - Fever
  - Hearing loss
  - Discomfort in ear or ear canal
  - Irritability
  - General malaise
  - Nausea
  - Vomiting

Otitis Media

- Causes severe pain and can have serious consequences
  - If untreated, infection can travel from middle ear to brain
  - May lead to permanent hearing loss

Otitis Media

- Often strikes small children with limited speech and communication skills
  - Be keen to subtle signs and symptoms
    - Irritability
    - Tugging at ear
    - Fever
    - Drainage from ear
Otitis Media

• Parents or caregivers may notice
  – Loss of balance
  – Sleeplessness
  – Signs of hearing difficulty

Otitis Media

• Management
  – Physician evaluation needed
  – Avoid contact with other children who are sick
  – Avoid exposure to environmental smoke
    • May aggravate condition

Otitis Media

• Management
  – Physician assessment includes otoscope examination of outer ear and eardrum
  – Various tests may be used to assess
    • Middle ear fluid
    • Eardrum movement
    • Hearing
  – Prescribed medications
    • Antibiotics for bacterial infection
    • Agents to reduce pain, fever
Otitis Media

- Management
  - Once infection is cleared, fluid may remain in middle ear for several months
  - Other treatments
    - Surgical removal of adenoids
    - Placement of tubes in affected ears to ventilate middle ear

Perforated Tympanic Membrane

- Hole or rupture in eardrum
- Causes usually from trauma or infection
  - Blunt trauma to ear
  - Barotrauma
  - Skull fracture
  - Explosion or blast injury
  - Foreign bodies in ear
  - Otitis media with perforation (infection example)

Perforated Tympanic Membrane

- Signs and symptoms caused by infection
  - Those of middle ear infection
  - Decreased hearing
  - Occasional bloody discharge
  - Pain is usually not persistent with perforation
### Perforated Tympanic Membrane

**Management**

- Prehospital care is primarily supportive
- Patients may be anxious if related to trauma
- Most heal without treatment within weeks of rupture
  - Some take several months to heal

---

**Perforated Tympanic Membrane**

**Management**

- During healing process
  - Affected ear should be protected from water and trauma
- Perforations that do not heal on their own
  - Require advanced technologies and/or surgical intervention to close tympanic membrane
  - Techniques often restore or improve hearing

---

**Perforated Tympanic Membrane**

**Management**

- Amount of hearing loss associated with perforations
  - Related to size and location of hole in tympanic membrane
  - Large hole close to inner ear structures will cause greater hearing loss
- Chronic infection that results from perforation may lead to progressive hearing loss
- Physician evaluation needed to determine underlying cause
Lesson 23.2
The Nose and Throat

Learning Objectives

• Label a diagram of the nose.
• Describe the pathophysiology, signs and symptoms, and specific management techniques for each of the following conditions that affect the nose: epistaxis, foreign body, rhinitis, and sinusitis.

Learning Objectives

• Label a diagram of the oropharynx.
• Describe the pathophysiology, signs and symptoms, and specific management techniques for each of the following conditions that affect the oropharynx and throat: toothache and dental abscess, Ludwig's angina, epiglottitis, laryngitis, tracheitis, oral candidiasis, peritonsillar abscess, pharyngitis/tonsillitis, and temporomandibular joint disorders.

Copyright © 2013 by Jones & Bartlett Learning, LLC, an Ascend Learning Company
Nose Anatomy

• Nose is organ of smell
  – Located in middle of face

• Components
  – External meatus
    • Triangular-shaped projection in center of face
  – External nostrils
    • Two chambers divided by septum

Nose Anatomy

• Components
  – Septum
    • Primarily cartilage and bone
    • Covered by mucous membranes
  – Nasal passages
    • Lined with mucous membranes and cilia
  – Sinuses
    • Four pairs of air-filled cavities
    • Lined with mucous membranes
Epistaxis

• Acute hemorrhage
  – Nostril
  – Nasal cavity
  – Nasopharynx
• Common occurrence
  – Frequent complaint in emergency department

Epistaxis

• Most common, anterior bleeding
  – Originating from nasal septum
• Less common, posterior bleeding
  – Originating from posterior nasal cavity or nasopharynx

Epistaxis

• Most common cause, local trauma (nose picking)
  – Followed by facial trauma
    • Foreign bodies
    • Nasal or sinus infection
    • Prolonged breathing of dry air
Epistaxis

• Less common causes
  – Nasogastric and nasotracheal intubation
  – Topical nasal drugs
  – Upper respiratory infection (especially in children)
  – Oral anticoagulants

Epistaxis

• Less common causes
  – Medical conditions that affect coagulation
    • Splenomegaly
    • Thrombocytopenia
    • Hemophilia
    • Platelet disorders
    • Liver disease
    • Renal failure
    • Chronic alcohol use
    • AIDS-related conditions

Epistaxis

• Less common causes
  – Dry climates
  – Vascular abnormalities
    • Sclerosis
    • Neoplasm
    • Aneurysm
    • Endometriosis
    • Use of cocaine or other inhaled drugs
Epistaxis

- **Management**
  - Most can be visualized in anterior portion of nasal cavity
    - If not, source is likely posterior
    - Especially true if bleeding from both nares, or if blood is draining into posterior pharynx

Epistaxis

- **Management**
  - Time permitting, question patient
    - Previous nosebleeds
    - Medication use that may cause or worsen epistaxis (aspirin, NSAIDs, coumadin)
    - Hypertension
    - Family history
    - Disease
Epistaxis

- Management
  - Prehospital care consists of hemorrhage control and calming patient
    - Conscious patient should be positioned upright and leaning forward to control bleeding
    - Unconscious patient should be positioned on side, if not complicated by injury
    - Direct pressure applied midway on nose for 5 minutes or until bleeding subsides
    - Use emesis basin to catch blood or drainage
    - Never attempt packing nose in prehospital setting
    - Severe or prolonged bleeding requires treatment for shock and transportation for evaluation

Foreign Body

- Usually lodge on floor of anterior or middle third of nasal cavity
- Most cases, not serious
  - Easily removed
Foreign Body

- Signs and symptoms
  - Airflow obstruction in affected nostril
  - Nasal discomfort
  - Tearing
  - Unilateral nasal discharge

Foreign Body

- Management
  - Prehospital care limited to gentle examination of nares
  - Coach cooperative patient to blow nose to expel foreign body
  - Easily visible objects may be removed with alligator forceps
    - Take care to no push object deeper into nasal cavity

Foreign Body

- Management
  - Physician evaluation and topical anesthesia likely
    - Small children may need to be restrained or sedated for exam
  - Removal methods
    - Forceps
    - Irrigation
    - Foley catheters inserted past foreign body, inflating balloon and pulling object out
Rhinitis

- Commonly known as “runny nose”
  - Term describes irritation and inflammation of mucous membranes
- Often caused by
  - Virus
  - Bacteria
  - Allergens (allergic rhinitis)
  - Foreign body

Rhinitis

- Hallmark feature, nasal drip
  - Caused by increase in histamine
  - Increases mucous production
- Other symptoms
  - Nasal congestion
  - Itchy eyes
  - Itchy nose

Rhinitis

- Management
  - Prehospital care is primarily supportive
  - Emergency care or transport seldom needed
  - Advise patients to follow up with private physician if symptoms persist
Rhinitis

• Management
  – Treatment
    • Antihistamines
    • Avoidance of exposure to allergens or irritants
    • Antibiotics if cause is bacterial

Sinusitis

• Inflammation of sinuses and nasal passages
• Caused by
  – Virus
  – Bacteria
  – Fungal infection

Sinusitis

• Symptoms
  – Headache
  – Eye pressure
  – Nose pressure
  – Cheek area pressure
  – Discomfort often limited to one side of head
  – Cough
  – Fever
  – Bad breath
  – Nasal congestion
    • Can produce thick nasal secretions
Sinusitis

• Paranasal sinuses
  – Four pairs of air-filled sacs that connect space between nostrils and nasal passages
    • Frontal sinuses (in forehead)
    • Maxillary sinuses (behind cheek bone)
    • Ethmoid sinuses (between eyes)
    • Sphenoid sinuses (behind eyes)

Sinusitis

• Normally, mucus that collects in sinuses drains into nasal passages and is eliminated from body
  – When patient has cold or allergy, sinuses can become inflamed and unable to drain
    • Leading to congestion and infection

Sinusitis

• Can be acute or chronic
  – Chronic can last 3 or more months
    • Can damage sinuses and cheekbones
    • Sometimes requires surgical intervention
Sinusitis

- Management
  - Prehospital care is primarily supportive
  - Signs and symptoms are easily confused with those of a cold or allergy
  - Encourage patients to follow up with private physician for treatments
    • Antibiotics for bacterial infection
    • Antihistamines
    • Decongestants

Oropharynx and Throat Anatomy

- Oropharynx
  - Begins at uvula, extends down to epiglottis
  - Opens into oral cavity
  - Contains
    • Lips
    • Cheeks
    • Tongue
    • Hard and soft palates
    • Palatine tonsils

- Throat
  - Anterior portion of neck
  - Located in front of vertebral column
  - Components
    • Pharynx
    • Larynx
    • Epiglottis
    • Separates esophagus from trachea
Toothache and Dental Abscess

- Dentalgia, medical term for toothache
  - Refers to pain around teeth or jaws
- Common causes
  - Dental cavities, most common
  - Dental abscess
    - Bacterial infection in center of tooth
  - Cracked tooth
  - Exposed tooth root
  - Gum disease, second most common

Toothache and Dental Abscess

- Normal adult mouth has 32 teeth
  - Each tooth has two sections
    - Crown, projects above oral mucosa around tooth
    - Root, fits into bony socket of maxilla or mandible
Toothache and Dental Abscess

- Normal adult mouth has 32 teeth
  - Three layers comprise hard tissues of teeth
    - Enamel
    - Dentin (ivory)
    - Cementum
  - Soft tissues
    - Pulp membrane
    - Periodontal membrane

Toothache and Dental Abscess

- Symptoms
  - Sharp, throbbing, or constant pain in tooth
  - Swelling around tooth
  - Fever or headache
  - Foul-tasting drainage from tooth infection
Toothache and Dental Abscess

• Management
  – Prehospital care is primarily supportive
  – Recommend follow up with dentist or oral surgeon
  – Dental care varies by nature of problem
    • Cavity fill
    • Tooth extraction
    • Root canal
    • X-ray
    • Phototherapy to reduce pain
    • Antibiotics to treat bacterial infection

Toothache and Dental Abscess

• Management
  – Proper dental infection identification and treatment is important
    • Untreated infection can spread to face and skull
    • May enter bloodstream (sepsis)

What serious medical condition should be ruled out in high-risk patients who complain of tooth or jaw pain?
Ludwig’s Angina

- Type of cellulitis that involves inflammation of tissues of floor of mouth, under tongue
  - Can occur following dental abscess or mouth injury
- Most common in adults
- Can cause swelling of tissues rapidly
  - Swelling may block airway or prevent swallowing of saliva

Ludwig’s Angina

- Signs and symptoms
  - Breathing difficulty
  - Confusion or other mental changes
  - Fever
  - Neck pain
  - Neck swelling
  - Redness of neck
  - Weakness, fatigue, excessive tiredness
  - Drooling
  - Earache

Ludwig’s Angina

- Management
  - Medical emergency that can be life threatening
  - Prehospital care may include airway and ventilatory support
    - Rapid transport indicated
**Ludwig’s Angina**

- **Management**
  - Physician care
  - Airway maintenance
  - CT scan
  - Blood cultures to identify bacteria
  - IV/oral antibiotics
  - Surgery to drain fluids that are causing swelling

**Possible complications**

- Complete airway obstruction
- Sepsis
- Septic shock

**Epiglottis**

- Inflammation of epiglottis
- Caused by bacterial infection
  - Can lead to life-threatening airway obstruction
- Most often affects children ages 3 to 7
  - Can occur at any age
Epiglottis

• Bacterial infection causes edema and swelling of epiglottis and supraglottic structures
• Usually begins suddenly
  – Frequently after child goes to bed

Epiglottis

• Signs and symptoms
  – Sore throat
  – Pain on swallowing
  – Drooling
  – Fever
  – Muffled voice
  – Respiratory distress

Epiglottis

• Management
  – True emergency that requires prompt recognition and immediate transport
  – Airway occlusion can occur suddenly
    • Can be precipitated by minor irritation of throat
    • Aggravation
    • Anxiety
Epiglottis

• Management
  – Patients with suspected epiglottitis should not lay down
    • Transport in comfortable position that helps them breathe and facilitate drainage of oral fluids
  – IV access should not be attempted in field to avoid creating anxiety and agitation in child
  – High-concentration O₂ should be applied by mask, unless it provokes anxiety

Epiglottis

• Management
  – If respiratory distress occurs before arrival
    • Patient should be intubated by most experienced paramedic
  – In-hospital care
    • Airway and circulatory support
    • Placement of surgical airway
    • IV antibiotic therapy

Laryngitis

• Swelling and irritation of larynx that inflames vocal cords
• Associated with hoarseness
  – Loss of voice
  – Swollen glands and lymph nodes in neck
• Most common form
  – Caused by virus
  – Often occurs along with upper respiratory infection
Laryngitis

• Other causes
  – Allergies
  – Bacterial infection
  – Bronchitis
  – Pneumonia
  – Influenza
  – Exposure to irritants or chemicals

Laryngitis

• Management
  – Not usually a serious condition
    • Usually improves without treatment
    • Rarely, respiratory distress develops
  – Prehospital care is primarily supportive
  – Encourage patients to follow up with private physician if symptoms persist

Laryngitis

• Management
  – Recommend resting voice
    • Humidifying air at home
  – Drug therapy
    • Analgesics
    • Decongestants
    • Antibiotics if infection is bacterial
  – Young children may need to be seen by specialist for further evaluation
Tracheitis

- Bacterial infection of upper airway and subglottic trachea
  - Major site of disease is at level of cricoid cartilage, narrowest part of trachea
- Generally occurs in infants and toddlers (ages 1 to 5)
  - Can occur in older children
- Frequently follows viral upper respiratory tract infection

Tracheitis

- Signs and symptoms are those of respiratory distress or failure (depending on severity)
  - Agitation
  - High-grade fever
  - Inspiratory and expiratory stridor
  - Productive cough
  - Hoarseness
  - Throat pain

Tracheitis

- Management
- Emergency care focus
  - Providing airway, ventilatory, and circulatory support
  - Rapid transport
Tracheitis

• If respiratory failure or arrest develops in field
  – Tracheal intubation and tracheal suction indicated
  – High-pressure bag mask ventilation may be needed because of airway swelling, mucus, and pus
• In-hospital care
  – IV antibiotics after child’s airway stabilized

Oral Candidiasis (Thrush)

• Infection of yeast fungi of genus Candida
• Affects mucous membranes of mouth
  – Infection appears thick or white cream-colored deposits on mucosal membranes
  – May appear inflamed and can be painful
  – Bleeding can occur from irritation of area
Oral Candidiasis (Thrush)

- Most commonly affects infants and toddlers
  - And those with impaired immune function
- Contagious disease
  - Seldom passed from person-to-person if immune systems are healthy

Oral Candidiasis (Thrush)

- People at risk
  - Newborns
  - Diabetics
  - Those taking antibiotics or inhaled corticosteroids
  - Those with immune deficiencies
    - HIV
    - AIDS
    - Cancer
  - Those with oral piercings
  - Denture wearers

Oral Candidiasis (Thrush)

- Management
  - Emergency care seldom required
  - Physician care
    - Topical or oral antifungal drugs
    - IV antifungal drugs for severe cases
Peritonsillar Abscess (PTA or Quinsy)

- Collection of pus in and around one or both tonsils
  - Abscesses form in area between palatine tonsil and its capsule
- Complication of tonsillitis

Peritonsillar Abscess (PTA or Quinsy)

- Most common deep infection of head and neck in adults
  - Most common in persons 20 to 40 years of age who have chronic tonsillitis
- Presenting symptoms
  - Fever
  - Throat pain
  - Trismus (muscle spasms of jaw)

Peritonsillar Abscess (PTA or Quinsy)

- Management
  - Prehospital care is primarily supportive
  - Physician care
    - Ultrasound
    - Antibiotics
  - Procedures to remove abscess material
    - Needle aspiration
    - Incision and drainage
    - Tonsillectomy
Pharyngitis/Tonsillitis

- Infections in throat that cause inflammation
  - Tonsillitis, tonsils primarily affected
  - Pharyngitis, throat primarily affected
- Inflammation of throat usually associated with underlying illness

Pharyngitis/Tonsillitis

- Most common inflammation cause is virus
  - Inflammation can also be caused by bacteria (especially streptococci)
    - Resulting in strep throat

What complications may occur if a patient’s pharyngitis is related to strep throat and is not treated?
Pharyngitis/Tonsillitis

- Signs and symptoms depend on underlying illness
  - Sore throat with common cold
    - Sneezing
    - Cough
    - Low-grade fever
    - Mild headache
  - Sore throat with influenza
    - Fatigue
    - Body aches
    - Chills
    - Fevers higher than 102°F
  - Sore throat with mononucleosis
    - Enlarged lymph nodes in neck and armpits
    - Swollen tonsils
    - Headache
    - Loss of appetite
    - Swollen spleen
    - Liver inflammation

Pharyngitis/Tonsillitis

- Management
  - Prehospital care is primarily supportive
  - Emergency care seldom needed
Pharyngitis/Tonsillitis

- Physician care
  - Antihistamines
  - Cough suppressants
  - Antipyretics
  - Throat cultures and blood analyses
    - If bacterial infection requiring antibiotics or mononucleosis is suspected
    - Tonsillectomy if severe or recurrent tonsillitis

Temporomandibular Joint Disease

- TM Joint or TMJ
  - Joint is on each side of head in front of ears
  - Where mandible meets temporal bones
**TMJ**

- Disorders are set of conditions that cause pain in area of joint
  - May also involve associated muscles and cause problems using jaw
  - One or both TM joints may be affected
  - Disorders influence person's ability to
    - Speak
    - Eat
    - Chew
    - Swallow
    - Make facial expressions
    - Breathe (severe cases)

---

**TMJ**

- Affect 35 million people in United States
  - Most who seek treatment are women in childbearing years
  - Not all causes of TM joint disorders are clearly understood

---

**TMJ**

- Risk factors
  - Jaw injury
  - Arthritis
  - Dental procedures
  - Infection
  - Autoimmune disease
  - Endotracheal intubation
  - Clenching or grinding of teeth
TMJ

• Disorders may also be symptom of other diseases
  – Sinus or ear infection
  – Periodontal disease
  – Headaches
  – Facial neuralgia

• Other contributors
  – Poor diet
  – Stress
  – Lack of sleep

---

TMJ

• Common associated complaints
  – Pain in neck and shoulders
  – Headache
  – Jaw muscle stiffness
  – Limited movement or locking of jaw
  – Painful clicking, popping, or grating in jaw joint when opening or closing mouth

---

TMJ

• Common associated complaints
  – Change in way upper and lower teeth fit together
    • Bite that feels “off”
  – Ringing in ears
  – Ear pain
  – Decreased hearing
  – Dizziness and vision problems
TMJ

• Management
  — Symptoms usually temporary, may be painful
  — Patients experiencing discomfort are often anxious
  — Prehospital care
    • Focused on calming patient
    • Providing comfort measures

TMJ

• Management
  — Physician care
  — Diagnostic tests
    • Head
    • Neck
    • Face
    • Jaw
  — Complete medical history helps rule out other possible causes

TMJ

• Management
  — Other health care professionals involved in treatment and recovery
    • Dentists
    • Sleep specialists
    • Ear, nose, and throat specialists
    • Neurologist
    • Endocrinologists
    • Rheumatologists
    • Pain specialists
Summary

• Eye is comprised of its primary vision structures and accessory structures that protect, lubricate, move, and aid in their function
  – Cranial nerves control vision, pupil constriction, and movement of the eyes
  – Consider nervous system disease if these functions are impaired

Summary

• Conjunctivitis is inflammation or infection of eye sometimes called pink eye
  – Infectious conjunctivitis is contagious
• Corneal abrasion is scrape or scratch of cornea
  – Very painful and may cause tearing, redness, and blurred vision
  – Patch eye and administer topical ophthalmic anesthetic if permitted by protocol

Summary

• Foreign bodies in eye are very painful and cause pain and tearing
  – Irrigation of eye may be indicated to remove small foreign bodies
• Two types of eyelid inflammation are chalazion (obstructed oil gland) and hordeolum (sty)
Summary

• Glaucoma is caused by increase in intraocular pressure related to excess aqueous humor
  – Results in pressure on optic nerve and can lead to blindness if untreated
  – Signs and symptoms include loss of peripheral vision, pain, headache, vomiting, or blurred vision

Summary

• Iritis is inflammation of iris, and can cause blindness if untreated
• Papilledema is swelling of optic disc caused by an increase in intracranial pressure (ICP)
  – May be related to illness or injury

Summary

• Retina is eye structure central to vision
  – Tears, breaks, or defects in the retina cause retinal detachment
  – Without treatment, retinal detachment leads to blindness
  – Signs and symptoms include increase in floaters, light flashes in eye, or appearance of curtain over field of vision
Summary

• Central retinal artery occlusion occurs when blood supply to retina is blocked
  – If circulation is not reestablished within 60 to 90 minutes, permanent loss of vision occurs
  – Onset is marked by sudden, painless loss of vision or sense that a shade has been pulled down over eye

Summary

• Orbital cellulitis is infection of tissue around eye that can lead to serious complications that include blindness, sepsis, and meningitis
  – Signs and symptoms include fever, pain, and swelling of eyelids, eye pain, decreased vision, bulging eyes, malaise, and impaired eye movement
  – Immediate treatment with IV antibiotics is essential

Summary

• When excess ear wax (cerumen) accumulates in ear, it can cause earache, hearing loss, tinnitus, itching, odor, or discharge
  – Removal of wax usually resolves symptoms
• Swelling of inner ear causes labyrinthitis
  – Causes vertigo and tinnitus
Summary

- Meniere’s disease causes vertigo, tinnitus, and hearing loss
  - Can lead to nausea and vomiting
  - Stroke can cause similar symptoms and should be ruled out
- Otitis media is infection or inflammation of inner ear
  - In addition to earache, can produce number of signs and symptoms

Summary

- Infection or trauma can cause perforation of tympanic membrane and can result in brief pain, hearing loss, and drainage from the affected ear
- Epistaxis is bleeding from structures of nose or nasopharynx
  - Attempt to control epistaxis by positioning patient upright, leaning forward
  - Apply direct pressure on nose until bleeding is controlled
  - Treat for shock if indicated

Summary

- Common for children to place foreign bodies in their nose
  - Transport for physician examination and removal
- Rhinitis is a runny nose; common causes are infection, allergy, or foreign body in nose
Summary

• Sinusitis is inflammation of sinuses and nasal passages
  – Signs and symptoms include cough, fever, halitosis, nasal congestion, headache, and pressure sensation over eyes, nose, or cheek
• Toothache is frequently caused by tooth decay, abscess, cracked tooth, exposed root, or gum disease
  – Transport for definitive care and pain management

Summary

• Ludwig’s angina is cellulitis of tissues under tongue
  – Can cause rapid tissue swelling and airway obstruction
  – Signs and symptoms include dyspnea, confusion, fever, neck pain, redness or swelling, weakness, or drooling
  – Urgent transport is needed

Summary

• Epiglottitis is inflammation of epiglottis caused by bacterial infection
  – Can lead to airway obstruction
  – Signs and symptoms include sore throat, high fever, drooling, and muffled voice
  – Airway obstruction is possible
  – Perform minimal interventions unless airway obstruction occurs
Summary

- Laryngitis is hoarse voice and swollen lymph nodes associated with inflamed vocal cords
- Tracheitis is bacterial infection of upper airway and subglottic trachea, and can cause respiratory failure and arrest
  - Be prepared to manage airway and ventilate if needed
- Oral candidiasis is yeast fungal infection of mouth
  - Covers tongue and mucous membranes with thick cream-colored coating

Questions?