Help! My Patient Doesn’t See 20/20

Nicole Patterson, OD, MS, FAAO

Low Vision Rehabilitation

Debunking the “Slow Vision” myth

An optical and functional evaluation to determine whether a patient’s vision can be enhanced to participate in desired activities

Helping Your Patient Without Picking Up a Magnifier . . .

Definition of Legal Blindness

- Acuity
  - 20/200 or worse, best corrected, better seeing eye
- Visual Field
  - 20 degrees or less in the widest diameter, in the better seeing eye

Why is the Definition of Legal Blindness Important?

- Income tax benefit
- Transportation services
- Handicapped parking
- Directory assistance
- Grocery store assistance
Helping Patients with Legal Blindness

- Letters of legal blindness
- Forms certifying legal blindness

Case 1

AN 85

- Patient with exudative AMD
  - Treated by retina specialist with Eylea x 6 OD & OS
- Complains of difficulty reading the mail

Expected Clinical/Subjective Findings

- Decreased acuity
- Central scotoma
- Reduced contrast acuity
  - Especially with anti-VEGF treatment

Common Complaints

- Reading
- Seeing faces
- Driving

AN 85 – Acuity Measurement

- Distance VA 4/20M OD, 4/40M OS
- Near VA .3/1.25 M
Distance Acuity

- ETDRS Chart
  - 4 m, 2 m, 1 m
  - 4/20 = 20/100
  - 4/40 = 20/200

Distance Acuity

- Feinbloom Chart
  - Uses numbers
  - 10 feet
    - 10/50 = 20/100, 10/100 = 20/200
    - $90
  - Finger counting is not acceptable
    - Not standardized
      - Different sizes, colors, background

Digital Projection Charts

- Advantages
  - Ability to change optotypes at acuity levels
    - 20/400 will not always be an E
  - Ability to easily isolate a line or letter
  - Ability to change contrast
- Disadvantage
  - Often over-estimates acuity
  - Normal setting is very high contrast
  - Fixed location in room

Near Acuity

- Continuous Text
  - More accurate idea of reading ability
  - Lighthouse Continuous Text
    - $22

Near Acuity

- Near VA: 3/1.25M
  - Numerator, test distance = 30 cm
  - Denominator, optotype size
  - As reference
    - 1M
    - 20/30
    - Newsprint

Factors that Impact Visual Acuity Testing

- Illumination
- Visual Field Status
- Measurement techniques and procedures
**Illumination**

- Uniform and glare free
- Glare on chart – will underestimate acuity

---

**CLINICAL PEARL**

- Asking the visually impaired patient the lowest line they can read
- Causes frustration if they are only able to read top line
- Will result in a long period of silence while patient tries to determine the line
- Having a patient read every letter on the acuity chart is VERY time consuming
  - Have patient read first letter of every line
  - Use something to occlude line below

---

**Eccentric Viewing**

- Determination of eccentric viewing angle
  - Eccentric viewing angle is direction eye moves in clock hour position, from patient perspective

---

**Potential Challenges When Measuring Acuity**

- Eccentric viewing
  - Looking slightly off-center to view information straight ahead
  - Avoid central scotoma
  - Photoreceptors are not packed as densely outside macula
  - Decreased VA

---

**A 12 o’clock EV angle**
A 3 o'clock EV angle

If a patient comes in and isn’t viewing eccentrically

- Have the patient look towards the center of the clock and determine which number is most clear
- Patient should be trained to EV in the opposite clock hour
- Example:
  - Pt sees 6 best while looking ahead. Should be trained to view at 12

AN 85

- Distance VA 4/20M OD, 4/40M OS
- Near VA 3/1.25 M
- Currently being treated by retina specialist for exudative AMD (Eylea x 6)
- Complains of difficulty reading mail and oatmeal and noodle packaging

Difficulty Reading Mail

- Trial Frame Refraction
Predicting the Add

- Patient acuity: 4/1.25M
- Goal acuity: 1M
- \(M = \frac{1.25}{F} = 1.25\) = Magnification needed = M

- \(M = rF\)
- \(1.25 = .4F\)
- \(F = 3.125\)

- The patient needs 3.125 diopters

Alternatively

- Rule of Thumb
  - If a patient sees 8M (20/40) or better
    - 8 – 12 D should be enough
  - If a patient sees 1M – 2.5M (20/50 – 20/150)
    - 12 – 24 D
  - If a patient sees less than 2.5M
    - 24 D – electronic devices

Deciding on the Device

- Use/goals
- Dexterity
- Illumination
- Cost

High Power Bifocals
Single Vision Reading Lens

- Diffractive Optics
- Diffractive optical elements typically have a two-dimensional shape.
- Compared to traditional elements such as lenses and prisms, they are more compact and easier to handle.
- Cost-effective mass production of diffractive elements.
- Eschenbach's Noves lenses, all less than 5mm in thickness, can provide the magnifying power of refractive lenses more than twice as thick and many times the weight.

If you elect to use NVO

- Lighting is key
- Ott-lite
- Day-lite bulbs
- LED Keychain

AN 85

- Received + 8.00 half eye readers (.5M)
- Educated on importance of lighting
- LED light for purse
  - Restaurants and church

Measurement of central scotoma

- California Central Visual Field Test

Patient Education

- Lighting
- Working distance
- Vision affected by AMD
  - “The best thing we’ve done all day”
- Accurate Information

Case 2
**DC 52**

- Distance VA 4/40 (20/200) OD, 2/40 (20/400) OS
- History of IDDM with extensive PRP
- Has a magnifier that doesn’t work any longer. Additionally complains of difficulty on the computer, light sensitivity.

**Expected Clinical/Subjective Findings**

- Decreased acuity
- Field loss
- Light sensitivity
- Reduced contrast

**DC 52**

- Uses 12 D magnifier and sees 1 M
- Would like a magnifier that would “cover the whole page”

**As magnification increases . . .**

- Working distance decreases
- Field of view decreases

**It Covers the Page, but . . .**

**Deciding on the Device**

- Use/goals
- Dexterity
- Illumination
- Cost
- Previous type of device used
Near Magnification

- **Hand-held magnifiers**
  - **Advantages**
    - Lighted vs. non-lighted
    - Portability
  - **Disadvantages**
    - Requires dexterity

- **Stand magnifiers**
  - **Advantages**
    - Lighted vs. non-lighted
    - Requires less dexterity
  - **Disadvantages**
    - Not as portable as HHM

- **Dome Magnifiers**
  - **Advantages**
    - Requires less dexterity
    - Durable
    - Ease of use
    - Inexpensive
  - **Disadvantage**
    - Inability to write underneath

- **Telemicroscope**
  - **Advantages**
    - Hands free
  - **Disadvantage**
    - May require short/fixed working distance
  - **Cost**

- **Electronic Magnification**
  - **Advantages**
    - Reverse polarity
    - Greatest magnification
    - No decrease in working distance with increased mag
  - **Disadvantage**
    - Cost
    - Dexterity
    - Technology
Near Magnification
- iPod touch, iPhone
- Magnification Apps
- Color identification
- Money identification
- Navigation

Useful Apps

DC 52
- Has a magnifier that doesn’t work any longer. Uses 12 D magnifier and sees 1 M
- Would like a magnifier that would “cover the whole page”
- Additionally complains of difficulty on the computer, light sensitivity

DC 52
- Currently using illuminated H&H
- No neuropathy, good dexterity
- Continue with current magnifier design
  - 12 D sees 1 M reads 2 M
  - 16 D sees 3 M reads 1 M
  - 20 D sees 4 M reads 8 M +

DC 52
- Has a magnifier that doesn’t work well.
- Uses 12 D magnifier and sees 1 M
- Would like a magnifier that would “cover the whole page”
- Additionally complains of difficulty on the computer, light sensitivity

Difficulty with the Computer
- Cntrl +
- Cntrl (roll mouse wheel up and down)
Using the Magnifier

Surfing the Web

DC 52
- Has a magnifier that doesn’t work well.
- Uses 12 D magnifier and sees 1 M using.
- Would like a magnifier that would “cover the whole page”.
- Additionally complains of difficulty on the computer, light sensitivity.

Filters
- Corning
  - 450
  - AMD
  - 511
- Optic atrophy, cataracts,
- 527
- Diabetic Retinopathy
- 550
- Achromatopsia, RP

Contrast Sensitivity Measurement
- Pelli Robson
- MARS
- Vision Contrast Test System
- Precision Vision Near Contrast Card
Typoscope

Distance Magnification

Telescopes
- Hand held telescopes
  - Advantages
    - Portable
    - Good for spotting
  - Disadvantages
    - Decreases field of view

- Hands - free telescopes
  - Advantages
    - Use for extended periods of time
  - Disadvantages
    - Cosmesis
    - Weight of device

Other Resources – Helping Patients
Little to No Cost
- Division of Blind Services
- Lighthouse or similar agency
- Books on tape
- Directory assistance
- Income tax exemption
- Transportation services
- Handicapped plates

Thank You
npatties@nova.edu