

Occupational Therapy's Valuable Role in Visual Screening & Interventions Course

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Course Objectives

- Define vision and the role of occupational therapy in the multi-disciplinary team to address vision.
- Review eye anatomy and specific neurologic conditions/diagnoses impact on vision.
- Demonstrate how to perform and record basic visual assessment subjective and objective data.
- Recommend interventions to support occupational performance across settings.
- Provide information regarding referrals to other low vision providers amongst the multi-disciplinary team.
- Implement knowledge translation via interactive case study analyses

Sight Is Not Vision

- “Vision is a dynamic, interactive process of motor and sensory functions, mediated by the eyes for the purpose of simultaneous organization of posture, movement and spatial orientation, for manipulation of the environment, and to its highest degree, of perception and thought.” - William Padula, O.D.



Photo Reference: A

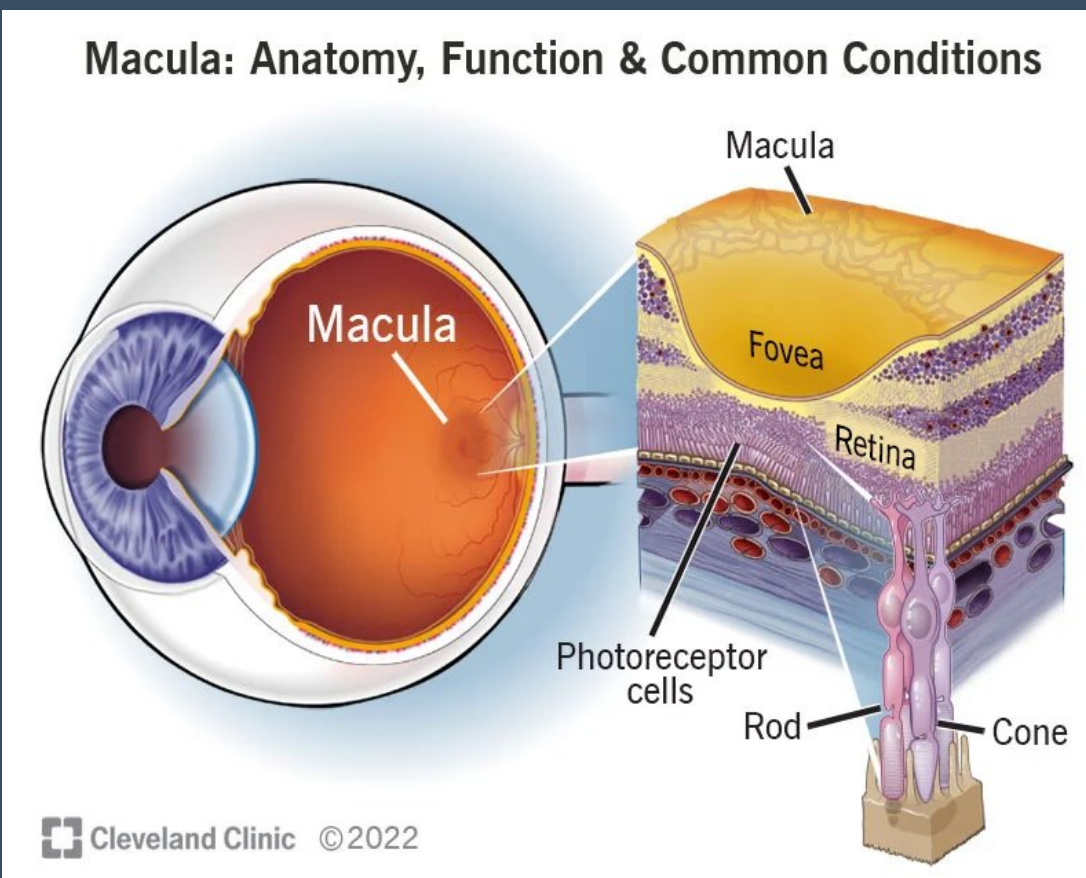
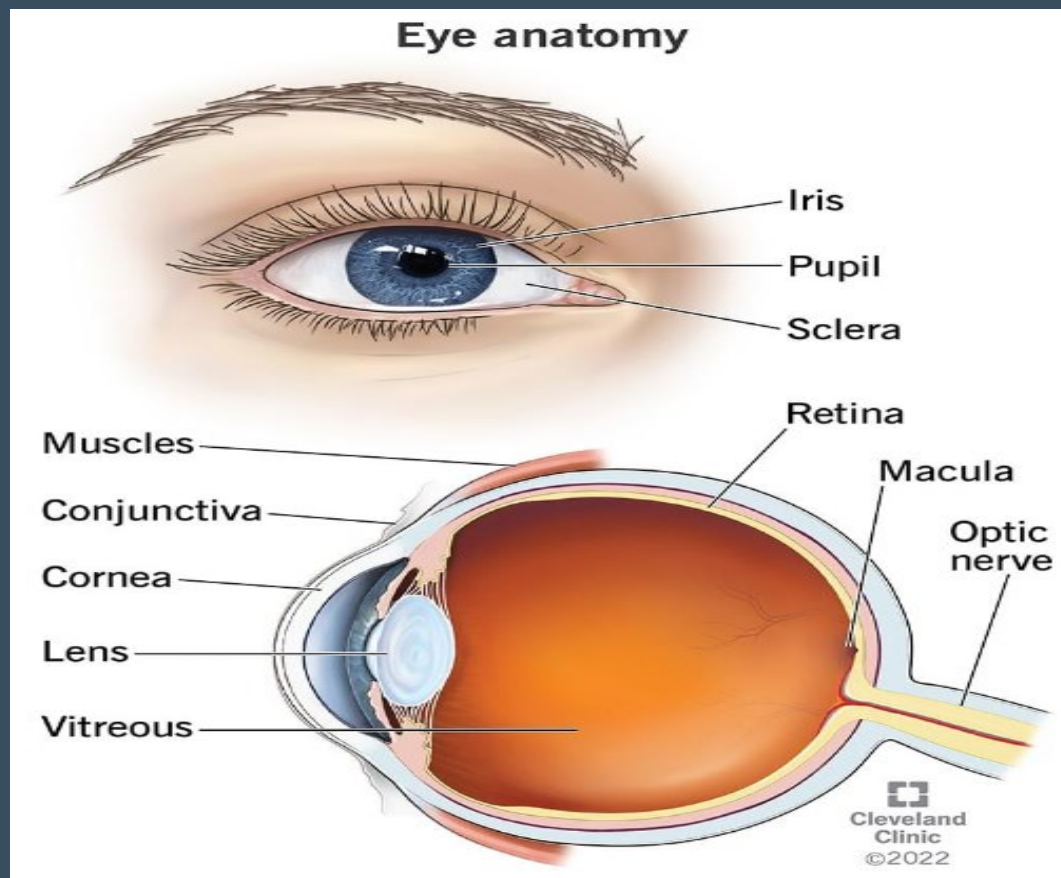
Low Vision and Occupational Therapy



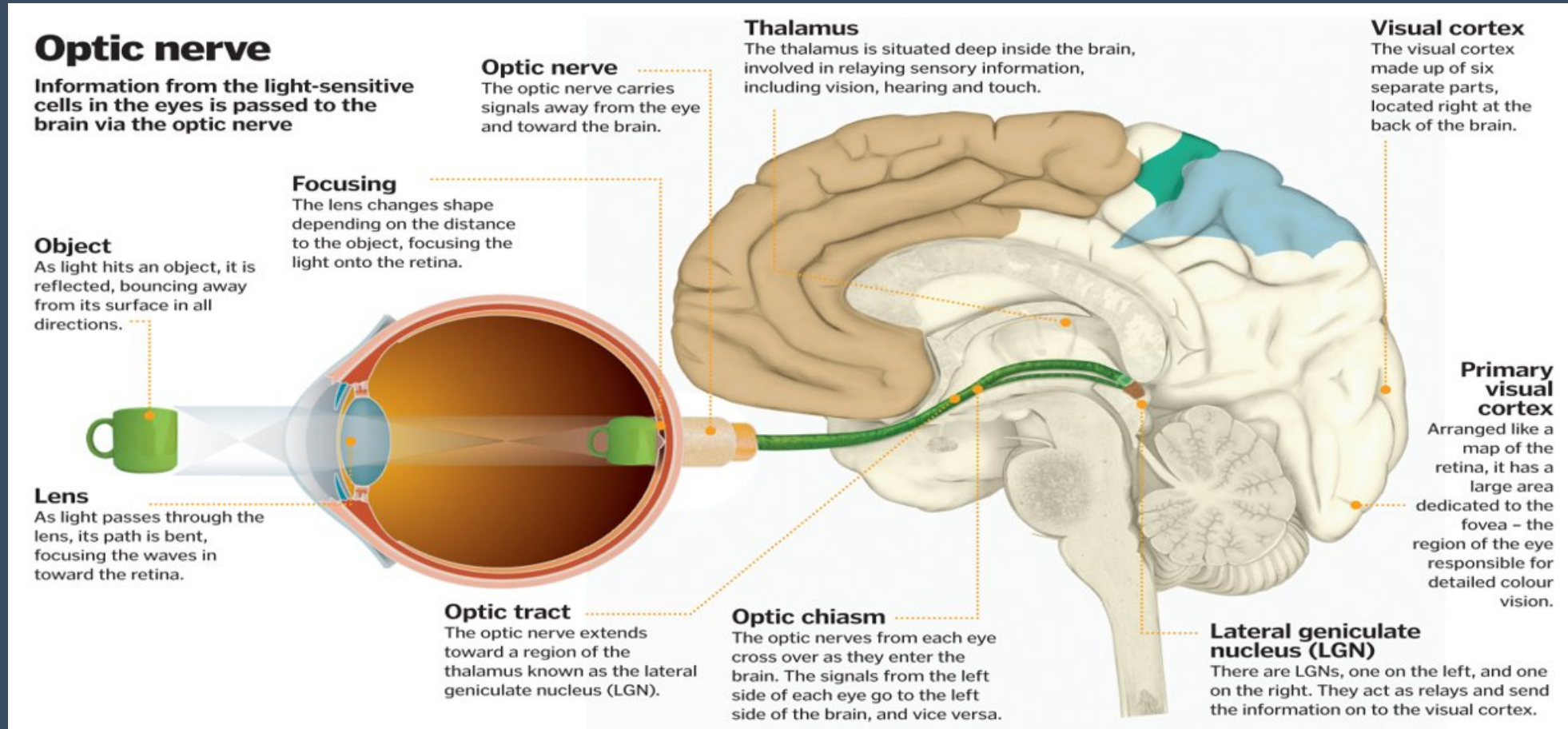
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- *Low vision* refers to vision loss that results in difficulty in everyday life activities even with regular glasses, contact lenses, medicine, or surgery
- In a 2020 systematic review, moderate evidence was found for low vision rehabilitation services including OT as part of a multidisciplinary approach (Liu, Chang, 2020)

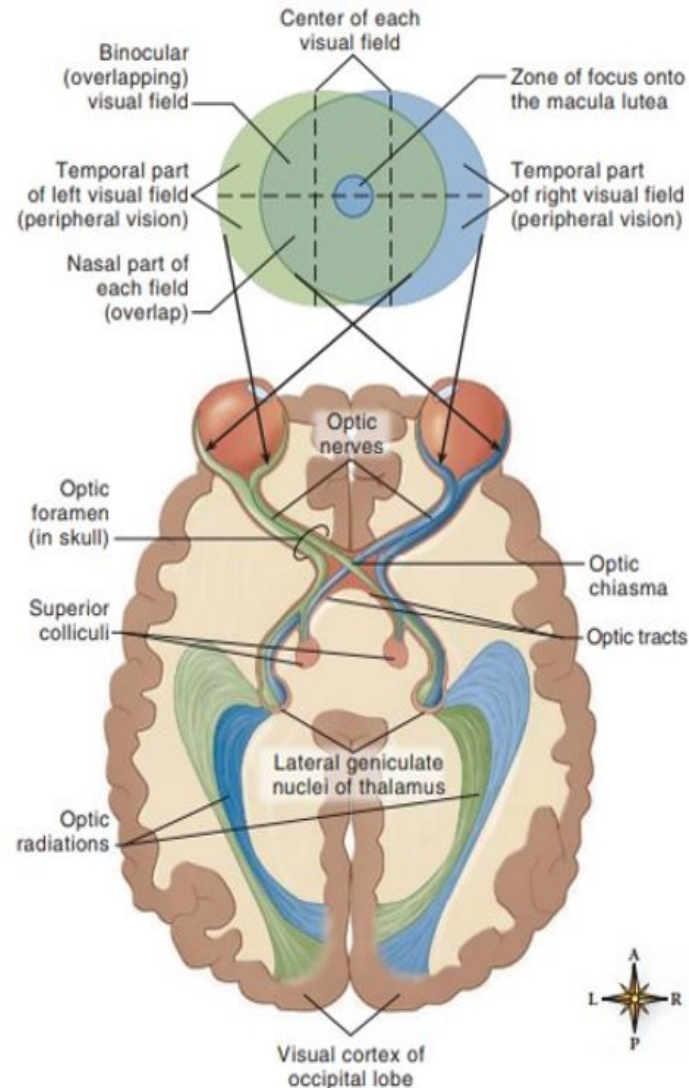
Eye Anatomy



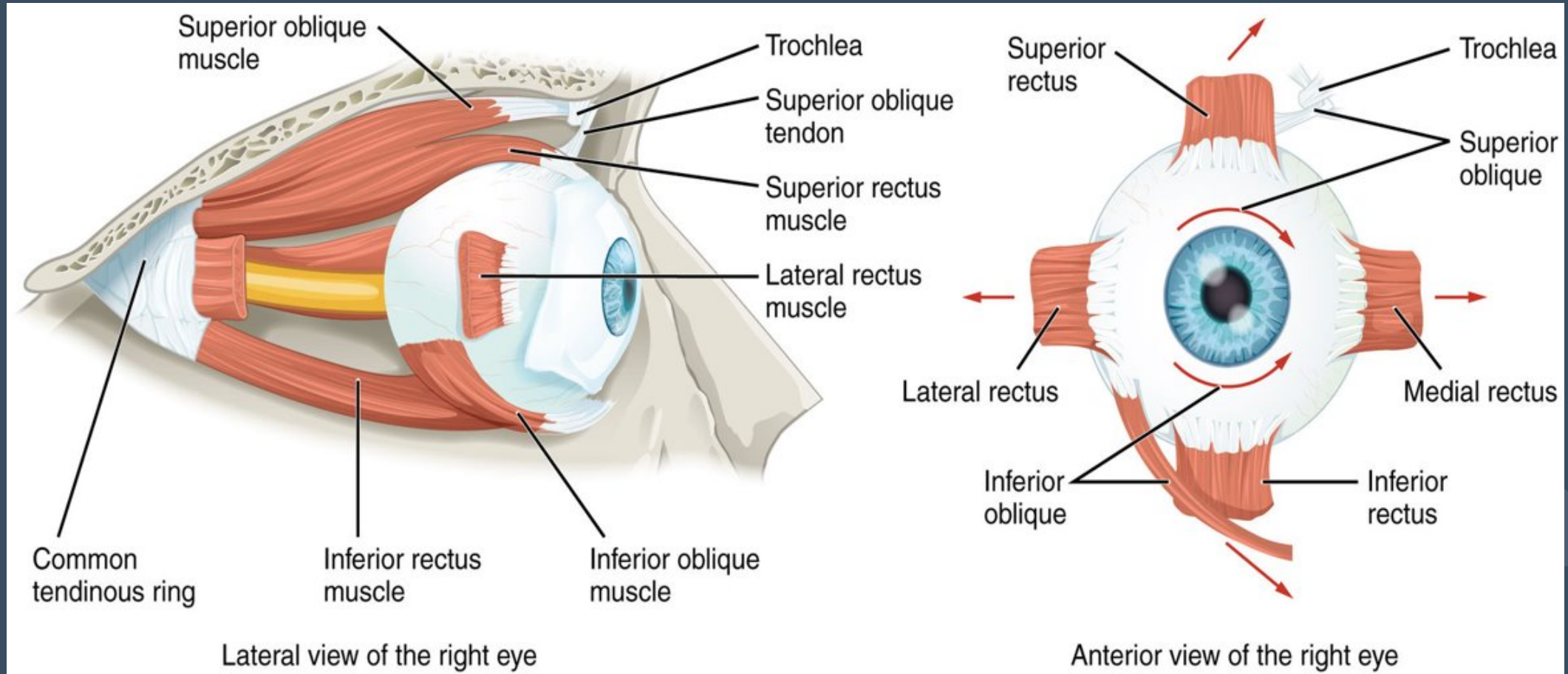
How Our Vision Works



Both Eyes Work to Create One Image



Muscles of the eye



Eye alignment at central gaze

TABLE 4.1: Visual Impairment Characteristics Associated with Lesions in Cranial Nerves (CN) 3, 4, and 6.

Oculomotor CN 3	Trochlear CN 4	Abducens CN 6
• impaired vertical eye movement • horizontal diplopia for near distance tasks • exotropic eye position • ptosis of the eyelid • fixed, dilated pupil and impaired accommodation	• impaired downward and outward eye movement • vertical diplopia for near distance tasks • hypertropic eye position • unilateral lesions-lateral tilt of head towards shoulder on sound side • bilateral lesions-downward head tilt	• impaired abduction of the eye • lateral diplopia for far distance tasks • esotropic eye position
 EXOTROPIA	 HYPERTROPIA	 ESOTROPIA

Let's Play a Game on Age Related Eye Conditions!

Your choices to the following questions will be any of these:

Glaucoma

Diabetic Retinopathy

Macular Degeneration



Facts on Age Related Eye Conditions

The leading cause of low vision in older adults is? _____



Facts on Age Related Eye Conditions

The leading cause of low vision in older adults is? **Macular Degeneration**



Macular Degeneration



Photo Reference: O

Facts on Age Related Eye Conditions

 is the 2nd leading
cause of low vision in older adults and
leading cause of blindness.



Facts on Age Related Eye Conditions

Glaucoma is the 2nd leading cause of low vision in older adults and leading cause of blindness.



Glaucoma

NORMAL VISION



ADVANCED GLAUCOMA



EARLY GLAUCOMA



EXTREME GLAUCOMA



© Sea View Optometric, Long Beach, CA

Photo Reference: P

Facts on Age Related Eye Conditions

_____ is the leading cause of blindness in adults under 65 years of age.

Facts on Age Related Eye Conditions

Diabetic Retinopathy is the leading cause of blindness in adults under 65 years of age.



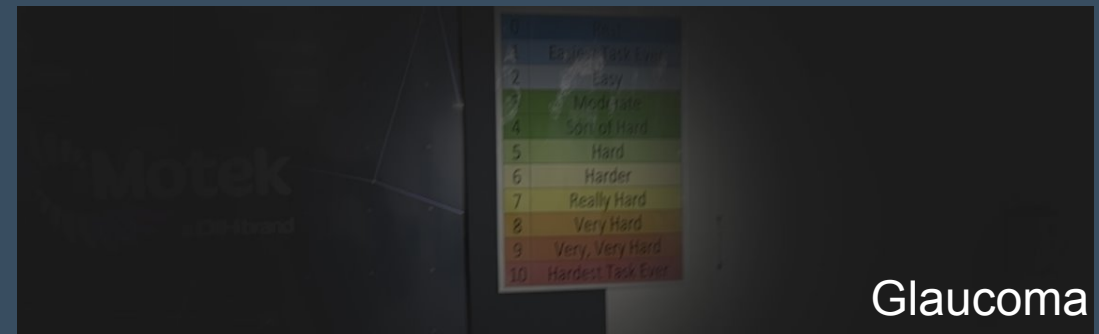
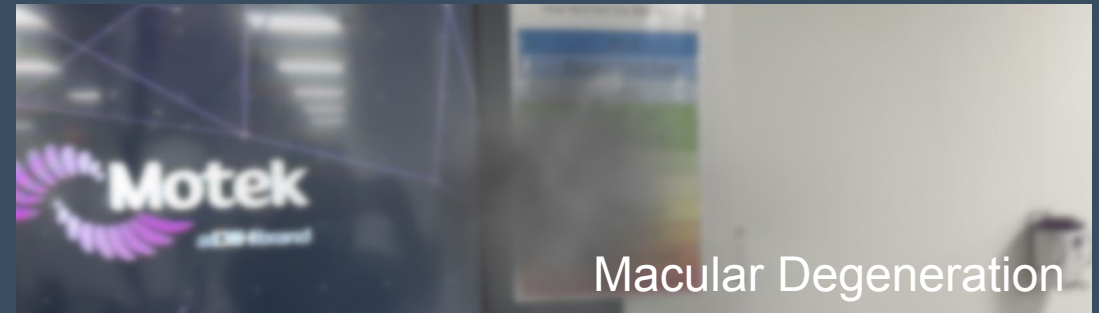
Diabetic Retinopathy



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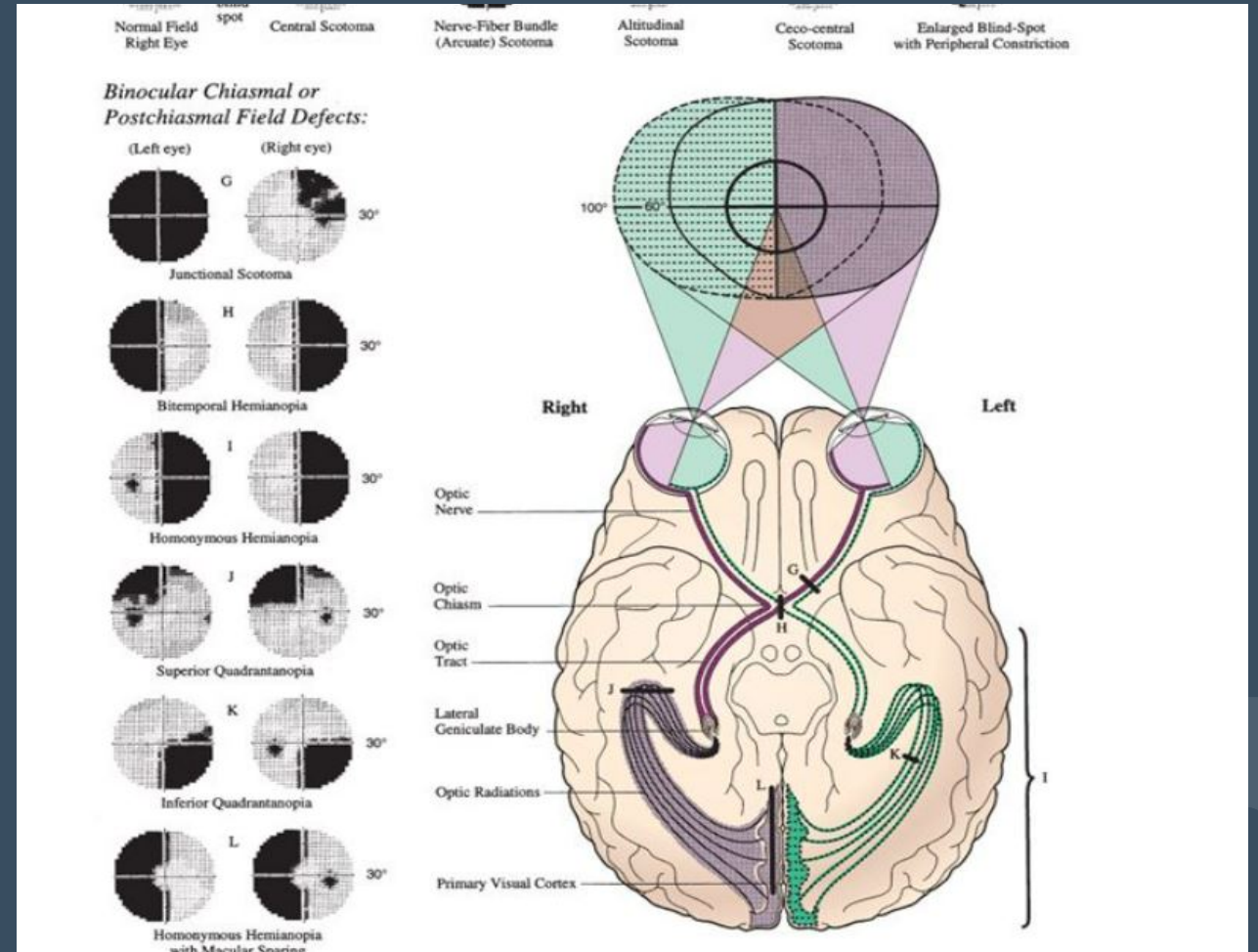
Age Related Vision Diagnosis

- Macular Degeneration – attacks cone photoreceptor cells in the macula
 - AMD causes: Macular scotoma (blind spot), Light sensitivity, Slow dark/light adaptation and Fluctuating vision
- Glaucoma – disease that affects the optic nerve and pressures
 - Glaucoma causes: Peripheral vision loss and in its late stages - blindness
- Diabetic Retinopathy – high and fluctuating blood glucose levels destroys integrity of blood vessel walls, causing fluid to leak onto the surface of the retina
 - Diabetic Retinopathy causes: Floaters, Blurred or patchy vision, Eye pain, Difficulty seeing in the dark



Facts on Neurological Conditions and Vision

- About **65% of stroke survivors have visual field loss**. (American Stroke Association, 2023)
- Studies show that **90% of TBI patients suffer from visual dysfunctions**.



Lesions to the Brain

Occipital Lobe Lesions

**Homonymous
hemianopsia**

Cortical Blindness

Central vision loss

**typical
vision**



**left
hemianopia**



Photo Reference: B

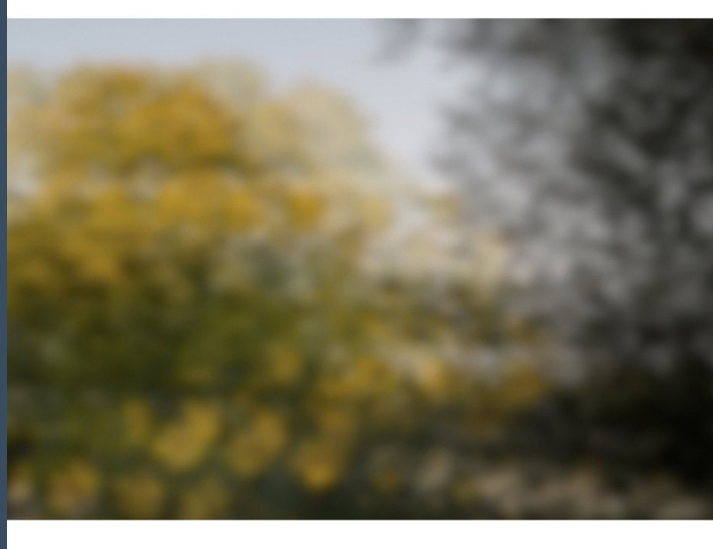


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Lesions to the Brain

- **Parietal Lobe Lesion**

- Difficulty with processing visual information such as **length, depth, and the size** of objects. **Hand-eye coordination** can suffer severely as a result.
- Partial vision loss may also occur after a parietal lobe infarct, making it difficult to see and recognize objects. A **parietal lobe stroke** is most likely to result in **inferior quadrantanopia**.
- Damage to the right **hemisphere of the parietal lobe** may result in the loss of **spatial awareness** of the left side.

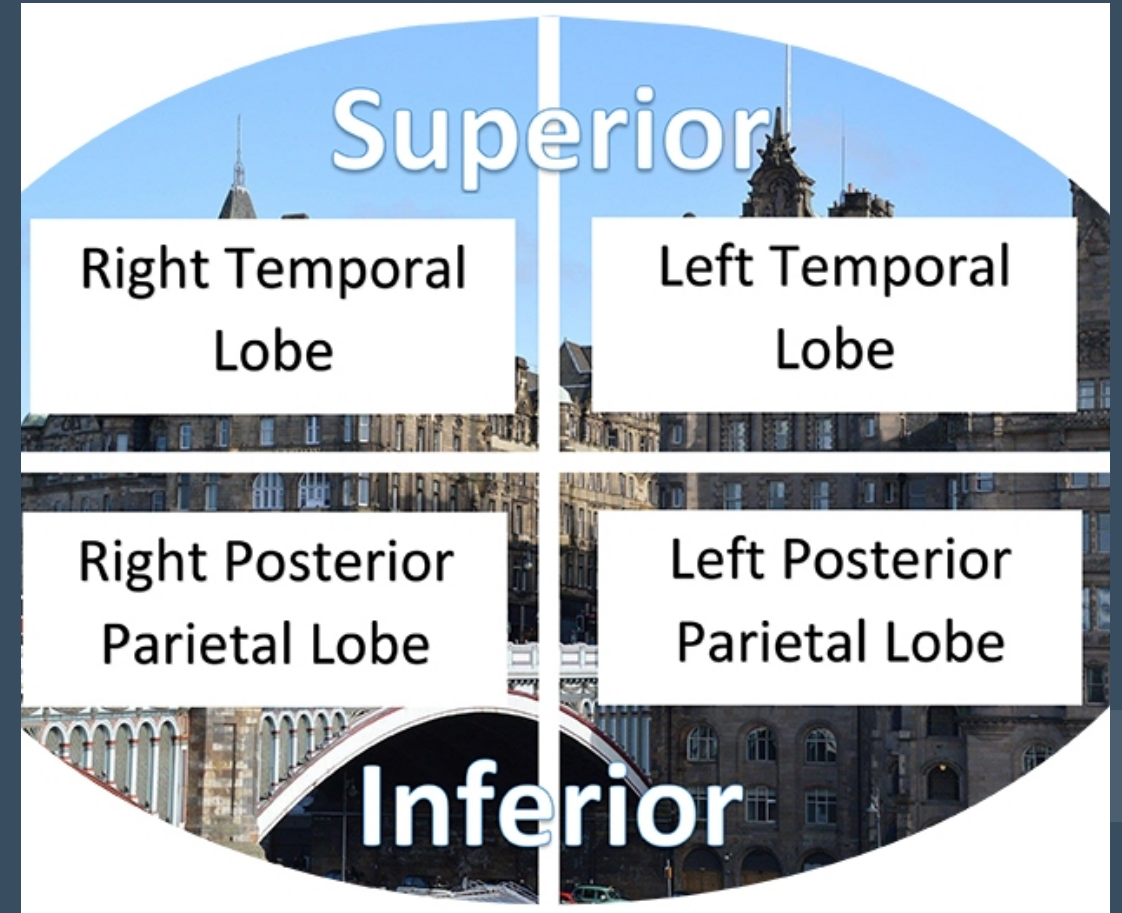
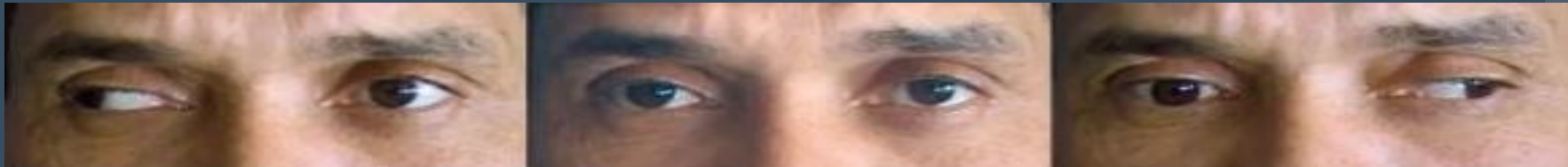


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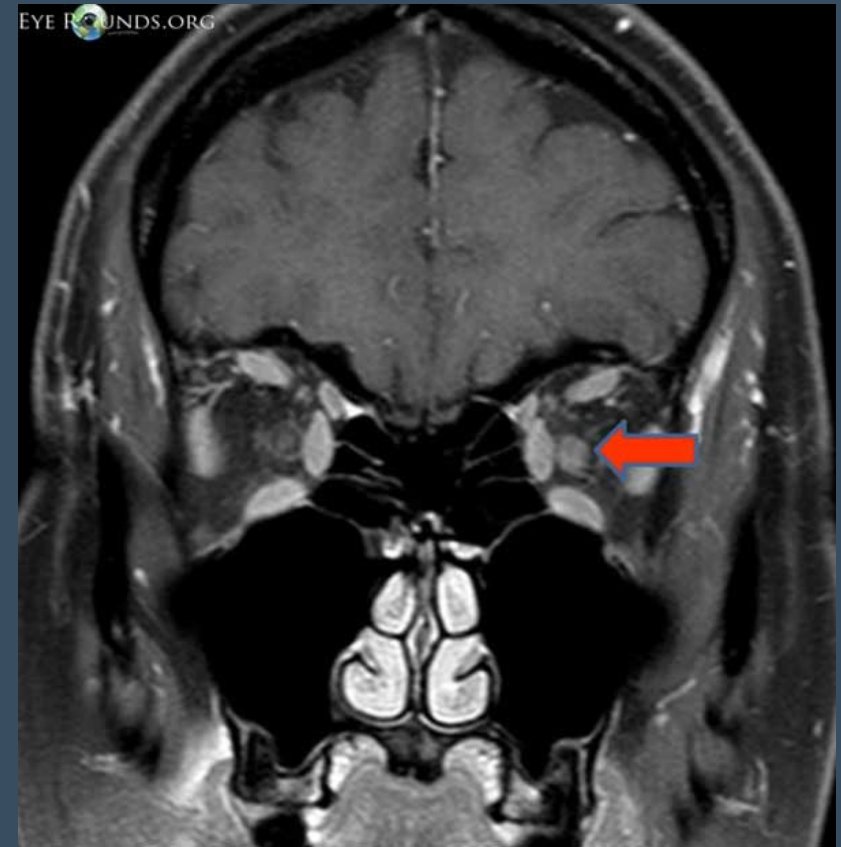
Facts on Neurological Conditions and Vision

- **Brainstem Injury**
 - **Accommodation impairment** – limitations on the clear focus of items as they move closer. Accommodation is a 3-step process – 1) eyes converge, 2) lens thickens and 3) the pupil constricts. This allows objects to stay in focus from 3-16 inches from the eyes.
 - **Pupillary light reflex impairment** – photophobia and slow adaptation to light changes
 - **Internuclear Ophthalmoplegia**- impairs horizontal movement of eyes
- **(CRAO) Central Retinal Artery Occlusion- “stroke” of the eye**
 - Often results in complete vision loss in that eye



Facts on Neurological Conditions and Vision

- About **50%** of people with **MS** will get **optic neuritis (ON)** - plaques along the optic nerve (National MS Society, 2026).
- **42-66%** of patients with Neuro-myelitis Optica Spectrum Disorder (**NMOSD**) experience ON
- With Myelin oligodendrocyte glycoprotein antibody-associated disease (**MOGAD**), **5%** of adults experience ON, **20-50%** of children experience ON



Reference Image: R

Symptoms of Optic Neuritis

Quick onset that progresses over a few days to 2 weeks

90% of people with MS experience eye pain that worsens with movement

Single eye visual acuity/clarity loss

Reduced contrast/color vision (Dyschromatopsia)

Exacerbated by heat in MS (Uhthoff's Phenomenon)

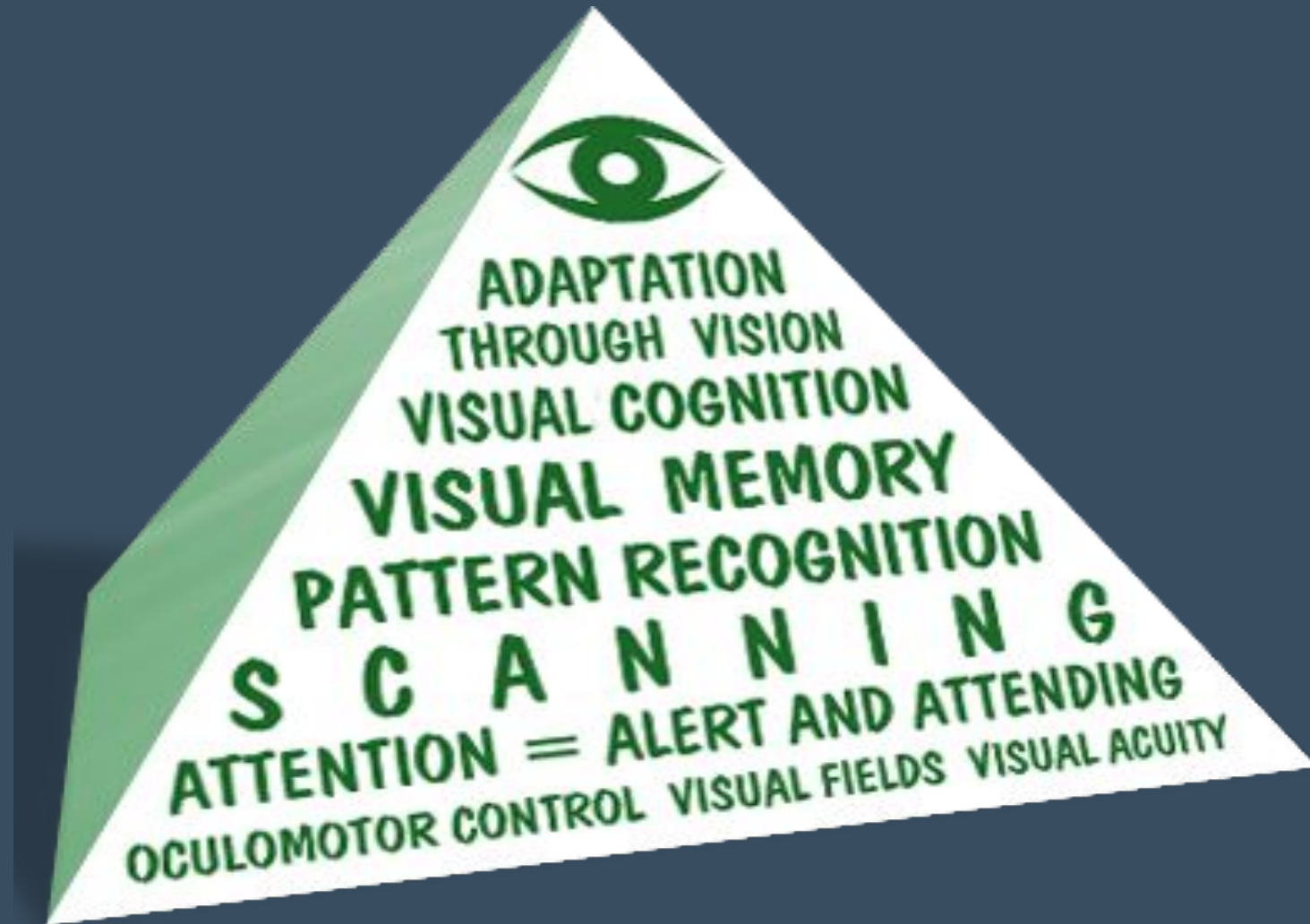
Increase of other symptoms such as sleep disturbance, mood changes, stomach upset, high blood pressure, hyperglycemia, and acne

Facts on Neurological Conditions and Vision

- Sixty percent of **Parkinson's** patients can experience (Parkinson's Foundation, 2020)
 - Double vision, especially to see up close (convergence insufficiency)
 - Blurry vision (can also be caused by PD medication, especially anticholinergics)
 - Trouble reading can occur (slowed eye movements to follow the lines of a page and trouble starting/ "freezing").
- **Progressive Supranuclear Palsy (PSP)** characteristics:
 - Difficulty with moving their eyes up/down (primary symptom resulting in diagnosis for almost all patients)
 - Jerky eye movements
 - Double vision
 - Abnormal eyelid movement



Mary Warren's Hierarchy to Visual Processing



Obtain a Detailed Visual History

- Is there a prior history of eye/vision health conditions?
 - Cataracts, glaucoma, diabetic retinopathy, macular degeneration, strabismus surgery, Lasik, monovision?
- Wears glasses and when? Are they working as well now as before neurologic incident?
- When was the last eye exam?

Visual History and Complaints

- What are the current symptoms/complaints?
 - Blurred vision (in which direction)
 - Diplopia
 - Losing/misplacing items
 - Missing words/letters when reading
 - Skipping lines during reading
 - Difficulty watching TV or using personal devices effectively

double vision can look like this:

double vision
double vision
double vision
double vision
double vision
double vision

Photo Reference: V

OT Vision Assessment

- Pupil reflex
- Eye alignment
- Visual Acuity
 - Eye dominance
 - Oculomotor control
- Visual Fields

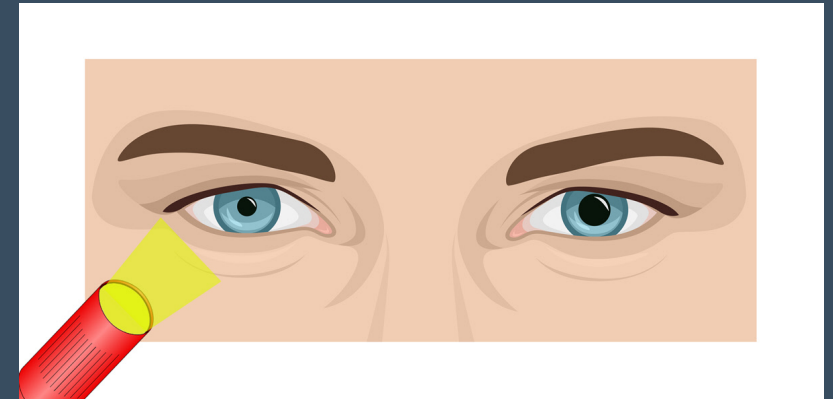


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Pupil Reflex/Eye Alignment

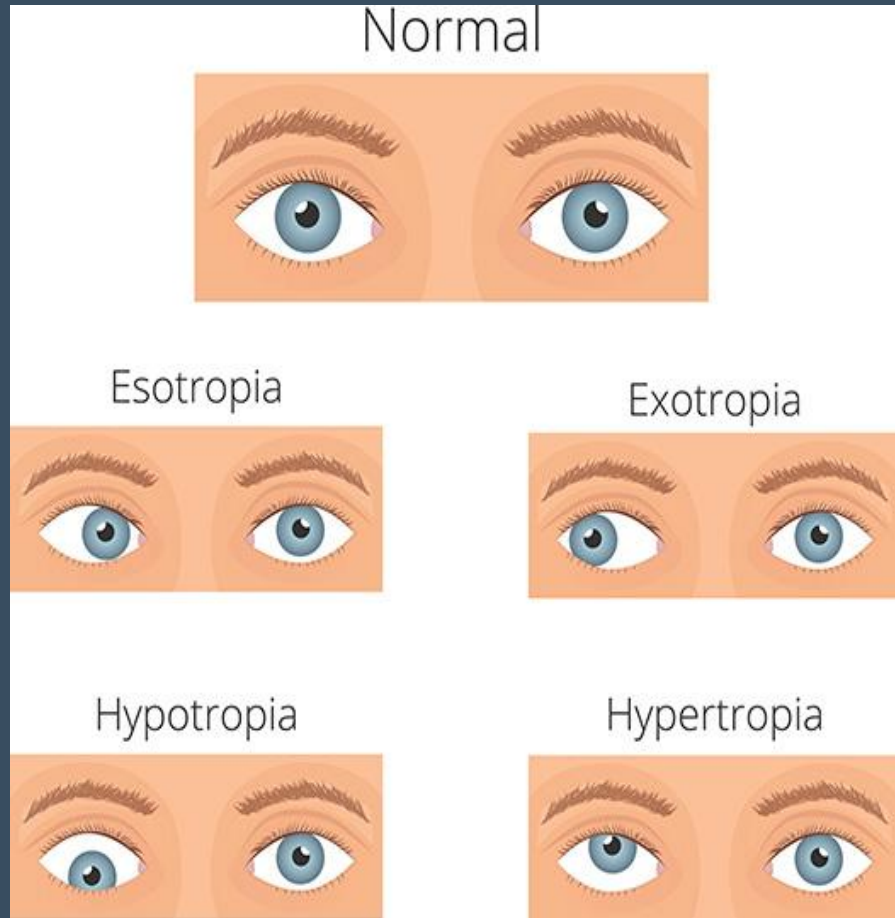


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- Pupillary Reflex: Reaction of pupil with light – constricts simultaneously with stimulus to one eye
- Eye Alignment: Symmetrical alignment of eyes at midline
 - Equality of sclera on each side of iris
 - Eye adducted, abducted, upward, downward

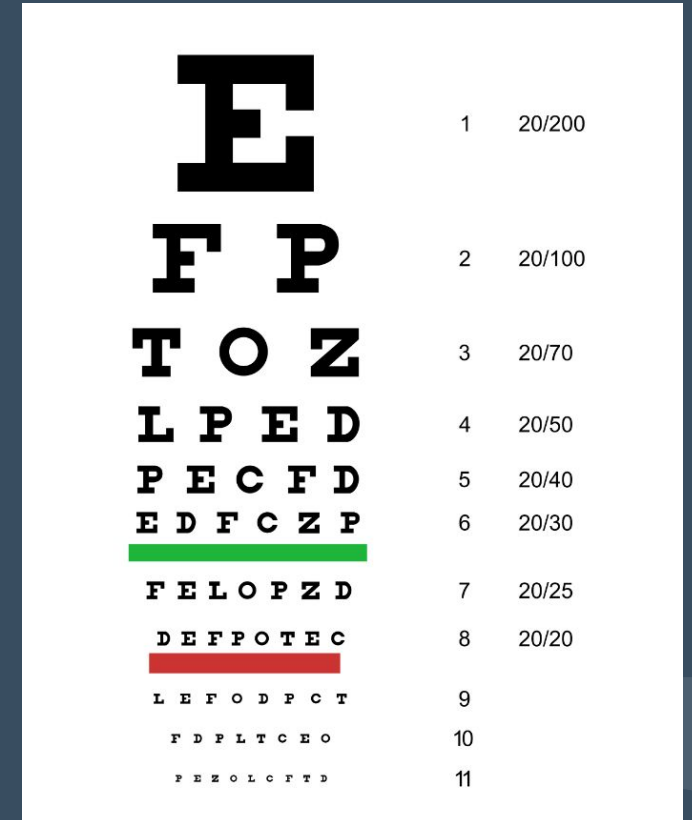
Visual Acuity Assessments

- Snellen charts
 - Near acuity – 14 inches away
 - Far acuity – 20 feet away
- Lea Symbols test
- Lea Number screener
- Warren Text Card - 16 inches away



Visual Acuity Procedure

- Distance: Initially tested at 20 feet
- Test monocularly then binocularly
- Begin at 20/40 line
- If patient has difficulty, isolate lines or use the Lea Symbols test
- Visual acuity is the last line where 50% or more of the letters are identified correctly



Reference F

Visual Acuity Interpretation

- Record ratio next to the smallest line read with errors noted up to 2 (i.e. 20/40-2)
- Numerator: testing distance at which stimulus is recognized
- Denominator: distance at which letter being viewed could be recognized by a patient with normal visual acuity (i.e. letter size)
- Criteria for referral is 20/40 or poorer

Treatment Interventions for Acuity Changes

- Look at accessibility settings on phone/tablet/computer as well as handouts provided (i.e. font size, contrast, dark mode, spacing , *font type*, etc) (more tech slides later)
- Encourage patients to wear their reading glasses (CLEAN) or use chart for options – non-prescription as eyes may have different acuity levels
- Recommend apps on phone (Phone/tablet Magnifier, Mag Lite) or phone camera use for magnification

Oculomotor Control

- The ability to move two eyes together to produce single vision
- Purpose- achieve and maintain foveation, to keep the object on the fovea of both retinas
 - Visual fixation
 - Pursuits
 - Saccades
 - Convergence



Visual Fixation

- The ability to locate, fixate and maintain eyes on targets in all visual fields at both near and far distances
- Procedure:
 - Place target in all visual fields at both near (16-20") and far (30"+)
 - Have patient locate with eyes and maintain for several seconds (3-5)

Visual Fixation Interpretation

- Record any:
 - Inability to locate, fixate and/or maintain fixation for more than several seconds
 - Fields where problems exist



Visual Fixation Interventions

- Reduce visual distractions/ “noise”
- Use larger targets vs small
- Find patient’s hobbies and use family members to aid in home tasks
- Consider occluding if diplopia present
- Sticky Note Simon



Photo Reference: G

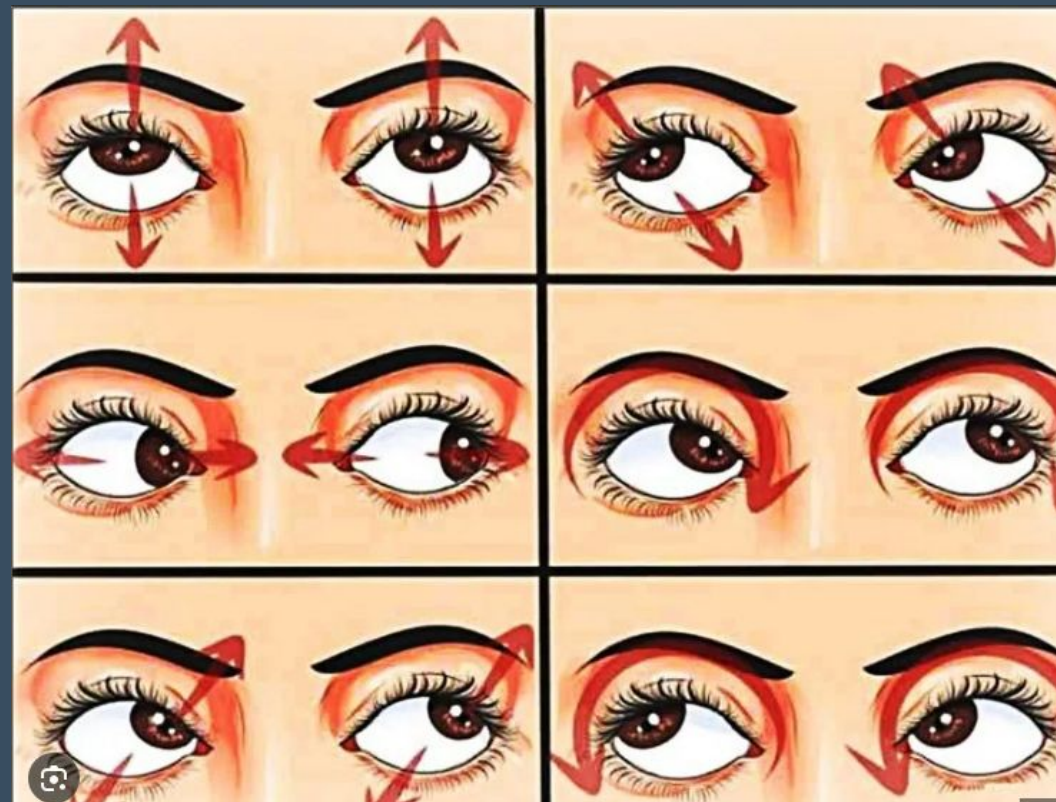
Pursuits

- Eyes smoothly follow an object in space, maintained on fovea, in all directions; eyes moving while head held steady
 - If the small eye movements could not keep up, the image would slip off retina and “fade”
 - The eye needs to keep pace with the moving object to keep it “fresh”
- Equipment:
 - Target
 - Eye patch



Pursuits Procedure

- Test monocularly and binocularly
- Place target 16"-18" from patient's eyes
- Move target in "H", "X", clockwise and counterclockwise "O" circular patterns
- Direct patient to follow target with eyes only
- If head movement noted, direct patient to keep head still



Pursuits Interpretation

- Note the following:
 - Visual attention span
 - Abnormal jerky eye movements
 - Head movements
 - Nystagmus particularly at midline (gaze evoked)
 - Difficulty crossing midline
 - Overshooting/undershooting/re-fixation



Pursuits Interventions

- Moving visual stimuli in clinic
 - Table tennis, various sized visual targets-rolling, bouncing
- Hand eye coordination with interactive component on screens/wall (i.e. BITS)



Treatment Interventions for Pursuits

- Reading tasks
 - Use of line guide/reading window
 - Use of finger to help with following line of text
 - Blocking out lower or upper space or eliminate visual clutter distractions
- Marsden Ball
- Scrabble/Card Hunting
- Trail Making



Saccades

- Sequenced rapid eye movements that move the fovea towards an object of interest – move rapidly
- Equipment
 - Two colored targets (Red and Blue pens, blocks, etc)



Saccades Procedure



Reference H

- Hold targets approximately 10" apart and approximately 16"-20" from the bridge of the patient's nose
- Direct patient to look at specific target upon command
- Ask patient to move eyes only
- Alternate between targets 3 times for a total of 6 fixations

Saccades Interpretation

Note

- Amount of head movement
- Undershoots/overshoots
- Ability to wait for verbal cue



Treatment Interventions for Saccades

- Split Hart Charts
- Blaze Pods
- Saccadic Fixator



Photo Reference: X

Convergence Procedure

- Convergence: Ability of the two eyes to work synchronously together
 - Hold penlight (or other object) at pt.'s midline, about 20 inches away from patient's eyes.
 - Slowly move the penlight toward the patient and ask when he/she sees 2 targets and/or target becomes blurry. Note and record this distance (blur point)
 - As you move towards the patient, Observe the eyes to determine whether the eyes stop working together (break point)
 - Move target out and away from break point to determine when patient again sees one object (recovery point)

Convergence Interpretation

- Convergence Norms:
 - Blur point : within 4-6 inches
 - Break point: within 2-4 inches
 - Recovery Point: within 6-10 inches

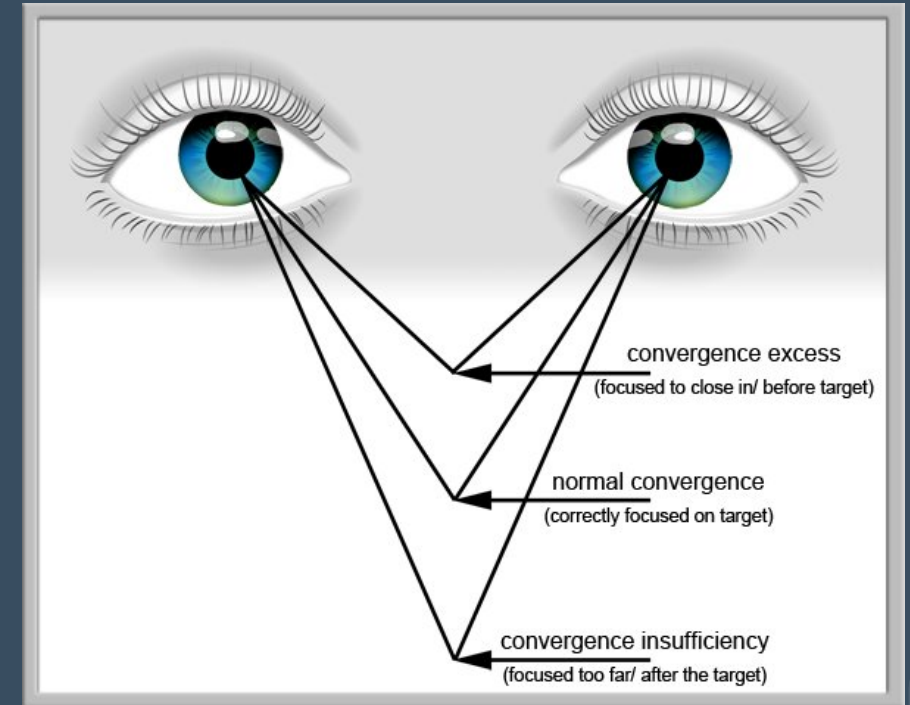


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Treatment Interventions for Convergence

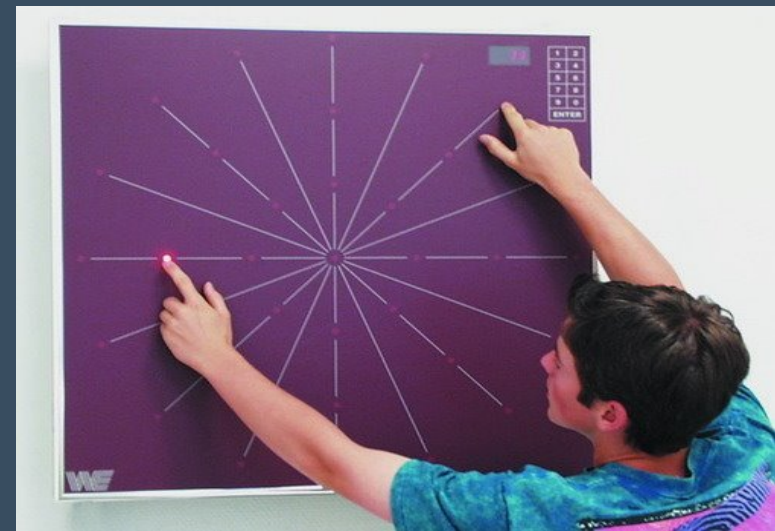
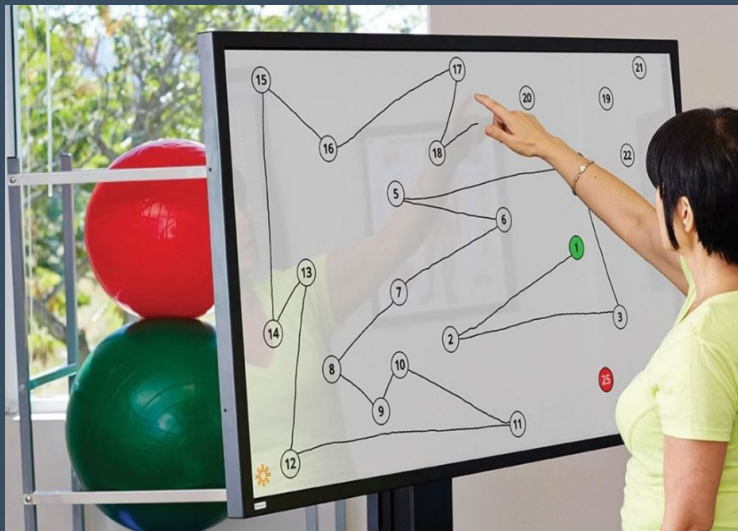
- Height and angle adjustments
- Distance and or placement of objects/materials
- Partial occlusion of eye
- Enlarged visual targets
- Brock String



Other Treatment Interventions

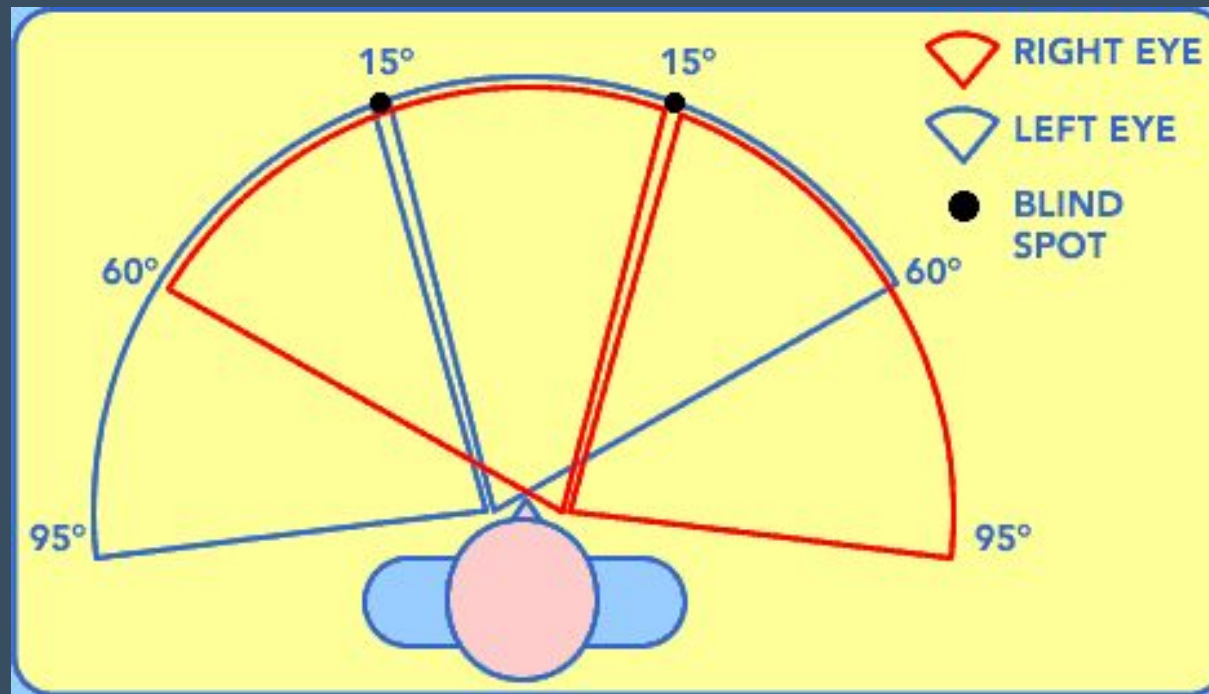
- Computer Orthoptics Programs
- Tranaglyphs
- Continuous Motion Exercises
- H, X, O Training
- Marsden Ball
- Pre-reading and use of reading windows
- BITS
- Dynavision
- Large space Trail Making and visual mazes/obstacle courses
- Low vision aids (i.e. magnifiers)
- Letter finds, word finds, newspaper exercises
- Split Hart Charts
- Blaze Pods
- Brock String
- Simon
- Partial Patching
- Scrabble/Card hunting
- Saccadic fixator: When using the fixator for oculomotor skills training instruct patient to keep head still and use eyes only to locate lights on the board

Photo References: J, K, L, M



Visual Fields

The space or range within which objects are visible when the eye is directed forward



Normal monocular field of vision

**What are some indicators Visual
Fields are affected?**



Testing Visual Field

- Confrontation
- AAO Red Dot
- 2-person kinetic testing
- Damato Campimeter



Confrontation Testing Procedure

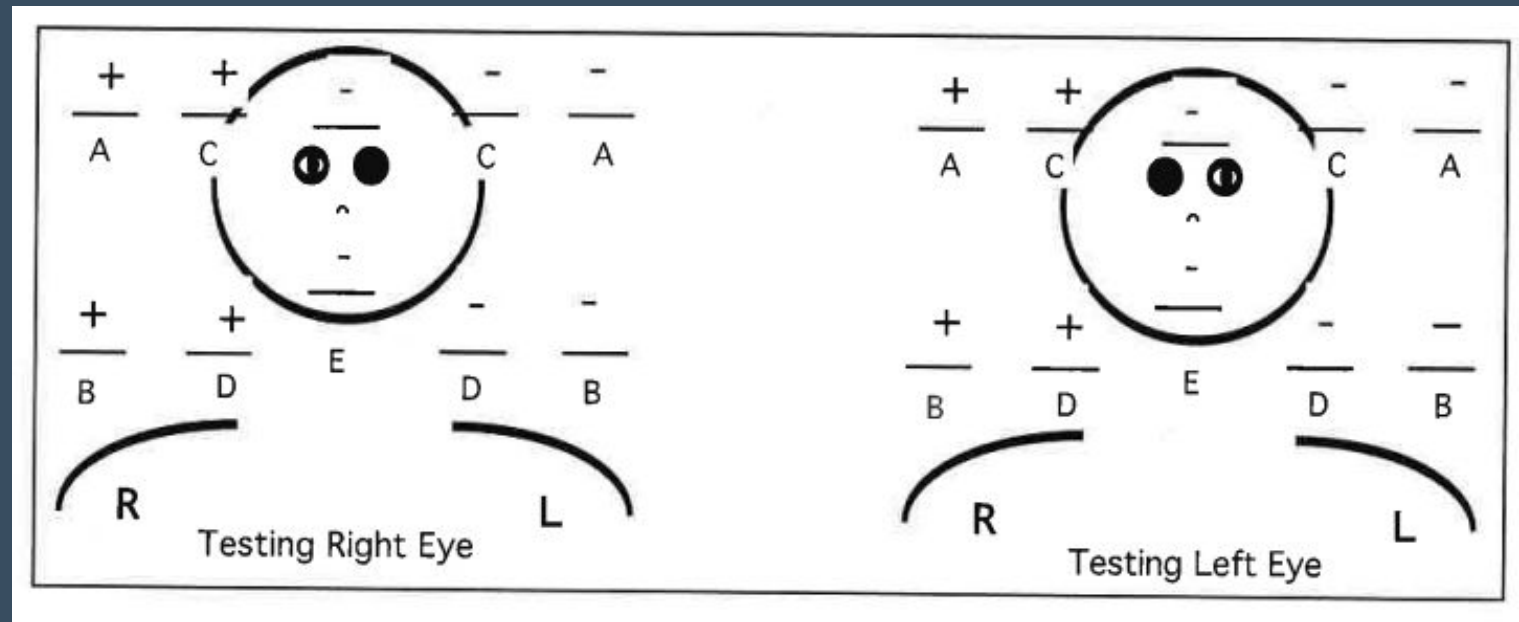
- Tested monocularly
 - Sit 3 feet away from patient
 - Ask them to cover one eye and you close the opposite eye.
 - Make sure you can see the correct number of fingers in your field
 - Hold stimulus, 1-2 fingers in each quadrant **static** position.
 - Instruct pt. to identify how many fingers.
 - Repeat for vertical and diagonal planes.
 - Repeat with opposite eye.



Red Dot Test

- Sit across from patient approximately 3 feet
- Occlude one eye with patch/occluder
- Hold Red Dot stick 20" from patient and test both sides of the visual field simultaneously (close opposite eye to check if you see the two stimuli as needed)
- Above head and at neck level present the stimuli several times and indicate if patient did not see the stimulus in any quadrant of vision

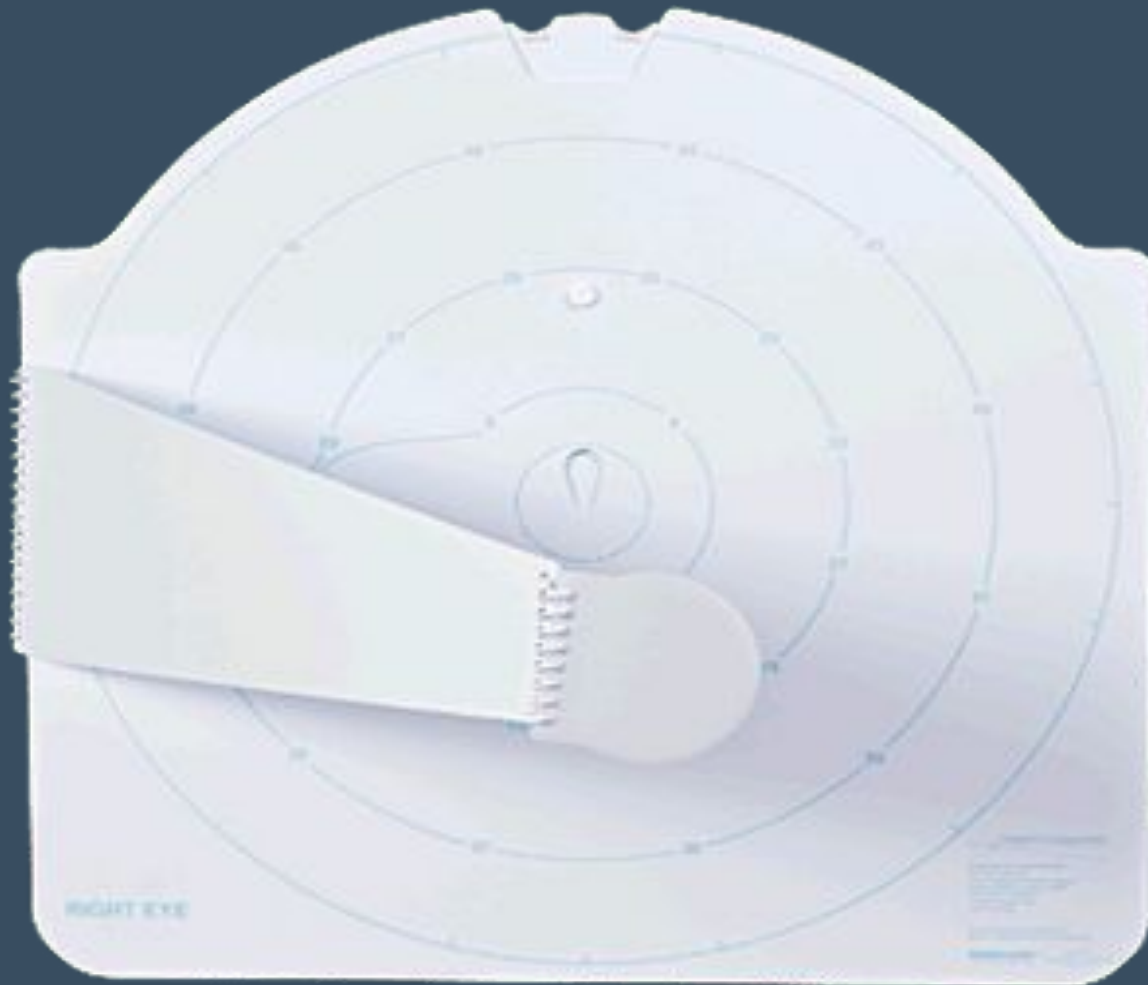
Red Dot Test



2 -person Kinetic Testing



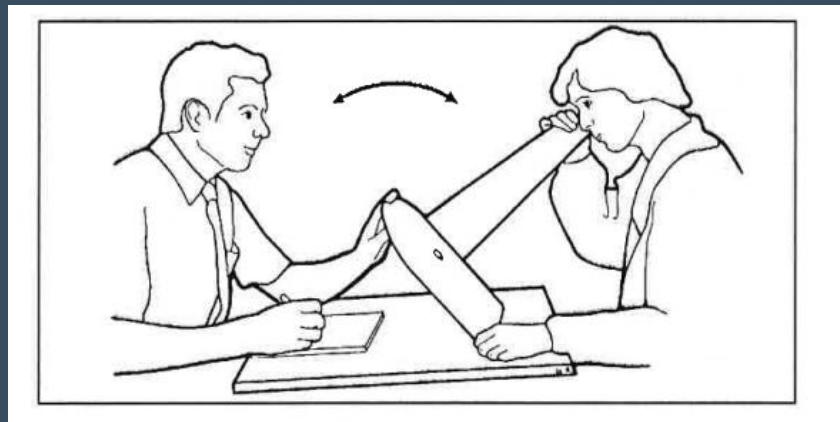
Damato Campimeter



- Rapid screening for peripheral vision loss – 30 points high contrast (dot is bold black) but other contrast options available, very helpful for early screening before HVF or with cognitive impaired patients/communication challenges

Damato Campimeter

- Quick to administer in various positions
- Client covers one eye with the arm or a patch at the appropriate distance. Cued to look at starting number.
- Client keeps focus on the number while tester turns the wheel at the top of the campimeter. Can also hold the dot in center if short on time or confused patient.
- If client sees the target dot = pass, if does, not mark x on the recording sheet. If unsure, try a second or third pass to confirm- make sure client is not moving eye off focus point.



Humphrey Perimetry vs Damato

Central 24-2 Threshold Test

Fixation Monitor: Blind Spot

Fixation Target: Central

Fixation Losses: 0/12

False POS Errors: 0 %

False NEG Errors: 9 %

Test Duration: 03:14

Fovea: 37 dB

Stimulus: III, White

Background: 31.5 ASB

Strategy: SITA-Fast

Pupil Diameter:

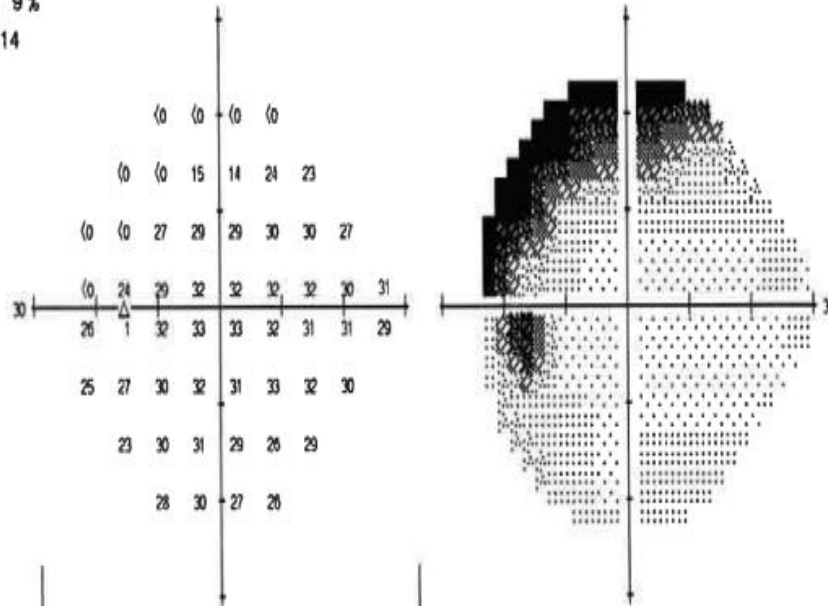
Visual Acuity:

RX: +4.50 DS DC X

Date: 09-21-2023

Time: 10:24 AM

Age: 56



Treatment Interventions for Visual Field Deficits (VFD)

- Most challenging is changing in the search pattern to compensate for the blind portion of the visual field
- Educate patient and family about perceptual completion and risks/ safety issues
- Allow patient to make safe, controlled errors to learn about visual field
- Use visual cues as needed especially with new challenges and for safety to prevent injury in home environment
- Increase head turn/ scanning to blind field to improve safety and allow for more processing time



Is it a Visual Field Deficit, or Spatial Neglect, or Both?

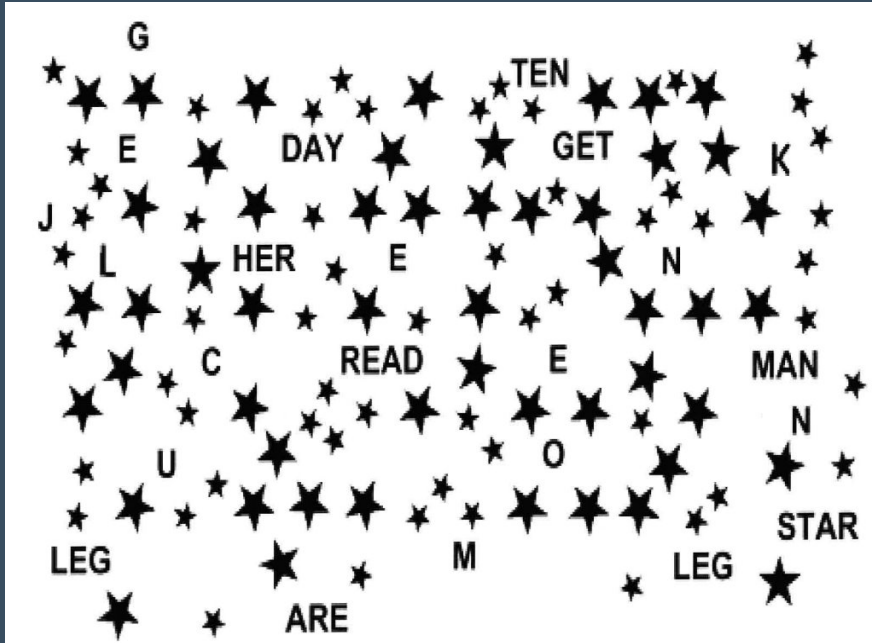


Other screening tools for neglect

- There is support for functional assessments (CBS Catherine Bergego Scale for Left neglect) vs paper pencil tests (Star Cancellation/ Line Bisection Tests).
- In small sample of 12 patients R-handed with R hemispheric Stroke- 1 with L HH :100% accuracy detection of neglect with the functional tests vs 50% accuracy with paper/pencil

Grattan, E.& Woodbury, M. (2017) Do neglect Assessments detect neglect differently?
AJOT, 71, 7103190050

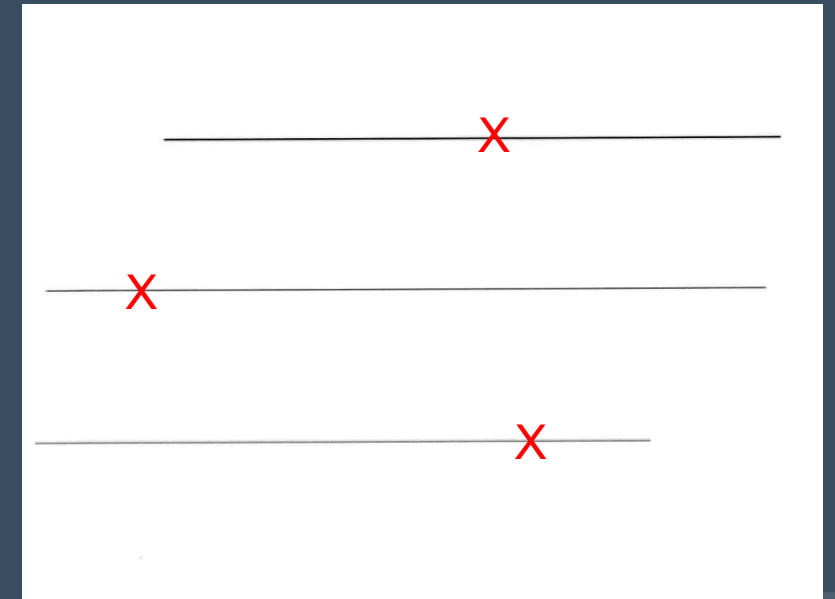
Star Cancellation Test



- **Purpose:** Determine intact visual fields and visual attention
- **Tools:** Pen, Star cancellation sheet
- **Procedure:** Place star cancellation sheet midline and anteriorly to patient seated at table. Provide pen and ask patient to cross out all SMALL stars.
- **Interpretation:** Score number of omissions and error on both right and left sides as well as time required for task completion.
 - There are 27 small stars on the left side and 27 small stars on the right side

Line Bisection

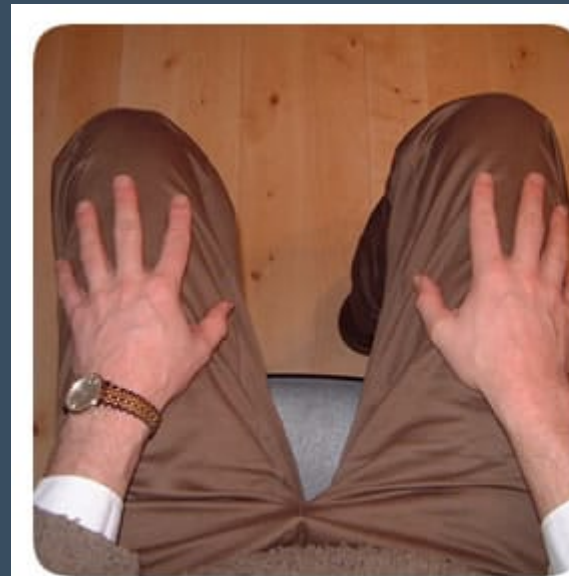
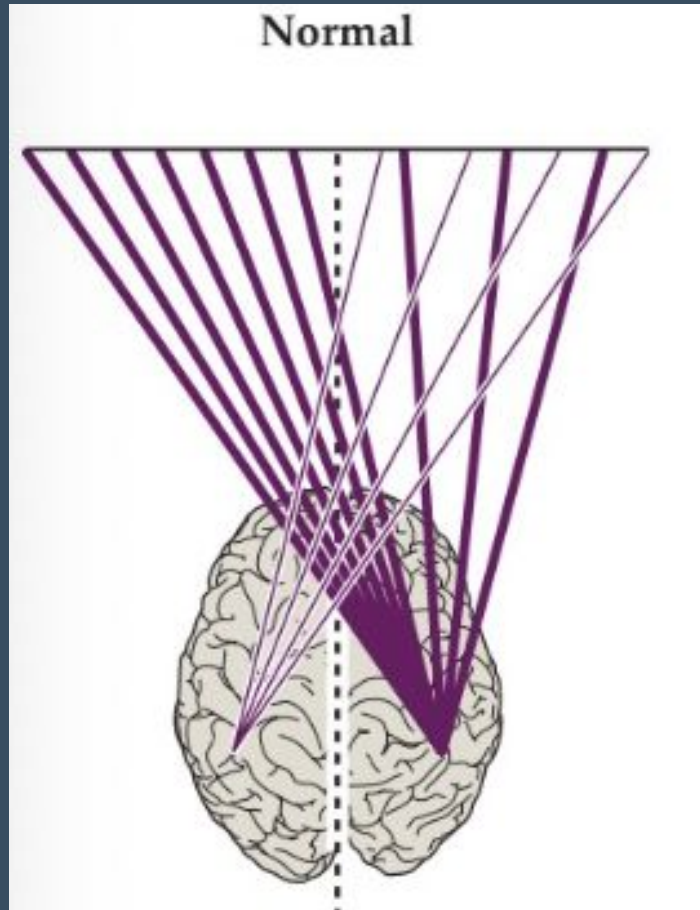
- **Purpose:** Determine intact visual fields and visual attention
- **Tools:** Pen, Line Bisection sheet
- **Procedure:** Place line bisection sheet midline and anteriorly to patient seated at table. Provide pen and ask patient to cut each of 3 lines down the middle.
- **Interpretation:** Score each line based on deviation from midpoint noting if $>.5$ " or $<.5$ " to right or left of midline.



CBS -Neglect Assessment

Forgets to Shave/groom L side of face	Rate each area: 0= No Difficulty 1= Mild Difficulty 2= Moderate Difficulty 3= Severe Difficulty
Difficulty with adjusting sleeve on L side	
Forgets to eat food on L side	
Forgets to clean L side of face after eating	
Has difficulty looking to the L	
Forgets about L part of body	0-10 Mild Neglect 11-20 Moderate Neglect 21-30 Severe Neglect
Difficulty in paying attention to noise on L side/people on L side	
Collides with objects or people on the L	
Experiences difficulty finding his/her way toward the L	
Experiences difficulty in finding personal belongings on L	

Why is Left Spatial Neglect more Common?



Normal view



Neglect and Anosognosia

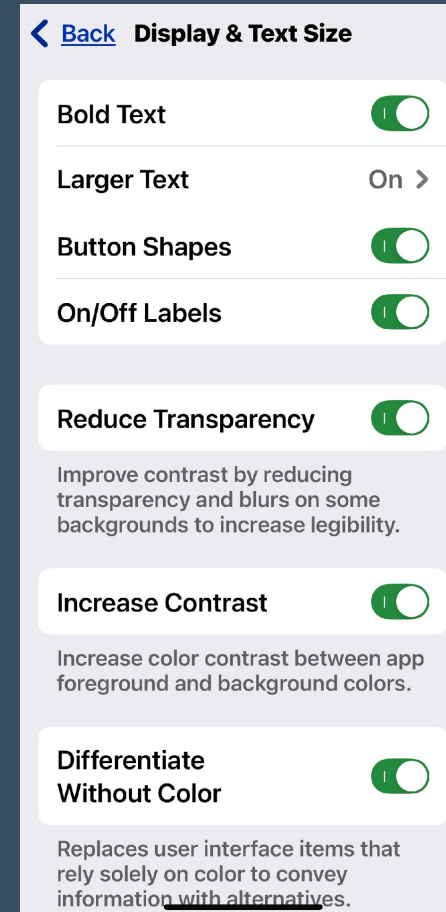
Neuro-Ophthalmology vs. Neuro-Optometry

- Neuro Ophthalmologist
 - Diagnoses and treats neurological and systemic diseases that affect sight.
 - Performs surgery
 - Some will prescribe specialized lenses and prisms.
 - Can be a waiting period before evaluation 3-6 months, some prefer 6 mo follow up
- Neuro Optometrist
 - Diagnostician
 - Experts at prescribing prisms, lenses, optics, and specific therapies
 - Prescribes medications
 - Focused on restoring vision and visual processing to improve a patient's functional capabilities. (Can be confusing when teaching compensatory strategies and may not prefer to refer back to OT)
 - Some vision treatments are private pay only
- Optometry/Ophthalmology
 - Screen visual fields, overall eye health, most have access to Humphreys Zeiss, can prescribe lenses for acuity changes, some prisms for diplopia
 - May have established relationship with provider and may be easiest to schedule post acute discharge

Low Vision Technology at your Fingertips

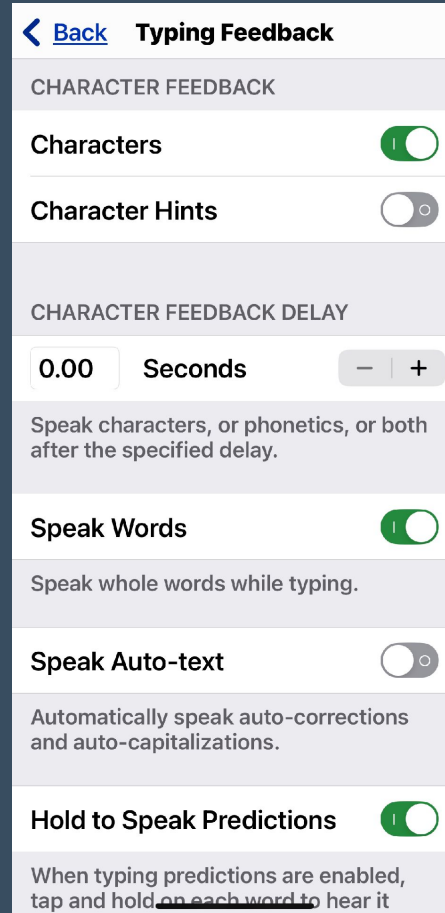
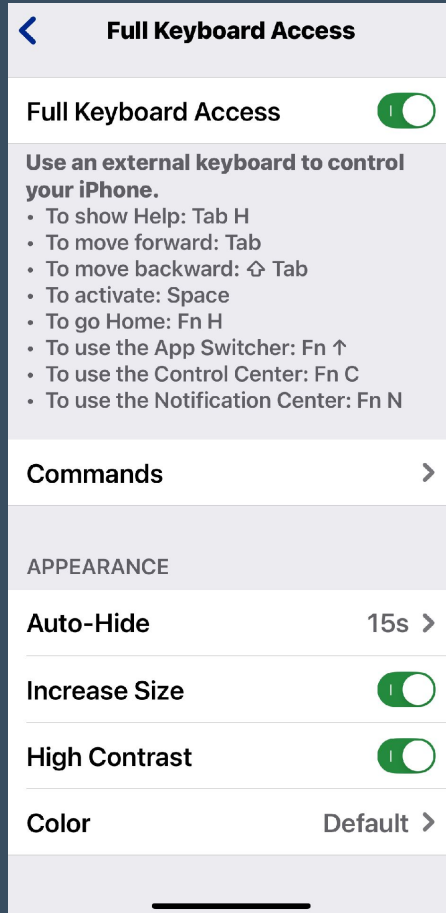
- Accessibility Display in Iphone/iOS

- Bold Text
- Larger Text
- Button Shapes
- On/Off Labels
- Reduce Transparency
- Increase Contrast
- Differentiate without color

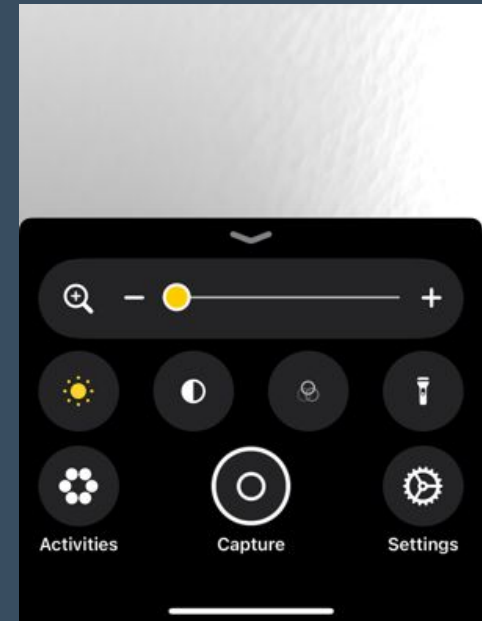
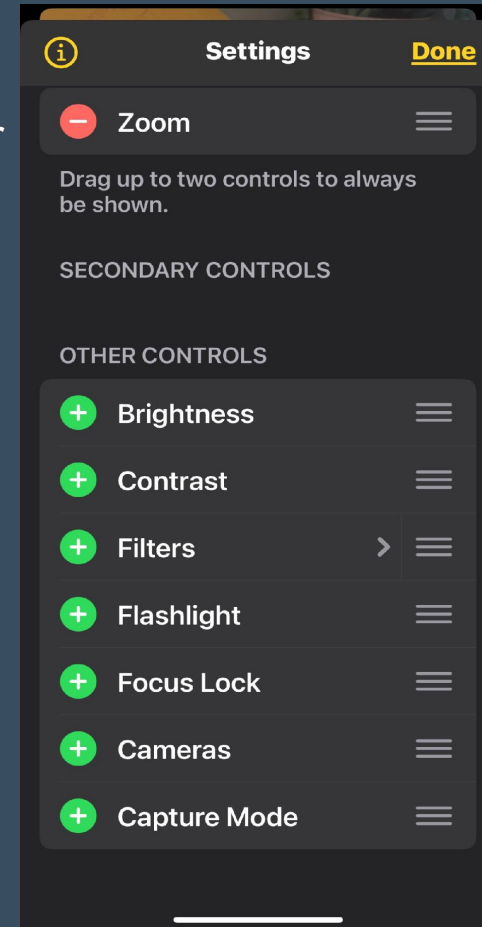


Keyboard and Magnifier iOS settings

Slide on to increase size & contrast

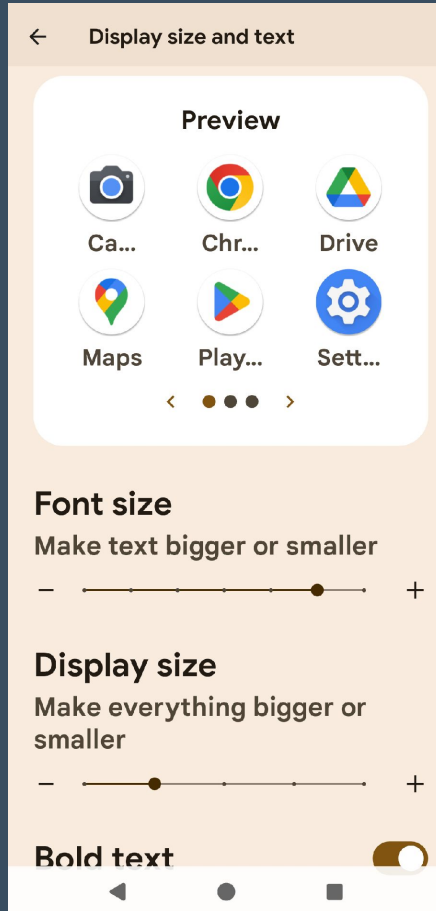


Magnifier settings



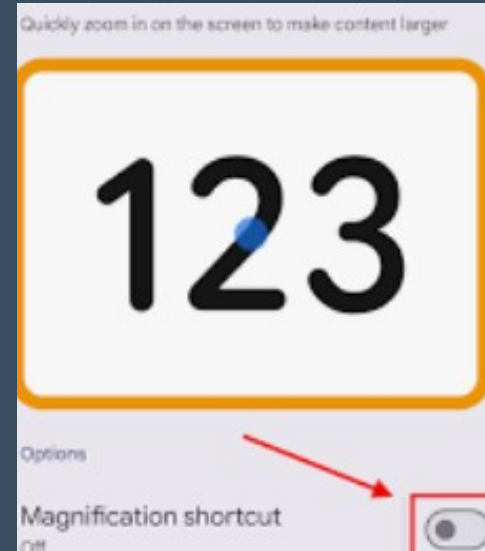
Android Phone Settings

Accessibility Menu

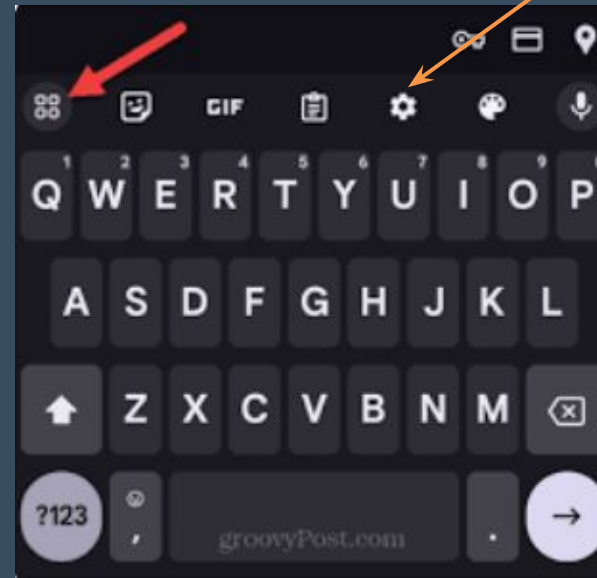


Add magnifier button to bottom of screen

Go to Keyboard and increase size



Go to Settings for more features including color, etc



Smart Glasses



- Describing environment
- Reading/summarizing text
- Hands free video/photos
- Scanning QR codes
- Connects with apps and social media
- AI capability

Community Resources

- Cleveland Sight Center
- Cincinnati Association for the Blind and Visually Impaired
- Sight Center of Northwest Ohio – Toledo
- United Disability Services - Akron
- Bureau of Services for the Visually Impaired
- Opportunities for Ohioans with Disabilities
 - Vocational Rehab
- Ohio Library for the Blind and Print Disabled
- United Disability Services
- Family Caregiver Alliance
- National Federation of the Blind
- Driver's Rehab and Bioptic Driving
- American Printing House for the Blind
- Support Groups
- Hadley Institute
- Mather
- Eye2Eye
- Be My Eyes App
- Seeing AI App
- Siri/Google Assistant
- Smart Glasses
- American Council and Foundation for the Blind

Questions regarding role of OT,
screens, treatment interventions or
community resources?



Patient Case Studies



Case Study #1 – LM OT eval

- Case Study: 76 y/o M presents with left posterior midbrain CVA 1/9/2024 and no significant PMH. Seen initially after CVA by IRF OT eval 1/12/24, homecare eval 1/31/24, OT OP eval 2/6/24
- Visual History:
 - Glasses for driving and distance with cataract removal in R eye July 17th, 2023
- Initial evaluation visual complaints
 - Glasses not performing as well as prior to CVA, primarily for L eye; difficulty seeing L side, impaired depth perception, and impaired near/far accommodation
- Observations:
 - Exophoria of bilateral eyes (L>R) with spontaneous<gaze evoked L eye nystagmus and L eye ptosis with increased squinting noted during engagement in sustained visual attention to accommodate for noted diplopia

Case Study #1 – LM Inpatient Vision Eval 1/16/24

- When testing fields without glasses, noted to be intact
- Pursuits: Difficulty crossing midline and Impaired
- Gaze Evoked Nystagmus: Left gaze (nystagmus with L eye)



Case Study #1 – LM Inpatient Vision

Eval 1/23/24

- Glasses: distance only
- Fixation: **Impaired: R eye tracks L but does not stay on target, L eye horizontal nystagmus end gaze to the L**
- Visual Fields: **Impaired left: R eye-L upper and lower quadrants impaired plus far R upper, L eye-R and L upper quadrants impaired**
- Pursuits: **Impaired: R eye cannot track past midline to the L, L eye cannot track past midline to the R, assessed monocularly, but bilateral impairments**
- Saccades: **Impaired: R eye cannot track past midline to the L, L eye cannot track past midline to the R**
- Saccades Test: **Difficulty crossing midline**
- Eye Alignment: Exophoric L eye
- Gaze Evoked Nystagmus : **Left gaze**
- Clock Drawing: Draws circle and 4 illegible numbers at location of 12,3,6, and 9
- Star Cancellation Test: L eye closed throughout, cancels letters in all quadrants, but very disorganized scanning strategies
- Additional Comments: **L eye lid opens ~50-60%. Worth 4 Dot indicative of L eye suppression. Severe convergence insufficiency suspected, R eye can converge, but L eye no convergence, nystagmus to the L with convergence attempts**

Case Study #1 – LM OP Vision Eval 2/6/24

- Convergence: **Unable to converge L eye**
- Saccades and Pursuits binocular:
 - **Bilateral eyes unable to track past midline to nasal fields (binasal heteronymous hemianopia)**
 - **R eye undershooting during monocular testing to RUQ and RLQ.**
 - **Assist required for maintaining midline positioning of head due to L cervical rotation to look out of R eye solely and cueing to keep L eye open 2* squinting**
- Pencil and Paper Tasks (Clock Drawing, Star Cancellation, and Line Bisection Testing): Pt. with L cervical rotation to look out of R eye solely and cueing to keep L eye open 2* squinting; however, noting R vertical superimposing diplopia

Case Study #1 – LM Neuro-Ophthalmology

Vision Eval 8/28/24

- Results:

- Pursuits: R eye jerky, full range; Left eye with abduction and elevation restriction; similar on saccades
- Fixation: Poor
- Unable to converge L eye
- Acuity: R: 20/25, L: 20/50
- L eye cataract noted on exam
- 3rd CN Palsy
- Presbyopia/Myopia bilaterally with L eye astigmatism

- Recommendations:

- Ongoing taping as completed by therapist with goal of targeting further sensory eye-based activities and eye calisthenics to slowly reduce tape use.

Case Study #2 - DS

- Male , 65, retired Fire Fighter works PT, presents right posterior circulation PCA territory infarct involving the right thalamus, right medial parieto-occipital and temporal lobe was seen by OT on 12/22 discharged home and assessed in outpatient OT on 1/10.
- Visual History:
 - Glasses for driving and reading; mild cataracts, myopic astigmatism both eyes

Initial evaluation visual complaints

Patient is bumping into items on L side, difficulty with hand eye coordination, navigating spaces outside home, concerns about return to work 20 hrs per week for city fire inspection and needs to drive to sites

- Observations:

Limited oculomotor movement to the L both eyes , fixation difficulty to the L, decreased head turn to L, scanning to the L last on scanning screens, can verbalize vision changes

Case Study #2 – DS Inpatient Eval

- Pt completes functional transfers with S
- Functional mobility during ADLs with SBA
- Challenges noted with L visual scanning and peripheral vision
- Trail making A test used pt missing numbers on L side and having trouble scanning for closely spaced words
- Inpatient OT recommended outpatient neuro OT with vision focus

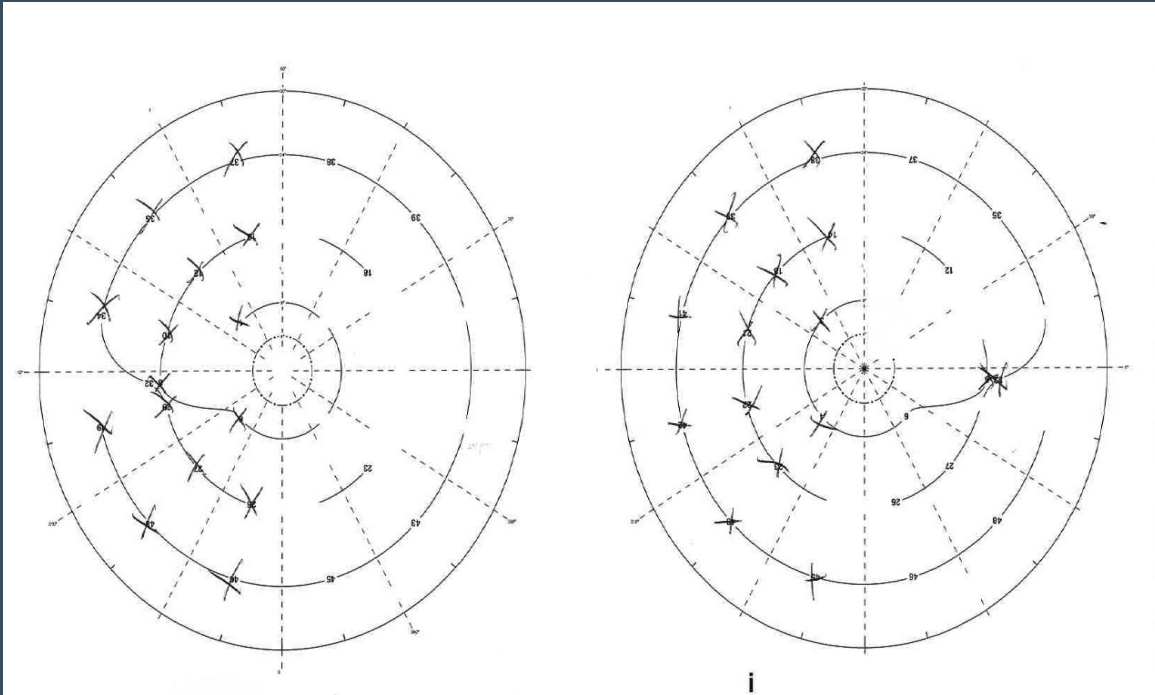
Case Study #2 DS Outpatient Eval

- Corrective Lenses: Wears glasses driving
- Binocular: 20/50
- Near and Reading acuity: 20/25
- Contrast Sensitivity: WFL
- Right Eye: Acknowledged 3/4 stimuli not LUQ
- Left Eye: Acknowledged all stimuli. However, reports unclear mostly with LUQ
- Dynamic 2 person VF screening - pt noted stimuli with equal distance both eyes positions symmetrically? No scanning
- Double Stimuli: Failed to Acknowledge- L side missed
- Pursuits: Decreased Speed
- Saccades: Decreased Speed

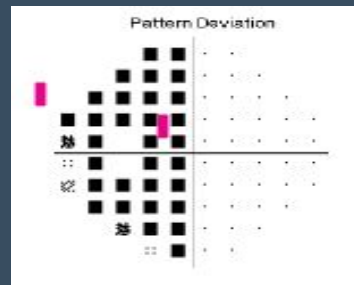
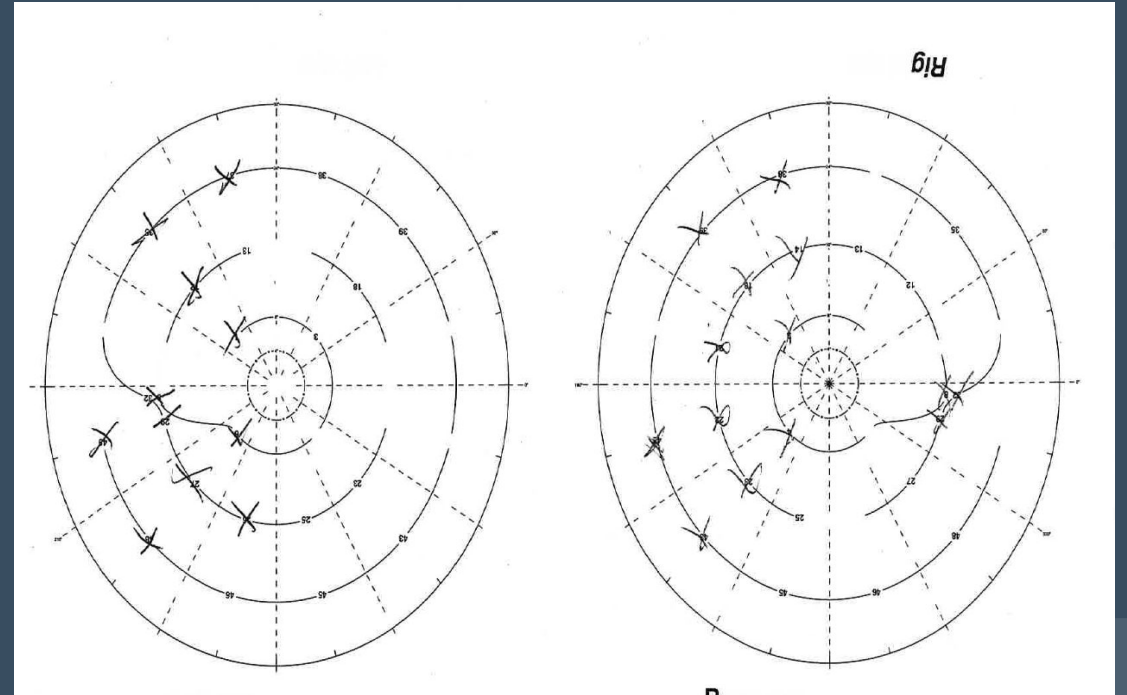
Case Study #2 DS Outpatient OT Damato

Campimeter

Evaluation 1/10/25



Progress report # 2



5/25/25
Humphreys L
eye pattern
deviation

Case Study #2 DS Goals

Pt will demonstrate compensatory strategies to improve visual field deficit/neglect with IND.

Pt will ID items in area of VFD with no cuing during clinic tasks.

Pt will educate family and friends about VFD in order to improve safety in the home and community.

Pt will demonstrate organized search patterns to improve safety in home and in the community at IND level.

Pt will increase reading tolerance with high technology and low technology modifications PRN up to 10 mins.

Pt will complete home program as recommended to aid in neuromuscular re-education to improve reading saccades and increase safety using available vision.

Pt will demonstrate safe lane management and reaction to hazards on L side with driver's simulation in prep for driving eval.

Case Study #2 DS Treatment

- Eye stretches to the L with use of mirror for feedback
- Educated patient and family about communication with VFD including use of hearing aids (not optional)
- Head turns to L increase FOV and scanning patterns down to up L side for safety for home community
- Adjustments to phone – dark mode, slight increase in text to reduce how many words across screen
- Saccades and smooth pursuits- reading tasks, scanning, toss/catch, table tennis, target reaching with L hand, ID targets on floor/ wall with laser pointer
- Functional tasks – looking around building for fire extinguishers, alarms, signs
- Driving simulation- Lots of rehearsal with hazards on the L side – construction drive, cars pulling out from L, L turns with pedestrians and oncoming traffic, busy school zones with parked cars on the side – progression from limited scanning on L side (did not realize there was a screen on the L side nor seeing hazards to brake) to 0 collisions
- Total treatment 9 sessions before transfer to Christina - CDRS

Case Study #2 DS Driving Evaluation

Clinical Evaluation

- Vision Screening
 - VA 20/20 OS, 20/20 OD, 20/20 OU
 - Lateral phoria: Pass
 - Depth Perception: Pass
 - Peripheral Vision: Within Legal Limits
 - Pursuits: WFL
 - Saccades: WFL
 - Convergence: WFL
- Cognitive Perceptual skills
 - Short Blessed: 0/28
 - Trails A and B: 35 sec and 85 sec no errors
 - Clock Draw: 8/8
 - Maze Task: 38 seconds with 1 error

Behind the Wheel Evaluation

- Completed drive in low traffic and high traffic areas, including interstate, neighborhoods and frequented routes for work
- Deficits anticipated due to diagnosis: poor lane positioning to opposite side, overcorrection of errors, missing hazards to the left, difficulty merging to the left
- Deficits noted: None
- Outcome: Safe to return to independent driving with no restrictions
- Equipment recommendations: blind spot mirrors, extended rear view mirror

Case Study #3

- This is a 55 year old female who presents to the ED with: 6 months of lightheadedness, weakness, fatigue, fogginess in head. New onset of bifrontal non-positional headache that started 2 days ago. Saw PCP the day before and noted elevated lipids. No history of cardiac workup in past. Very active, working full time as a lawyer, runs marathons
- Imaging shows a large T2/FLAIR abnormal mass in the left mesial parietal lobe with some areas of enhancement/necrosis.
- S/p CRANIECTOMY EXCISION TUMOR, TREPHINATION, BONE FLAP CRANIOTOMY, SUPRATENTORIAL, EXCEPT MENINGIOMA (Left: Head)

Case Study #3 Acute Care Eval

Acute Care OT Evaluation

- D/C Recommendations: Home with home OT w/low vision intervention; may progress to OP
- Pt is AxO x4 and delirium (-). Demos some sequencing and processing deficits requiring verbal cues for assist (putting toothpaste on finger versus brush) but pt aware of deficits. SBA - CGA for functional mobility with no AD with some scissoring and R side field deficits requiring cues for safety.



Noting what the OT observed, what tests would you complete as part of your vision screen?

Who would you refer to once discharged?

Case Study #3 Outpatient Eval

OP OT Evaluation

- Vision Deficits: Wears corrective lenses, Hemianopsia, Field deficit, Visual acuity deficit, Nystagmus, Smooth Pursuits
- Corrective lenses: eye glasses
- Visual acuity deficit: right lower quadrant
- Visual Fields: right lower quadrant
- Smooth Pursuits: 1 beat of nystagmus tracking target to the right
- Hemianopsia: Right Lower Quadrant, Compensates independently
- Goal: "I want to be able to drive"

Neuro Ophthalmology Evaluation

- Pt feels that her VA has declined since "all of this has happened," OS>OD. Notes that her VA isn't blurred, even if it has declined. Would like an updated Rx. Pt isn't currently driving, is scheduled for testing in order to be able to drive again. Doesn't have any difficulty with reading.
- Notes that surgery caused a visual field deficit, she hasn't been seen for it prior to now. The missing VA is in her OD.
 - R inferior homonymous hemianopsia central sparing
 - not affecting central vision
 - not taking any anti-seizure medication now
 - Nuclear sclerotic cataract of both eyes

Case Study #3 Driving Evaluation

- Corrective Lenses: Wears glasses / contact lenses for driving
- Distant Acuity:
 - Binocular: 20 / 20
 - Right: 20 / 20
 - Left: 20 / 20
- Lateral Phoria: Pass
- Functional Depth: Pass
- Contrast Sensitivity: WFL
- Peripheral Vision: Within legal limits for driving
 - Right Eye: Acknowledged all stimuli.
 - Left Eye: Acknowledged all stimuli.
 - Double Stimuli: Acknowledged
- Pursuits: WNL
- Saccades: WNL
- Convergence: losses fixation with left eye
- Nystagmus: May be present with Pursuits
- Diplopia: No complaints
- Cataracts: Yes OU
- Bells Cancellation: 104 seconds with 3 misses (BITS)
- Short Blessed: 7/28
- Clock Drawing: 7/8
- Trails Making A and B: 49 sec and 160 sec (norms 38 sec and 98 sec)
- Maze Task: 170 sec with multiple errors

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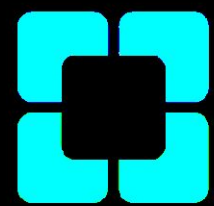
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Questions?

**EVALUATION:
Occupational
Therapy's Valuable
Role in Visual
Screening &
Interventions**



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