

Eye Disorders

- Hordeolum (Sty)
 - Acute infection of the sebaceous glands on the eyelid margin
 - Often caused by staph aureus, relates to poor hygiene and cosmetic use.
 - S+S- Rapidly occurring localized erythema, edema, and pain
 - Treatments
 - Warm moist compresses- 10/15 min intervals a few times a day
 - Topical antibiotic ointments/drops if doesn't resolve with conservative tx
- Chalazion
 - Chronic inflammation of the meibomian (sebaceous) gland of the eyelid with development of a granuloma
 - Progression: slow onset and recovery (weeks to months to develop and heal)
 - S+S same as hordeolum except presence of granuloma can be seen with inspection which is a hard, shiny, lump within the eyelid
 - Treatments
 - Warm compresses, corticosteroids
 - Surgical removal if gland persists or disrupts vision
- Conjunctivitis
 - Inflammation or infection of the conjunctiva
 - Poor hygiene plus infected tears and discharge enables spread to others and from one eye to the other.
 - Many different types: Bacterial, Viral, Chlamydial, Allergic
- Bacterial Conjunctivitis
 - Commonly caused by: Staph. Aureus and Strep Pneumoniae and H. Influenza
 - S+S: irritation, tearing, erythema and mucopurulent discharge, Crusting common
 - Self-limiting but antibiotic drops will shorten the course (from 2wk to few days)
- Viral Conjunctivitis
 - S+S: tearing, mild photophobia, foreign body feeling
 - Mild, self-limiting course.
 - No treatment cures or shortens duration as it is viral
 - Teaching for bacterial and viral conjunctivitis
 - Highly contagious-wash hands frequently and after contact
 - Don't cover eye with a patch of any sort it can result in further infection.
- Allergic Conjunctivitis
 - eye medications, dander, contacts, pollen, makeup can cause
 - S+S: Generally milder than bacterial/viral
 - Itching-most significant, Redness, Discharge, Burning, tearing
 - Treatments
 - Artificial tears to thin allergen
 - Antihistamines-Claritin, Benadryl decrease tearing, discharge, inflammation
 - Corticosteroids
- Trachoma

- o Chronic conjunctivitis resulting from chlamydial infection transmitted to the eyes
- o 2 types:
 - **Trachoma (Serotypes A-C)** frequent cause of preventable blindness worldwide because infections can cause scarring of eyelids
 - Mainly transmitted via contaminated hands and eye seeking flies that have been in contact with bacterium chlamydia trachomatis
 - **Adult Inclusion Conjunctivitis (serotypes D –K)-** caused by chlamydia bacterium (STD)
 - Seen in developed countries and does not lead to blindness
 - Educate that risk of contracting other STD's is high as this person already has contracted chlamydia.
 - Spread from hands to eyes after contact with infected genital secretions.
- o S+S same for both types
 - Mucopurulent discharge, Irritation, Red, Lid edema
- o Treatments
 - Oral or ocular Antibiotics (Azithromycin usually)
- Keratitis
 - o Corneal inflammation or infection
 - **Bacterial Keratitis-** damage to the cornea that allows infection to penetrate
 - S/S: Pain, redness, tearing, discharge
 - Treat with subconjunctival Ab injection or even IV
 - Risk Factors: Contact lens use, injury
 - **Viral Keratitis-** Viral infection of cornea. Herpes virus most common causative organism
 - Results in Hallmark Sign: Dendritic Ulcer (branch like appearance)
 - S+S: Pain, photophobia,
 - Many heal spontaneously because of self limiting viral nature others use ocular antivirals, oral antivirals, antibiotics to prevent secondary infection
 - Treat pain with opioids, nonopioids, mydriatics (dilate pupil and relieve pain),
- Corneal Ulcer
 - o complication of corneal infection with corneal tissue loss, complication keratitis
 - o Emergency because cornea is avascular and can not defend itself against infecting organism
 - o S+S- Painful, Feeling of a foreign body (sand in eye), Eye secretions (discharge or excess tearing), Redness, Photophobia, Visual loss (Hazy or cloudy cornea)
 - o Treatments
 - Aggressive to prevent permanent visual loss
 - Anti-infective (broad spectrum Ab, antiviral, antifungal)

- Corneal transplant may be necessary if corneal scarring or perforation occurs
- Blepharitis
 - inflammation of the eyelid margins commonly associated with staph infection and/or seborrhea (secretion of oily matter causes inflammation) *eye dandruff*
 - S+S: think dandruff
 - red rimmed lid edges, scales and crusts at lashes, itchy, burning
 - Treatment
 - To prevent complications from causative organism (hordeolum and keratitis)
 - Staph Infection: ophthalmic antibiotic ointment
 - Seborrheic Blepharitis: Anti-Seborrheic shampoo for scalp & eyebrows or something as simple and gentle as Baby Shampoo.
- Enucleation
 - Surgical removal of the entire eye and part of the optic nerve
 - Indications- Tumor, Glaucoma, infection, trauma, painful eye, infections
 - Postop Considerations- Pressure Dressing applied in OR and left on for 3-4 days
 - Antibiotics
 - Nursing Care
 - may be difficult to open eye lids initially so warn preoperatively if able because it can be disconcerting and scary
 - Must wait 4-8 weeks after enucleation to be fitted for prosthesis
 - Wash around socket with soap and water then rinse and pat dry
 - Can use sterile saline to clean inner eye socket
- Keratoconjunctivitis Sicca
 - Dry eyes from a decrease in quality/quantity of tears
 - Common with: elderly, systemic diseases (scleroderma, lupus), and certain meds
 - S+S- “sand in eye” feeling, Irritation worsens throughout day
 - Treatments -Artificial tears, lubricating ointments
- Retinoblastoma
 - Malignant tumor of the retina (innermost layer)
 - Risk factors
 - Age-usually occurs in childhood
 - Family history-30-40% of cases are hereditary
 - S+S
 - Classic Sign: Cat’s Eye- White, yellow, or pink color in center of eye reflects back when light introduced
 - Strabismus, redness, swelling
 - Treatments-enucleation, possible chemo or radiation
- Eye Injury- penetrating injury, chemical cause
 - Chemical Injury
 - Immediately flush with solution or saline if available for 20 minutes

- Penetrating eye injury
 - Leave the object in place and seek emergency care.
- Errors of Refraction
 - Myopia (near sightedness) CAN SEE NEAR, CAN NOT SEE FAR
 - Blurred distant vision, cornea is too curved
 - Eye is too long (anterior-posterior diameter) image falls in front of retina
 - Diabetes at risk increased blood glucose levels cause the lens to swell
 - Often identified in children when squinting at the blackboard
 - Tx-concave contact lens (curves inward)
 - Hyperopia (farsightedness) CAN SEE FAR, CAN NOT SEE NEAR
 - Near vision blurred
 - Anterior posterior diameter of eye is too short. Cornea has too little curvature. Objects focused behind the eye
 - Treatment-Convex contact lens (curved outward)
- Presbyopia
 - form of hyperopia that occurs with aging –Nearby objects are blurry
 - lens loses elasticity, becomes more rigid and is unable to accommodate for near objects
 - Treatment-Convex lens (curved outward)
- Astigmatism
 - Irregularity in corneal shape causing horizontal and vertical rays to be focused on 2 different areas of the retina. The cornea is shaped like the back of a spoon
 - Can coexist in addition to refractive errors
 - Treatment-corrective lenses or surgery
- Strabismus
 - deviation of one eye from the other. Cross Eyes
 - S&S for adults – double vision.
 - Treatment- Glasses, surgery, exercises
- Amblyopia
 - brain favors one eye and as a result the eye used less becomes weaker and it is where we get the term lazy eye
 - Treatment- Eye patches worn on the stronger eye to force weaker eye to focus, video games. Worn for weeks or months
- Treatment for Refractive Errors
 - Contact Lenses
 - Better vision because no peripheral loss with frame and lens obstruction
 - Made of silicone or plastic that allow oxygen to reach cornea
 - Remove if eyes: red, sensitive, vision prob, pain
 - LASIK Surgery- Laser assisted in situ keratomileusis
 - LASIK Indications: myopia, hyperopia, and astigmatism
 - Flap & zap- Corneal flap folded back, laser alters corneal shape by removing layers.
 - Flap is returned to normal position and allowed to heal in place
- PRK: Photorefractive Keratotomy

- Indications: myopia, hyperopia, and astigmatism (no membrane there)
- Epithelial layer removed and laser scrapes away tiny bits corneal tissue (less removed so option for those with inadeq corneal thickness for LASIK. Healing takes months
 - Avoid eye rubbing
 - Eyedrops: antibiotic and anti-inflammatory
- **Cataracts**
 - Clouding or opacity of lens
 - Etiology
 - Aging-changes in metabolism lead to water accumulation in the lens fibers
 - Injury-advocate proper eye protection with sports, activities
 - Diabetes
 - Medications
 - Over exposure to sun
 - Congenital factors-maternal rubella infection in pregnancy
 - S+S
 - Painless gradual blurring of vision, decreased color perception and glare, poor night vision
 - Diagnosis
 - Ophthalmoscope or slit lamp microscopy identifies opacities
 - Inspection-large cataracts will cause the pupil to appear milky white
 - Management
 - Adaptive changes can be instituted
 - Drive during day, Brighter lights when reading
 - Stronger glasses prescription
 - No cure other than surgery
 - Surgical treatment: Cataract Removal.
 - Preop
 - Preop Medications: Antibiotic drops, pupil dilators to help examine inside of eye better, NSAID drops to decrease inflammation assoc with the procedure, and antianxiety medications prior to local administration
 - Mydriatics cause pupil dilation
 - Cycloplegics-pupil dilation
 - Nursing Care-Dim lights and teach to wear dark glasses for discomfort with pupil dilation, monitor for S+S toxicity-tachycardia, CNS effects like behavior disturbances
 - Intraop
 - Local anesthetic administered to the eye via injection
 - Intracapsular-lens and capsular bag removed in one piece.
 - Phacoemulsion-Probe penetrates capsule and sound waves break up lens nucleus then remove with suction. Small incision is made on side of cornea, then small probe penetrates capsule of lens, remove with suction. Implant then placed.
 - may have immediate vision improvement following implant

- Procedure may or may not require sutures
 - Antibiotics, steroids may again be administered post op
 - If patient has a patch or shield leave until F/U visit (24 hr)
 - Nursing Care
 - Vision usually improves within days of surgery
 - Procedure causes mild pain-OTC analgesics to alleviate
 - Patient should avoid bend, lift, pull, sneeze, blow, vomit, and rubbing because could increase in IOP directly after procedure
 - Call doctor if: severe pain, N/V (sign of complications-hemorrhage or inc IOP). Increased redness, purulent drainage.
- Aphakia
 - Absence of the eyes lens. Causes congenital or surgical removal
 - S+S: severe refractive error (severely blurry) because lens needed for light focus
 - Treat with specialty contact lenses, glasses or a lens implant
- Glaucoma
 - Group of ocular disorders with increased intraocular pressure (IOP)
 - Pathophysiology- Aqueous humor is continually secreted by the ciliary bodies and absorbed at the trabecular meshwork and Canal of Schlemm. Aqueous humor maintains shape of the eye as well as provides nutrients/nourishment
 - An obstruction in this outflow pathway impedes absorption, increases fluid volume, and increases intraocular pressure. Fluid builds up in eye.
 - Increased pressure within the eye presses on blood vessels, hindering blood flow and adequate O₂ delivery which causes damage to the sensitive photoreceptors in the retina and to the optic nerve leading to visual loss
 - Diagnosis
 - Tonometry-measures IOP. Normal is 10-21 mmHg
 - Slit lamp microscopy is used to evaluate the angle of glaucoma
 - Types of Glaucoma
 - Primary Open Angle Glaucoma: Most common form
 - Inadequate Aqueous Humor outflow via the trabecular meshwork (like a clogged kitchen sink) results in peripheral vision loss. Eye drainage canals become clogged and pressure build up damages optic nerve
 - Diagnosis: Tonometry readings: 22-33 mmHG
 - S+S: gradual peripheral visual loss that frequently goes unnoticed until impairment is severe. Defect is tunnel vision loss (edges darkened)
 - Treatment: Goal is to reduce intraocular pressure prevent visual loss medications control but do not cure
 - Beta blockers are first line of defense
 - drops are instilled once daily
 - decreasing aqueous humor production by its effects on the ciliary body
 - Punctual pressure necessary to prevent systemic BP/HR changes
 - Alpha adrenergic blockers

- Decreases aqueous humor production relieving pressure
 - Miotics or Cholinergics
 - Contracts iris sphincter muscle, opens trabecular meshwork increasing outflow since it was clogged
 - Surgical Treatment: outpatient procedures
 - Argon Laser Trabeculoplasty ALT
 - Laser stimulates scarring & contraction of trabecular mesh to improve outflow
 - Trabeculectomy
 - Part of iris and trabecular meshwork are removed which allows the humor to flow out of the eye where iris is missing. Aqueous humor is absorbed systemically
 - Primary Angle-closure glaucoma (aka closed-angle glaucoma, narrow-angle glaucoma, angle-closure glaucoma.
 - Medical emergency with sudden onset of increased IOP that can lead to vision loss within 48-72 hours of onset
 - Pathway for aqueous outflow through the trabecular meshwork is narrowed due to: Aging associated lens bulging or the Iris bulging from pupil dilation in a pt with normally narrowed angles
 - S+S: Sudden pain around eye (excruciating), N/V, H/A (sudden inc IOP), blurred or hazy vision, colored halos around lights, ocular redness, frosted cornea
 - Diagnostics: Tonometry readings up to 50 mmHg or higher
 - Drug Therapy-topical, PO, and IV administration to reduce IOP
 - Hyperosmotics-pulls intracellular fluid into vascular spaces
 - Cholinergics-topical admin.
 - Surgical treatment: Laser peripheral iridotomy, surgical iridectomy
 - Allows for aqueous outflow through surgical opening in the iris
 - Important note for all glaucoma patients
 - Never give mydriatics & cycloplegics to glaucoma pts. – dilate and paralyze ciliary body (worsening outflow of aqueous humor)
 - Notify dr if S+S of IOP-n/v, increased eye pain
- Age-related Macular Degeneration
 - Degeneration of the macula
 - Risk Factors- Caucasians, Familial, Smoking, Hyperopia, Light colored eyes
 - Types
 - Dry AMD– dry more common (90%)
 - abnormal accumulation of waste material (drusen- which is made up of lipids, fatty proteins) in the retinal layer causes macular atrophy and degeneration
 - Wet is more serious

- Abnormal blood vessels grow in the retinal layer that are fragile and leak blood and fluid. Scarring and vision loss
 - Clinical findings S/S- Gradual central vision loss
 - Diagnosis
 - Amsler Grid
 - Ophthalmoscope exam shows abn blood vessel proliferation or drusen deposits
 - Treatment
 - Dry AMD treatment goal is to slow drusen proliferation
 - Antioxidants: mega oral doses of vitamins and beta-carotene.
 - Wet AMD treatment
 - Photodynamic Therapy (PDT)- Geared toward abnormal vessel growth- systemic IV injection of a photosensitive dye (Visudyne-verteporfin) that is activated with local application of a “cold” laser. Causes destruction of the abnormal blood vessels. Patient instructed to avoid direct sunlight for 5 days because light will activate the dye and cause thermal burns to the skin and eyes.
- Diabetic Retinopathy
 - Damage to retinal blood vessels- Can result in blindness
 - Two types: nonproliferative and proliferative (more severe)
 - Nonproliferative-occlusion of small blood vessels in retina cause microaneurysms, retinal swelling, and hard exudates.
 - Proliferative retinopathy occurs with progression of nonproliferative. When retinal capillaries are occluded new blood vessels form “neovascularization” to supply the retina with blood. These new vessels are weak and fragile. They hemorrhage easily
 - S+S: Blurred vision, floaters, spots, black or red lines with bleeding into vitreous
 - DX
 - Ophthalmoscope- Fluorescein Angiography-can see vascular changes, microaneurysms, blockages, and dye leaking from broken vessels
 - Treatment
 - Photocoagulation: Laser Surgery – light beam that coagulates microaneurysms
 - Vitrectomy – remove blood filled vitreous and replace with saline through corneal incision – 70% improvement
 - Retinal Repair for detachment (detachment can occur when vessels leak beneath retina and separate it from the choroid layer)
- Retinal Detachment
 - Separation of 2 layers of the retina.
 - Sensory Retina (contains rods & cones) separates from the pigment epithelium (the nourishing layer-vasculature).

- Retinal breaks may be tears or holes. With aging vitreous humor shrinks and pulls on the retina. If strong enough this pulling force will cause a retinal tear. Vitreous humor occupies space behind lens in front of retina and helps give eye shape.
 - Risk: aging, diabetic retinopathy, myopia, trauma, family or personal history
 - S+S-vision changes or loss without pain
 - floaters, cobwebs, hairnet, ring, photopsia (light flashes), peripheral or central visual loss, may be described as a curtain coming over the eye
 - Diagnostics
 - Gross visual acuity loss (20/400)
 - Evaluate retinal layer with ophthalmoscope or slit lamp microscopy. Retina appears to quiver (not fixated to other layers)
 - Treatment
 - Tears (tares): treated by inducing inflammation that causes scar formation, seals hole or tear, and binds choroid and retinal layers together-scar acts like a bandaid. Induced by a laser beam
 - Surgery
 - Scleral Buckling Procedure-silicone implant placed exterior to site of retinal tear causes sclera to buckle inward promoting reattachment. Surgeon may also place an encircled band to cause more diffuse scleral buckling, promote retinal and choroid attachment, and stop inward traction (pulling).
 - Pneumatic Retinopexy-Intravitreal (within vitreous cavity) injection of special gases to form a temporary bubble in the vitreous that presses on the detached retina and closes the break.
 - Nursing Implications
 - Decrease anxiety pre op-urgent situation coupled with fear of vision loss. Teach s+s to report (visual changes, curtain coming down in vision)
 - Make aware of activity and position restrictions which are dependent on treatment modality
- Rehabilitation of the Blind patient
 - Total Blindness-no light perception, no visual field.
 - Functional Blindness-some light perception, but no usable vision
 - Common causes: macular degeneration, retinopathy, cataracts, glaucoma
 - Legally Blind Criteria: Visual Acuity 20/200
 - Nursing Management
 - Major intervention is allowing person to vent their feelings.
 - Determine whether visual loss is recent or not.
 - Care of the Blind Patient
 - Be sure to speak to the patient
 - Identify self when arriving and announce you're leaving.
 - Lead, do not push. Stand slightly in front of patient and to one side.

Talk as you walk so pt understands surroundings

- Describe location of items in room and inform when you move them. Describe location of food on plate – use clock reference
- Instruct which way door opens
- Place pt hand on chair, before sitting.
- Be aware of injury risk for blind patients.