Low Vision Rehabilitation for the Primary Care Practitioner

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Why add Vision Rehabilitation of the Visually Impaired to your Practice?
- With aging population there is an increasing demand
- Diversify your practice
- Don’t have to refer patients out
- Additional revenue stream

Visual Impairment (Low Vision, Sub-normal Vision)
- Any chronic decrease in acuity not correctable medically, surgically, or with conventional spectacles or contact lenses that limits daily function
- Usually defined as 20/60 or worse
Traditional Definition of Legal Blindness

- Central visual acuity does not exceed 20/200 in the better eye with corrective lenses, or
- The widest diameter of the visual field subtends an angle no greater than 20 degrees with a Goldman III4E stimulus.

New Social Security Administration Guidelines of Legal Blindness

- New SSA regulations went into effect 2/20/07
- Acuity worse than 20/100 on an ETDRS or Bailey-Lovie chart
- Now recognize Automated static threshold perimetry
  - A stimulus of 10dB is considered equivalent to a III4E Goldmann stimulus

Who is involved in the vision rehabilitation process?

- Primary Eyecare provider
- Retinal specialist
- Low vision optometrist
- Occupational Therapist/Rehabilitation Teachers
- Orientation and Mobility Instructors
- Social Case Workers
- Vocational Rehabilitation Counselors
Who Pays for Vision Rehabilitation?

- Most insurances will pay for evaluation and management of a visual impairment using the visual impairment codes
- No insurance will pay for devices (at this time)
  - Maloney Bill
- State Rehabilitative Services
- Private Pay

Vision Impairment Codes

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Common Pathologies in Low Vision

- Central vision deficits
  - Macular Degeneration
  - Myopic Degeneration
  - Diabetic Retinopathy
  - Stargardt's Disease
- Field constriction
  - Glaucoma
  - Retinitis Pigmentosa
Low Vision Rehabilitation Evaluation

- Gather information about visual function
  - History (Goal oriented)
    - What things do you have difficulty doing with your vision?
  - Objective Data (Acuities, Fields, etc.)
- Develop and implement a plan based on goals and data gathered

Distance Acuity

- Use low vision charts with variable lighting and variable test distances
- Good time to introduce eccentric viewing

Near Acuity Single Letters

- Use M format to
  - compare with distance acuity
  - allows for testing at different distances
  - Snellen near card only calibrated for 40cm, Jaeger acuity not consistent
- Record acuity as test distance over M size (.2/4M = 20/400)
Near Acuity Continuous Text

- Single letters vs. continuous text
  - Most people want to read
  - Reading acuity typically worse than letter because of crowding and scotomas
- Assesses reading acuity, maximum reading speed, and critical print size

MNRead Test

- Detects scotomas and metamorphopsias
- Location of the scotoma determines prognosis for success (inferior and superior scotoma better than left or right)
- Aids in education of scotoma (makes patient more aware)
- Re-enforce eccentric viewing

Central Visual Fields
CONTRAST SENSITIVITY TESTING

- Contrast sensitivity is a better predictor of visual function than visual acuity
  - Eleanor E. Faye Contrast sensitivity tests in predicting visual function International Congress Series, Volume 1282, September 2005, Pages 521-524

- Helpful in determining to use a monocular or binocular device
- May explain poor performance with a predictive add

Pelli-Robson Contrast Sensitivity Test

MARS Contrast Sensitivity Chart

- Faster, more accurate, and easier for patients to understand
- Portable
- Easier to get uniform illumination
Trial Frame Refraction

- Allows patient to manipulate head movement for best eccentric viewing
- Easier to make larger jumps

Techniques to Achieve Patient’s Goals

- Magnification
- Enhance contrast
- Minimize Glare

Types of Magnification

- Relative distance magnification
  - Move closer to the TV
- Relative size magnification
  - Large print materials
- Lens vertex magnification
  - Magnification induced by an optical system
- Most of the systems we use are a combination of relative distance magnification and lens vertex magnification
X isn't always X

- Effective magnification \( X = \frac{D}{4} \)
  - Assumes the unaided reading distance is 25cm
- Conventional magnification \( X = \frac{D}{4} + 1 \)
  - 4D of accommodation are needed at 25cm, no accommodation is needed with a magnifier at the vertex point so in theory the is an extra 4D of magnification
- Neither method is accurate and vendors often mislabel the magnification

Equivalent Power

- The power of an optical system in diopters
- Hand & stand magnifiers, high plus readers, and electronic magnification systems are interchangeable when the EQUIVALENT POWER of each device is the same

Predictive Add

- Approximates the Equivalent power in Dioplers to achieve goal
- Kestembaum’s rule: inverse of distance acuity to achieve 1M
  - \( \frac{20}{200} \) acuity \( \frac{200}{20} = +10D \)
- Ratio of near acuity to goal acuity
  - \( \frac{2}{2M} \) near acuity goal of 1m
  - \( \frac{2}{2} = x/1 \) \( x = .1 \)
  - New working distance is 10cm = +10D accommodative demand
Spectacle Devices

- Prismatic Reading Glasses
- Aspheric High Plus Reading Glasses
- Clip-on Loupes

Equivalent power = Diopteric power of lens

ADVANTAGES
- Hands-free
- Widest field of view
- Prolonged reading
- Cosmetically acceptable

DISADVANTAGES
- Short working distance
- Obstructs illumination

Hand Magnifiers
Hand Magnifiers

**ADVANTAGES**
- Portable
- Inexpensive
- Does not require a reading aid or bifocal
- Greater working distance than glasses
- Illuminated & non-illuminated

**DISADVANTAGES**
- Reduced field of view
- Both hands occupied
- May be difficult to keep in focus
- Not good for long term tasks especially over 4X
- Problems with hand tremor or arthritis

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Hand Magnifiers

**Without bifocal**
- Equivalent power = Diopteric power of lens

**With bifocal**
- Less equivalent power outside working distance of bifocal
- Increased equivalent power inside of bifocal

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STAND MAGNIFIERS
STAND MAGNIFIERS

**ADVANTAGES**
- Fixed focal length
- Great for arthritis or long term tasks
- Portable
- Better than hand magnifier over 4-5X

**DISADVANTAGES**
- Reduced field of view
- Requires the use of accommodation, reading glasses or a bifocal
- Each stand magnifier has specific requirements for add power to maintain clarity & magnification

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Stand Magnifiers

- Equivalent power (EP) = bifocal add or natural accommodation X enlargement ratio (ER) of magnifier at the proper eye-to-lens distance
- Not the power of lens alone
- Example: Bifocal add +3.50, ER 4.2
  \[ EP = 3.5 \times 4.2 = +14.7 \text{D} \]

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Video Magnifiers (CCTV’s)
**Video Magnifiers (CCTV’s)**

**Types**
- Desktop
- Portable
- Pocket
- Plug into TV
- Computer Compatible
- Distance Feature

**Advantages**
- Greater working distance
- Range of magnification
- Enhanced contrast
- Can be used for writing

**Disadvantages**
- Expensive

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**Video Magnifiers**

- Equivalent power = Magnification of CCTV X Add

- Using 5X mag with a +2.50 add = +12.50

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**TELESCOPES**

- Hand-held
- Monocular Telescopes
- Spectacle Binocular Telescopes
TELESCOPES FOR DISTANCE

- Magnification of telescope needed = Denominator of Distance acuity / Denominator of desired acuity
- Best corrected acuity 20/100 and want 20/40
  100/40 = 2.5X

Improving Contrast Sensitivity

- Increased light over shoulder from behind to minimize glare
- Video magnification with reverse polarity
- High contrast materials
- Filters- “changes in the CSF with filters are statistically significant and consistent with report of self-improvement by patients”

Non-Optical Devices
Preparing your practice

- Educate your staff
  - Patients may need assistance with paperwork
- Prepare waiting room
  - Are there glare issues with large windows
  - Large print magazines
- Schedule appropriate time
  - Initial evaluation can be 45-90 minutes
  - Training follow-ups are about 30 minutes

Resources

- AOA VRS Low Vision Tool Kit
- AOA VRS Low Vision Online Resource Manual
- AOA Optometric Clinical Practice Guideline
  - Care of the Patient with a Visual Impairment
- jrundquist@wnycvi.com

Any questions?

Thank You