LOW VISION 101: VISION REHABILITATION FOR THE OLDER ADULT
Financial Disclosures

- No relevant financial disclosures or commercial interests related to the content of my presentation.
What defines low vision?

- Visual impairment that is not correctable through surgery, glasses or contact lenses.

- Any visual loss that effects a person’s ability to perform functional visual tasks.

- How does Medicare define a visual impairment?
Low Vision at a Glance

- 1 in 28 Americans over the age of 40 have low vision
LV is caused by eye diseases like:

- Macular Degeneration: 2.07 million Americans (By 2050 expected to double to 5.44 million)
- Diabetic Retinopathy: 7.6 million Americans
- Glaucoma: 3 million Americans
- Stroke
- Congenital disorders
What types of defects result in vision impairment?

- Scotomas
- Decreased contrast sensitivity
- Field Defects-Central or Peripheral
- Decreased Visual Acuity
- Binocularity Issues
Scotomas
Decreased Contrast Sensitivity
Age Related Macular Degeneration

- A disease that blurs the sharp, central vision you need for “straight-ahead” activities such as reading, sewing, and driving. AMD affects the macula, the part of the eye that allows you to see fine detail. AMD causes no pain.

- Two types of ARMD:
  - Dry
  - Wet
The Macula

- Part of the retina
- Located at the center
- at the back of the eye.
- Responsible for sharp, clear detail and color vision.
- The only part of the eye which has capability of 20/20 vision.
The Macula

- Fovea - the absolute center of the macula – 20/20
- The further away you go from the fovea the less resolution capability and decreased acuity.

- 1mm from center = 20/50
- 2mm from center = 20/200
Dry AMD

- Most common
- 80%-90% of AMD is dry.
- No treatment available
Wet AMD

- Less Common
- 10 - 20%
- Tends to be more severe and can progress quickly if tx is not sought
What is Wet AMD?

- A degeneration of the central retina
- Leakage of blood or serum
- Damage to retinal nerve cells
- Nerve cell death
- Can dry ARMD progress to wet?
  - Yes
- Treatment is available: injections
Effects of AMD

- Affects central vision
- Creates scotomas
- Creates blur
- Creates distortion
- Reduces ability to see detail
- Reduces color vision
- Increased need for light
Scotomas

- **Dense scotomas:**
  - Absolute blank spots in the central vision

- **Relative Scotomas:**
  - Areas of decreased sensitivity in the central vision
Scotoma Identification

- Are all scotomas the same?
  NO

- Different sizes
- Different shapes
- Different locations
- May be different between two eyes
Risk Factors for AMD

- Age---usually occurs after 50
- Hereditary---children of parents with AMD have 15% greater risk
- Gender---females more than males (due to increased life span)
- Light iris color/European descent
Risk Factors

- Sunlight---UV and blue light
- HTN
- Malnutrition-Bad Diet
- Smoking
- Poor Circulation
What can you do?

- Avoid smoking
- Exercise regularly
- Maintain normal blood pressure and cholesterol levels
- Eat a healthy diet rich in green, leafy vegetables and fish
You know you are an OT when you can justify trips to the casino as a way to increase ROM, strength, cognition and social emotional well being.
Diabetic Retinopathy

- Diabetic retinopathy occurs when there is damage to the small blood vessels that nourish tissue and nerve cells in the retina.
- Create multiple scattered central scotomas.
- Decreased acuity and contrast sensitivity.
- Fluctuating vision in response to changing blood glucose levels; vision can change from day to day, or from morning to evening.
Diabetic Retinopathy
Diabetic Retinopathy
Stroke (CVA)

- Field Loss
  - Quadrantanopsia
  - Hemianopsia
- Binocular defects
- Contrast sensitivity issues
- Spatial organization problems
- Balance issues
- Mobility
Stroke (CVA)
Hello, it's me.
(whoops, forgot about your left neglect)

Hello from the other siiiiiiide
Glaucoma

Too high of an internal pressure does not allow adequate nourishment of the optic nerve and retina.
Glaucoma

- Peripheral and central field loss
- Advance glaucoma causes field defects which encroach upon central visual field
- Decreased acuity
- Extreme decrease of contrast sensitivity
- Light/glare sensitivity
Glaucoma
Occupational Therapy Evaluation

- Orders required from MD or OD to begin OT
- Must meet criteria of Moderate visual impairment (worse than 20/70) in better eye or have VF defect
- Clinic evaluation
- In home assessment/treatment
Clinic Evaluation

- Diagnosis
- Visual acuity/visual fields
- Contrast sensitivity
- Glare sensitivity
- Scotomas
Testing

- MN read
- LEA contrast sensitivity
- California Central Tangent Visual Field
- Eccentric viewing assessment and PRL training
- Self-Report Assessment of Functional Visual Performance (SRAFVP)
My father takes me to school every day in his big green car.

Everyone wanted to go outside when the rain finally stopped.

They were not able to finish playing the game before dinner.
MN Read

- Measures:
  - Reading Acuity - smallest print that the patient can read without making significant errors
  - Maximum reading speed - reading speed when reading is not limited by print size
  - Critical print size - smallest print size that the patient can read with maximum speed
  - Pattern of errors
MN Read

Performing the test:

- Chart should be evenly illuminated with no shadows or glare.
- Testing distance is 40 cm
- Pt should read the sentences out loud
- Mark on the score sheet any words that are missed or read incorrectly
- Each sentence is timed and recorded
- Encourage the pt to continue reading until the cannot read ANY words in a sentence
- Encourage the pts to guess, even when they believe the test in unreadable.
MN Read

- Chart design
  - Each sentence contains 60 characters, printed on 3 lines with even left and right margins.
  - 2\textsuperscript{nd}-3\textsuperscript{rd} grade reading level
Patterns to looks for:

Right side scotoma (MN read):

Went -> We
Circus -> Circle
Everyday -> Every
Wanted -> Want
Outside -> Out
Patterns to looks for:

Left side scotoma (MN read):

The -> he
Father -> mother
Snow -> now
Game-> same
Today -> day
Patterns to look for:

- **Ring Scotoma (MN read):**
  - Right sided and left sided errors
  - Reading speed is slow -> faster -> slower

Never -> eve
Before -> for
They -> he
LEA contrast sensitivity chart
Contrast sensitivity

- Contrast sensitivity measures the ability to see details at low contrast levels. Visual information at low contrast levels is particularly important.

- For example: In communication, the faint shadows on our faces carry the visual information related to facial expressions.
Contrast sensitivity

- In orientation and moving, curbs and stairs can have very low contrast.
- In everyday tasks, there are numerous visual tasks at low contrast, like cutting an onion on a light colored surface, or pouring coffee into a dark mug.
Central Tangent Visual Field
Central Tangent Visual Field

Test consists of:

- Upright plastic tangent field form holder
- 3 reproducible tangent field forms (varying sized central fixation dots)
- 3 unique laser pens offering three different levels of brightness and size of laser dot
Central Tangent Visual Field

- Enables you to test for scotomas monocularly or binocularly
- You can see how the patient is affected by the central scotoma when using both eyes-this is real world.
- Simple and easy to administer
- You can perform this testing just about anywhere!
Face Fields

Compared to normal vision, macular degeneration induces image distortion and dark areas.
Self-Report Assessment of Functional Visual Performance (SRAFVP)

- ADL assessment that focuses on 38 vision-dependent ADL tasks.
- The assessment was developed in 1995 as a collaborative project between the occupational therapy departments at the Eye Foundation, University of Missouri-Kansas City and Washington University with a grant from the American Occupational Therapy Foundation.
Self-Report Assessment of Functional Visual Performance (SRAFVP)

- The goal was to create an assessment that would be easy to administer and interpret and would assist the therapist to develop appropriate occupation-based goals for the client.
Self-Report Assessment of Functional Visual Performance (SRAFVP)

- The assessment should take approximately 20 minutes to complete.
- Rating scale: 0=unable, 1=difficult, 2=independent, n=NA.
- You may want to prepare a “cheat sheet” with the words: unable, difficult, independent printed on it to remind the client of the rating scale.
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<td>3. Feeding</td>
<td>locates food, sessions, spreads toppings, cuts</td>
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<td>4. Dressing</td>
<td>inc, identity, and mark, storage</td>
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<td>5. Clothing Care</td>
<td>mending: thread, needle, uses scissors</td>
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<td>7. Meal Preparation</td>
<td>read recipe, package instructions</td>
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<td>8. Meal Preparation</td>
<td>use oven: transfer, food, monitor, temp, time</td>
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<td>9. Meal Preparation</td>
<td>cut, slice, use rice, safety</td>
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<td>10. Meal Preparation</td>
<td>pour, measure, liquids, ready ingredients</td>
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<td>11. Meal Preparation</td>
<td>use current: kits, transfer, items</td>
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<td>12. Meal Preparation</td>
<td>use microwave: oven, select, settings, transfer</td>
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<td>13. Meal Preparation</td>
<td>locate/organize items in kitchen</td>
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<td>14. Financial Management</td>
<td>manage financial records</td>
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<td>read bills/financial statements</td>
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<td>16. Financial Management</td>
<td>write check/money order</td>
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<td>17. Leisure Participation</td>
<td>play cards/games</td>
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<td>18. Leisure Participation</td>
<td>locate and park for item, manage, make change</td>
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<td>19. Leisure Participation</td>
<td>legible personal list that can be read back</td>
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<td>20. Community/Social Participation</td>
<td>dine in a restaurant</td>
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<td>22. Retrieve telephone numbers: familiar and unfamiliar</td>
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<td>other leisure activities important to client</td>
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<td>25. Leisure Participation</td>
<td>play cards/games</td>
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<td>26. Leisure</td>
<td>operate tape/CDB player/radio/TV</td>
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<td>30. Reading: newspapers</td>
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<td>legible personal list that can be read back</td>
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<td>36. Functional Mobility</td>
<td>ascend/descend stairs</td>
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<td>37. Functional Mobility</td>
<td>adjust to changes in walking surface</td>
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</table>
Occupational Therapist...
No, I am not your Nurse
or your Physical Therapist
& I am Not here to find
you a job. I am here
to help you Get
Your Life Back!
Goals

- What does patient want to be able to do?
- Must be meaningful as well as realistic.
- Does patient have resources/abilities to achieve goals?
Living Situation/Support System

- Where does the patient live?
- What resources is the patient utilizing already?
- Does the patient have a good support system (family, friends, church)?
- Does the patient have any other medical conditions that may affect vision loss or that vision loss may affect?
Meal Preparation

- Type of meal preparation
- Safety in the Kitchen
- Difficulty with pouring, measuring
- Type of appliances and ability to use
- Difficulty with reading recipes, labels, directions
Functional Communication

- Difficulty with reading: newspaper, mail, letters
- Difficulty with phone use: regular phone, cell phones, looking up phone numbers
- Writing: writing messages, phone numbers, letters, grocery lists
- Reading back own writing
- Television: watching television, changing channels, getting information about weather conditions
- Telling time: clocks, watches, changing time pieces
- Spot Reading: price tags, labels
Self-Care

- Identifying colors to match clothing
- Styling hair
- Shaving
- Make-up
- Jewelry
- Identifying different products
- Brushing teeth
Homemaking Tasks

- Laundry: washer, dryer, detergent, sorting clothing
- Sweeping, Vacuuming, Dusting, Mopping
- Setting thermostat
- Washing dishes
- Placing a key in a keyhole
Medication Management

- Reading labels
- Sorting medications
- Re-ordering medications
- Diabetes management
- Blood pressure management
- Eye drop management
Financial Management

- Identification of coins and currency
- Writing checks
- Bill paying
- Using ATMs
- Using credit/debit cards
- Using auto-bill pay
- Reading bank statements
Financial Management
Community Mobility

- Grocery shopping
- Driving
- Transportation
- Ambulating at home, community
- Attending activities in the community
- Referral to O&M
I’ll have a cheeseburger, large fries, black coffee...

I’m starting to think retesting seniors for driving isn’t a bad idea!
Leisure Activities

- Crafts
- Community activities
- Playing cards
- Crocheting/Knitting/Sewing

Has the person given up any activities because of vision loss?
Leisure Activities
Computer Use

- How large is their monitor?
- Mac or Windows program?
- What kinds of activities are they wanting to do on the computer?
- Are they using any of the accessibility options on the computer?
Modifications/Equipment/Resources

- What modifications have they already made at home
- What devices are they utilizing at home
- What resources do they have in place
- Educated on other resources:
  - TAP
  - Audio Reader
  - Talking Books
  - Free Directory Assistance
  - Meals on Wheels
  - Etc.
Home Assessment

- Evaluate home situation
  - What areas does the patient have difficulty
  - What modifications/recommendations can be made
  - What safety issues are present

- Safety Hazards:
  - Throw rugs
  - Furniture all one color (poor contrast)
  - Electrical cords and extension cords in walkway
  - Clutter
  - Assess safety in bathroom
  - Getting in/out tub or shower
Strategies to Improve Performance

Magnification

- Enlarge print or bring closer to eyes
- Examples:
  - Large print recipes
  - Large numbered phone
  - Large print address books
- Large print books
- Use of magnifiers
Magnification

- Optical Devices
  - Hand held magnifiers
  - Stand magnifiers
  - CCTV
  - Portable CCTV’s
  - Prismatic reading glasses
  - Computer Software
  - Magnification apps for smart phone (Visor, Supervision+)
Strategies to Improve Performance

- Non-Optical
  - Pens (20/20)
  - High contrast measuring cups
  - Puff paint
  - Large print pillboxes
  - Easy thread needles
  - Large button phone
  - Check writing guides
  - Filters
  - Bump Dots
  - Bold-lined paper
  - Talking Clock
Strategies to Improve Performance

Lighting

- Use appropriate lighting and make sure that there is enough lighting for task
- Gooseneck lamps work the best
- More is not always better
- Lux IQ
- Examples:
  - Task lighting
  - Daylight
  - Overhead lighting
  - Flashlights
Strategies to Improve Performance

Controlling Glare

- Goes along with lighting, make sure that have appropriate bulbs so not increasing glare
- Examples:
  - Do not wax floors
  - Close shades
  - Wear sunglasses or filters: indoors and outdoors
Strategies to Improve Performance

Increasing Contrast

- Black on white or white on black is typically the best
- Examples
  - Marking appliances with high contrast marks
  - Using white cup for black coffee
  - Watches with contrasting face
  - Colored toothpaste on white toothbrush
  - Managing pills/meds on a black tray or washcloth
Strategies to Improve Performance

Decreasing Patterns

- Patterns can be confusing and overwhelming
- Make things as simple as possible
- Examples
  - Flowered placemat vs. solid color
  - Clutter
  - Patterned rugs
  - Contrasting the color of flooring and furniture
Strategies to Improve Performance

Using Other Senses
- Smell, Hearing, Touch, Taste
- Examples
  - Smell: Meal preparation, spices
  - Hearing: Talking devices
  - Touch: Tactile marks
  - Taste: Foods
Strategies to Improve Performance

Organization and Memory

- Using memory for everyday tasks
- Organizing to increase accuracy

Examples

- Pillboxes
- Memorizing the placement of buttons on phone, remote, microwave
- Folding and organizing money in wallet
- Using overlapping patterns when cleaning
- Organizing shopping experiences
Requirements for Low Vision Rehabilitation

- Moderate visual impairment in better seeing eye (worse than 20/70)
- Orders from OD or MD
- Completed in 90 day period
- Cannot be receiving any other OT services at the time
Coding

- Primary Diagnosis: Impairment code
  - i.e. H54.2 low vision both eyes
  - **Could also be visual field deficit or central scotomas**

- Secondary Diagnosis: Etiology
  - H35.32 Wet Macular Degeneration
Levels of Visual Impairment (ICD-10)

- Blind (worse than 20/400)
- Low vision (20/70-20/400)
- Visual field deficit
  - Central scotoma
  - Ring scotoma
  - Generalized constriction
  - Homonymous hemianopsia
## Common Codes for Primary Dx

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>H54.0</td>
<td>Both eyes blind</td>
<td>H54.2</td>
<td>Both eyes low vision</td>
</tr>
<tr>
<td>H54.11</td>
<td>OS low vision, OD blind</td>
<td>H54.12</td>
<td>OD low vision, OS blind</td>
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<tr>
<td>H53.40</td>
<td>Visual field defect</td>
<td>H53.411</td>
<td>Central scotoma right eye</td>
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<tr>
<td>H53.412</td>
<td>Central scotoma left eye</td>
<td>H53.413</td>
<td>Central scotoma both eyes</td>
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<tr>
<td>H53.451</td>
<td>Ring scotoma right eye</td>
<td>H53.452</td>
<td>Ring scotoma left eye</td>
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<tr>
<td>H53.453</td>
<td>Ring scotoma both eyes</td>
<td>H53.481</td>
<td>Generalized constriction right eye</td>
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<tr>
<td>H53.482</td>
<td>Generalized constriction left eye</td>
<td>H53.482</td>
<td>Generalized constriction both eyes</td>
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<tr>
<td>H53.461</td>
<td>Bilateral homonymous hemianopsia Right side</td>
<td>H53.462</td>
<td>Bilateral homonymous hemianopsia Left side</td>
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### Common Codes for Secondary Dx

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<td>Macular degeneration - Dry</td>
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<td>H35.32</td>
<td>Macular degeneration - Wet</td>
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<td>H35.53</td>
<td>Stargardts</td>
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<td>H47.20</td>
<td>Optic Atrophy</td>
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<td>365.11</td>
<td>Primary Open Angle Glaucoma-Unspecified</td>
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<td>365.11</td>
<td>Primary Open Angle Glaucoma-Moderate</td>
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<td>Primary Open Angle Glaucoma-Severe</td>
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<td>E11.31</td>
<td>NPDR w/macular edema T2</td>
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</tbody>
</table>
Billing Codes

- 97003-OT eval
- 97535-Self-care/Home management

- G-Codes (Utilize SRAFVP)
  - G8987 Self care current status
  - G8988 Self care goal status
  - G8989 Self care d/c status
Documentation Required

- Primary and Secondary dx (ICD-10 codes)
- Visual Acuity or Visual Fields
- Date of Onset
- POC
- Rehab Potential
- Start of Care
- Specific goals
- G-codes
- PLOF
Other funding sources

- FOCUS project
- Financial assistance-income based
- Veterans Administration
- Vocational Rehabilitation
UNSTOPPABLE

YOU MIGHT BE AN OT IF

YOU THINK A PICTURE OF A T-REX WITH A REACHER IS SUPER FUNNY

www.aota.org
Where do we start (With eccentric viewing testing and training)?
What is Eccentric Viewing?

- Basically looking around your blind spot.
- A method by which the person looks slightly away from the subject in order to view it peripherally with another area of the visual field.
What is a PRL?

- When, due to retinal disease, a different healthy area of the retina is substituted for the damaged fovea in order to see more clearly this alternate location is called a **preferred retinal locus (PRL)**.
Scotoma screening tools

- MN read
- Smith-Kettlewell (SK) read
- Pepper Visual Skills for Reading Test
- Central Tangent Visual Field
- Face Fields
My father takes me to school every day in his big green car

Everyone wanted to go outside when the rain finally stopped

They were not able to finish playing the game before dinner
to e ink band d earn
hash flute u pickle
floss c heart s tan g
f pine d sink heart
window sight c up say
s top p think k rant
k clear wage f pair x
ten loss sliced fit
l bland c exact v if
SK Read

- **Measures:**
  - Reading Acuity - smallest print that the patient can read without making significant errors
  - Critical print size - smallest print size that the patient can read with maximum speed
  - Pattern of errors - designed to allow words to be easily confused and facilitate the verbalized mistakes encountered while reading
  - No context - so is much more difficult
SK Read

- Chart design
  - No meaning is present in text.
  - Each block of text contains 6 single letters, 1 two letter word, 3 four letter words, 3 five letter words, and 1 six letter word.
  - Words were chosen from the 1000 most commonly used words in the English language.
  - Recommended working distance of 40 cm
Pepper Visual Skills for Reading Test
Pepper Visual Skills for Reading Test

- **Measures:**
  - Corrected Reading Rate
  - Pattern of Errors
    - Total # correct
    - Mean % Correct
Pepper Visual Skills for Reading Test

Chart Design:

- Utilizes non contextual words and is useful for identifying scotoma related mistakes. However, its format does not allow for as rapid testing with various text sizes as the MN Read format.
- Text size limited from 1M to 4M
Pepper Visual Skills for Reading Test

Performing the test:
- Chart should be evenly illuminated with no shadows or glare.
- Testing distance is 40 cm
- Pt should read the chart out loud
- Mark on the score sheet any words that are missed or read incorrectly
- The test is timed
Central Tangent Visual Field

- Test consists of:
  - Upright plastic tangent field form holder
  - 3 reproducible tangent field forms (varying sized central fixation dots)
  - 3 unique laser pens offering three different levels of brightness and size of laser dot
Central Tangent Visual Field
Name: [Redacted]
Date: Aug 25, 10
Eye: OD OS OU
Stimulus: from Red
Fixation: central
Impression:
Able to Demonstrate Scotoma to Patient: yes
Comments:
Sap right arm
and relative
Scotoma (w/ and w/o light)
L.
Central Tangent Visual Field

- Enables you to test for scotomas monocularly or binocularly
- You can see how the patient is affected by the central scotoma when using both eyes-this is real world.
- Simple and easy to administer
- You can perform this testing just about anywhere!
Face Fields

Compared to normal vision, macular degeneration induces image distortion and dark areas.
Patterns to looks for:

Right side scotoma (MN read):

Went -> We
Circus -> Circle
Everyday -> Every
Wanted -> Want
Outside -> Out
Patterns to looks for:

Left side scotoma (MN read):

The -> he
Father -> mother
Snow -> now
Game-> same
Today -> day
Patterns to look for:

- Ring Scotoma (MN read):
  - Right sided and left sided errors
  - Reading speed is slow -> faster -> slower

Never -> eve
Before -> for
They -> he
Teach Awareness

- Educate pt on disease and difference between central field loss and peripheral field loss.
- Determine if the patient is aware of the scotoma.
- Start with face field or by looking at a target
Teach Awareness-Identify area of scotoma

1. Utilizing either the therapist’s face or a clock picture, ask the patient to look at the center of the target without moving their eyes. Ask the patient to identify the areas that look blurry, missing, indistinct, distorted, or faded.

Make sure the patient does not move their eyes around.
Teach Awareness-Identify area of scotoma

2. Note the area of the blurred, indistinct, or missing area. This area may indicate the location of the scotoma.

Now, in your mind, you need to be thinking about the patterns of errors that you saw with the screening tools to see if it correlates
Teach Awareness

Now that you know the possible area of the scotoma, you will now teach the patient how to utilize their new PRL.
Teach Awareness-Identify PRL

1. Again, you will instruct them to look at the center of the target, without moving their eyes, and identify the area that appears blurry, indistinct, or missing.

2. You will now ask the patient to move their eyes in the direction of the scotoma to see if that makes your face/or target come in clearer.

3. It is also helpful to have the patient move their eyes up, down, to the left, and to the right. This allows them to see how moving their eyes in certain directions actually makes their vision seem “worse”.

4. Once you have determined the PRL, explain to the patient what a PRL is and how they will use it for looking at faces, reading a clock on the wall, and then eventually for reading.
Instructions to the patient

“With many eye diseases, blank spots, or scotomas are created in your vision. This reduces your ability to see detail, such as reading the newspaper or seeing faces. So, I am going to do some testing to identify where those blank spots, or scotomas are located in your vision.”

“I am going to ask you to look right at the center of my face, toward my nose or eyes and without moving your eyes, I would like for you to tell me what parts of my face are missing, black, indistinct, or blurry.”
Teach Awareness

Example:
If the patient reports that the right side of your face appears blurry, the PRL will typically be located to the left of that scotoma. So to use that PRL, they will need to move their eyes to the right, therefore moving the scotoma off of the face, and they will be utilizing the good, healthy macular area to the left of the scotoma.
Teach Awareness
PRL skills training

1. Locating/fixation
2. Maintaining fixation with scanning
3. Saccades or Gaze shifting
4. Eye/hand coordination for functional activities
PRL skills training

- Equipment needed:
  - Poster board cards (paddles) with 1”-2” letters
  - Mary Warren pre-reading exercises
  - Playing cards
Locating and Fixation

- Perform this test utilizing both eyes.
- Use letter paddles (white poster board with 1-2” letters on each end).
- Hold the target in various planes and positions and ask the patient to quickly move their eyes to the new position and fixate on the target using their PRL.
- The patient is to tell you when they can see the target clearly.
Locating and Fixation

- Generally repeat the target in several locations. I generally will start midline and gradually move outward to various positions. But maintain the target within shoulder width.
Locating and Fixation

Instructions to the patient:

“Now I want to see how quickly you can locate a target using your PRL. I am going to place this letter (show and identify the letter) in various locations and ask you to move your eyes to find it and to tell me when you are able to see it clearly.”
Locating and Fixation

Video 1
Maintaining fixation with scanning

- Perform with both eyes.
- While holding the target in front of the patient, instruct the patient to locate and fixate on the target until they see it clearly.
- Now slowly move the target horizontally and instruct the patient to let you know if the target goes out of focus.
- If the patient loses the target clearly, stop and allow the patient to re-establish fixation, and then start slowing moving the target
Maintaining fixation with scanning

- You will want to move the target horizontally, vertically, and then diagonally
- Keep the target within the patient's shoulder width
- You can repeat this several times and change the target.
Maintaining fixation with scanning

Instructions to the patient:

“Now we are going to see how well you can use your PRL to track a target. I am going to hold this target in front of you. I want you to look at it and tell me when you can see it clearly.”

“Now I want you to follow it with your eyes as I move it. Tell me if parts or all of the target disappear or become blurry or distorted.”
Maintaining fixation with scanning

Video 2
Saccades

- Maintain PRL while shifting gaze between 2 targets
- Complete using both eyes.
- Hold 2 targets about 12 inches apart horizontally
- Instruct the patient to fixate on one target and then quickly shift eyes to other target and focus until target is clear.
- Repeat this several times between 2 different targets
- Start moving targets so the patient is gaze shifting in diagonal line.
Saccades

Instructions to patient:

“Now we are going to see how well you can use your PRL to look from target to target.”

“I am going to hold up these 2 letters. One is a ___ and the other is a ___. Look first at the ____ and tell me when you can see it clearly. Now look at the ____ and tell me when you can see it clearly.”
Home Exercise Program

- Perform these exercises without devices!
- Mary Warren Pre-reading exercises
- LUV (Learn to Use your Vision) Reading workbook
- Playing cards
- Play solitaire
- Practice reading headlines in newspaper
- Start with bigger text, and gradually decrease size of text
Home Exercise Program

Mary Warren Pre-reading and writing Exercises for Scotomas
Home Exercise Program

Cross out the designated letter everytime it appears in the line

a bcdheaghfaeslgagachtacas
b cdhbhuierboputybuionbibn
c ghtdcopoacehjuehjcdcjnhjk
d ghjendeuiwdilljdkdjkdlkwlfsd
e ceoauchjebnhydecoicefkesi
f yuijptfjklipfurtyfxvnbfittulfiel
g htygjkimpjechgjygeopghkgf
h qwbhjkbkpvbsxefguhrthiqu
i qwiojlibhingbfhiopwjjecnilji

Cross out the number 88

4 4 5 6 7 8 8 9 2 3 4 5 6 8 8 1
1 2 2 3 0 0 8 7 6 8 6 8 7 9 9 4
5 4 4 3 3 6 6 8 8 6 7 5 4 4 4 2 3
8 8 1 2 3 4 9 0 0 8 6 6 5 5 8 2 4
5 5 6 6 7 8 8 2 3 4 8 8 1 2 8 9 7
7 4 5 8 8 4 5 3 6 7 7 9 8 8 3 4 6
8 8 9 5 6 3 4 2 3 8 9 7 8 8 3 4 5
5 4 4 3 3 6 6 8 8 6 7 5 4 4 4 2 3
8 8 1 2 3 4 9 0 0 8 6 6 5 5 8 2 4
5 5 6 6 7 8 8 2 3 4 8 8 1 2 8 9 7
7 4 5 8 8 4 5 3 6 7 7 9 8 8 3 4 6

Mary Warren Pre-reading and writing Exercises for Scotomas
Video 4
Eye/hand coordination for functional activities

- Integrate PRL use into ADL’s
  - Pouring a glass of water
  - Handwriting exercises
    - Need to be able to see the pen tip!
Eye/hand coordination for functional activities

Copy the numbers on the left side of the page onto the blanks on the right side of the page.

- 356 - 7876
- 288 - 9876
- 515 - 6687
- 338 - 9769
- 486 - 6384
- 884 - 2633
- 533 - 8768
- 211 - 7743

TRACE AROUND THE SHAPES
What about Ring Scotomas?
Ring Scotomas: How to tx?

- Need to teach them to try to utilize good vision within the ring.
- Mary Warren Pre-reading exercises
- Typoscope or line guide
- Lighting
- Very minimal magnification
- Or go outside the ring and utilize a CCTV or other optical device
How to assess progress?

- Re-evaluate MN read, SK read or Pepper
- Re-assess number of errors, reading rate, etc.
What can we do to adapt and modify the homes of visually impaired individuals?
Lighting

 An older adult requires up to 10x more light than a 20-30 year old.
 More than just having a bright light bulbs. Some visual conditions, such as cataracts, will actually increase the sensitivity to light. Bright bulbs will result in glare and can be quite painful.
 Lighting is a Catch 22.
 Challenge with lighting is that you need enough light that does not produce glare, and to be able to adjust the light for your needs.
Goal for lighting

- Good ambient lighting throughout the home as well as provide task lighting for detail work.

- If doing home visits, consider getting a light meter.
Light meter measurements

- Adequate light level recommendations:
  - Reading: 500-1000 Lux
  - Dining room table: 200-300 Lux
  - Sewing: 1000-2000 Lux
How do you create good ambient lighting??

- Touchier lamps provide ample lighting throughout a room with minimal shadows.
- Strategically place them throughout the room to provide broadest amount of illumination.
Positioning for task lighting

- Gooseneck lamp for task work
- Places illumination directly where you want it
- Closer to the surface, the more illumination
- Position it on side of non-dominant hand for writing
- If using only for reading, position on side of better seeing eye
What type of bulb do you use?

- **Compact fluorescent bulb**
  - Last 8 times longer than normal bulbs
  - Uses 80% less energy
- **Halogen**
  - Bright but can get HOT!
- **LED**
  - Can last as long as 50,000 hours!
  - There are warm and cool LED—need to be aware of different types.
- **Don’t forget natural light**
  - Open curtains, but have sheers to reduce glare
  - Light colored walls to reflect light and enhance lighting.
Contrast

- How light can the object be relative to its background and still be seen?
- What functional problems are anticipated?
  - Curbs and mobility obstacles
  - Performance in poor illumination
  - Etc.
- Anything that needs to be seen in your home will be seen better when that object contrasts sharply with the background
Poor Contrast

Good Contrast

Slide compliments of Dr. Donald Fletcher
Contrast examples

- If walls are white, use dark colored face plates for outlets and light switches.
- Paint door frames to contrast with wall color.
- Mark the edge of steps with contrasting paint or tape.
- Avoid patterns. Furniture should be solid colors. Plaids and stripes can be very confusing.
Low Contrast Kitchen
High Contrast Kitchen
Modifications Made

- Light colored cabinets with dark counter tops
- Dark colored pulls
- White plates on dark shelf liner
- White microwave on dark countertop
- Tactile marking on microwave
- Timer is large with large white numbers on black background
- Cutting board is light color on black countertop
- Light colored soap dish with dark colored soap
- Dark faceplate on light switch against light colored wall
- Dark dishwasher set within light colored cabinets
- Install under cabinet lighting
AVOID CLUTTER!!
Dining Room

- Have windows positioned behind patient sitting at table. This provides good natural lighting with reduced glare
- Avoid glass or very shiny tabletops-these surfaces create glare
- Contrast place setting with table cloth or placemat
- Avoid patterns, especially on plates
Low Contrast Bathroom
High Contrast Bathroom
Modifications Made

- Dark countertop with light colored walls
- Light colored soap dish with dark colored soap
- White cup against dark colored countertop
- Light colored toothbrush holder with colored toothbrushes
- Large print medicine bottles
- Rubber bands utilized to distinguish one medicine bottle from another
- Dark colored faceplate for light switch against light colored wall
- Dark colored hand towel hanging on light colored wall
- Hairbrush has light handle against dark colored countertop
Bathroom modifications

- Always keep items in the same place
- Use non-skid mat or non-skid appliqués on bottom of tub/shower. Use colors that contrast with the surface.
- Place grab bars
- Install additional lighting
- Place dark colored towel over edge of tub for easier identification
- Replace white toilet seat cover with darker contrasting seat.
Living Room

Although beautiful, not great for our low vision patients!!
Living Room

- Ensure there is good room lighting with adjustable gooseneck lamps as needed.
- Use good contrast with furniture.
- Remove low lying objects—coffee tables. And avoid clear glass.
- Position TV, computer away from windows to reduce glare.
- Avoid clutter and always keep everything in its place.
- Use shear curtains or blinds to reduce glare.
- Consider wall color—lighter colored walls are going to reflect light much better. Dark colored walls will absorb light.
Living Room
Other recommendations

- Handrails in stairways
- Mark edge of steps with contrasting paint or tape
- Raised marks to thermostat
- Raised marks/Velcro to telephone, remote controls
Stairs
Stairs
Stairs
In summary-Home Modifications

- Increase contrast
- Increase lighting
- Reduce glare
- Utilize other senses
A Physical Therapist will teach you to walk.

An Occupational Therapist will help you put on your dancing shoes and dance the Night Away!

someecards user card
Technology

- Electronic magnifiers
  - Desktop
    - OCR
  - https://www.youtube.com/watch?v=1CwXyzmV1jw
Technology-Portable video magnifiers
OrCam

https://www.youtube.com/watch?v=pt4mS2OK6no
E-readers
- iPad
  - Adjust font size
  - Invert colors
  - Voiceover
  - Zoom
  - Speak screen
  - Mirroring-apple TV or Lightning Digital AV adapter
Technology

- E-readers
  - Android
    - Magnification gestures
    - TalkBack
  - Mirroring/Casting
    - Chromecast
    - Belkin miracast video adapter
Technology

- E-readers
  - Kindle Fire-VoiceView screen reader
  - Kindle e-book has not been accessible until recently.
    - Just recently Amazon came out with Kindle Audio Adapter-enables VoiceView.
    - The Kindle Audio adapter is a small dongle with an audio jack at one end and a short, micro USB cable at the other.
    - The Kindle Audio Adapter can also be purchased alone for $19.99.
Technology-Computers

- Get a bigger monitor-hook up with HDMI
- Windows
  - Windows magnifier
  - Adjust contrast setting
- Apple
  - Built in voiceover and magnifier
Case Study

- L.C.
  - 77 y/o female with dx of RP (Onset 45 yrs ago)
  - PMH: Lupus, Hx of R THR, hypoglycemia, arrhythmia, and anemia
  - Visual Acuity
    OD: 20/349
    OS: NLP
    Fields: < 5 degrees
Case Study

- Testing:
  - MN read: 8.0 M in 28.1 seconds
  - LEA contrast sensitivity chart: 10/30
  - California Central Tangent Visual Field showed small <5 degree FOV
Date:  
Eye: OD OS OU  
Stimulus: Laser Pointer: #1, #2, #3  
Fixation:  
Impression:  
Able to Demonstrate Scotoma to Patient:  
Comments:  

< 5° dihedral field

No appreciation of dim stimulus

DCF

At 57 cm (22in) testing distance: rings increase in 2.5° radius increments.
Case Study

- Lives with husband in single level home with basement
- Recently moved to Wichita from Joplin after home devastated by tornado, where she lost most of her belongings, including most of her adaptive equipment
Case Study

Goals:

- Needed her appliances marked
- Was unable to read anything
- Unable to play cards (lost playing cards in tornado)
- Trouble seeing to cut her canvas for needle point

(She had a device called a magnacam prior to the tornado that she used for needlepoint, but lost power cord in tornado.)
Case Study

- At initial OT eval, pt reported:
  - Difficulty with playing cards
  - Difficulty with needlepoint
  - Dependent for all reading
  - Great difficulty setting dials on appliances
  - Slight difficulty with dialing telephone (was able to dial phone, but unable to locate flash button for call waiting).
Case Study

- Devices dispensed: Pebble portable CCTV, white cane, super jumbo playing cards, bold pen, and a LV phone with talking caller ID
Case Study

- After trying different CCTV’s for cutting canvas for needlepoint, pt decided the Magnicam would be best option and husband was able to locate new power cord for the device and built new stand for the device.
Case Study

- All of her appliances were tactually marked.
- Pt was also referred to senior support group and to art club.

- Senses used: 
  - **Tactile**-needlepoint, bump dots on appliances
  - **Olfactory**-cooking
  - **Vision**- high contrast marks on steps and lights on deck, video magnifier
  - **Auditory**-talking caller ID
Case Study Video
Resources

- www.mattinglylowvision.com
- www.shoplowvision.com
- www.precision-vision.com
- www.visabilities.com
- www.afb.org
References

University of Alabama-Birmingham (UAB) Occupational Therapy Graduate Low Vision Certificate Program

Mary Warren Pre-reading and Writing Exercises

www.visabilities.com
Questions?

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