Low Vision Management in AMD

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Outline

• Introduction
• Prediction of LV device success
• Case 101. Early AMD
• Case 102. Later AMD
• Resources
Survey of LV services provided by Optometrists across Canada

- 459 responses
- Highlights
  - 35% reported one an optometrist in their office provided LV services
  - 10% of patients were estimated to have BCVA of 6/12 or poorer
  - 40% would manage a patient with minimum disability and simple goals with simple optical devices such as magnifiers and filter lenses

- What needs to change for you to do more LV?
What type of education?

- Practical
- Basic
- Timely, efficient LV assessment
- Basic calculations/optics
- Equipment list
How to predict LV success?

• Motivation
  ▫ “A well motivated patient is one who has specific goals in mind”
  ▫ Help patient to be goal directed
  ▫ Most common goal = reading
1. Insufficient acuity reserve
2. Insufficient contrast reserve
3. Field loss
• VA
  • Patients with very poor VA, may not be able to obtain sufficient acuity reserve.
    ▫ Need at least 2x acuity reserve for reading for adults.
    ▫ More gives better reading speed
The hen was sitting on the shed.

Patty spilled some jam on the rug.

I will make a wish for a red pen.

The big circus cats ran in the cage.

A pet shop is a nice place to visit.

The children took Grandma some flowers.

My dog likes to play with a stick.

The picture of the children is funny, indeed.
Colenbrander Continuous text near vision card

- Available in Spanish, Portuguese, German, Dutch, Finnish, Swedish, Italian, French

Available from Precision Vision
CS

- If logCS < 1.00 reading is slow, whatever optical magnification is used i.e. even with optimal optical magnification (Leat and Woo, 1998)

Observer has clinical reading acuity of 0.85logMAR or better

Latham and Tabrett (2012)
• Measuring CS

Pelli-Robson chart

Available from Good-Lite $395

MARS charts

Available from Precision Vision $540
• Low contrast VA

ETDRS (Good-Lite) $95
Mixed contrast charts

Colenbrander (Precision Vision)

Continuous text mixed contrast chart (Precision Vision)
• **Visual fields**
  - Central scotoma $\geq 22^\circ$ (PRL $\geq 11^\circ$ from anatomical fovea)
  - Constricted fields $\sim 5$ characters
  - Hemianopia (especially RVF)
Techniques for measuring central fields

Based on California Central Visual Field test
Case 101

• 78 year old female with macular degeneration

• Case History
  ▫ Chief goals; Reading, TV, driving, writing
  ▫ Pertinent ocular, medical history
  ▫ Macular degeneration diagnosed about 5 years previously
  ▫ OD; Laser therapy, Visudyne and Lucentis treatment
  ▫ OS; Visudyne and Lucentis treatment
  ▫ Has distance and reading glasses and a magnifier which doesn’t help much
Clinical findings

- VA; OD 3/18, OS 3/9.5+2 OU 3/9.5+ (Feinbloom chart)
- Slight change in distance refraction
- Near VA (with 3.50D add)
  - OD 0.24/3M, OS 0.24/0.8M, OU 0.24/0.8M
- CS (Pelli-Robson)  OD 0.45, OS 1.05

- Central visual field (Amsler); OD scotoma left of fixation, OD no scotoma noted
• Calculation of magnification
  ▫ Assuming a goal of 1M for reading (2M for writing)
  ▫ Already reading 0.8M???

  ▫ But current acuity reserve is 1/0.8 = 1.25x
  ▫ OR consider that for acuity reserve of 2x, acuity needs to be 0.5M

\[
Mag = 2 \times \frac{\text{near VA in M print}}{\text{goal in M print}} \\
= 2 \times \frac{0.8}{1} \\
= 1.6x
\]
To determine Dioptres required (EVP)

\[ EVP = Mag \times \text{Reading add used for near VA} \]

\[ = 1.6 \times 3.5D \]

\[ = 5.6D \]
• Try that mag. (EVP) in devices available
  • +4.50D add = 0.63M
  • +6.00 prism half eye = did not like
  • 3.5x LED Eschenbach HM (10D) = 0.4M
  • Or 1.6x SM

□ Lighting very important for patients with AMD
- $2.1 \times \text{Max TV} = 3/7.5 \text{ pt}$

- $4 \times \text{Esch bar-mounted} = 3/3.8$
• Driving counselling
  ▫ Borderline – try test
  ▫ Bioptics
  ▫ Driver’s license for ID
Final recommendations
- SV readers with +4.50D add (could be BF)
- Keep current glasses for general wear
- 10D illuminated HM
- Trial of 2.1x Max TV and 4x Esch telescopes
- Importance of lighting
Case 102

• 79 year old male with exudative macular degeneration

• Case History
  ▫ Chief goals;
    • Model railroads (difficulty seeing the wiring),
    • reading, writing (re-writing Navy manuals for cadets. originals are hard-copies)
    • Computer use (does not currently own one, wife has one)
    • TV (has 45’ screen)
• Pertinent ocular, medical history
  ▫ AMD diagnosed 10 years previously
  ▫ Anti-VEGF Tx OU last 3 years
  ▫ Variety of HM (not brought) and mag. Visor
  ▫ Arthritis, HT, melanoma on left ear

• Other information
  ▫ Lives at home with wife (who accompanied him)
  ▫ Depression (PHQ =5)
  ▫ Reported no falls in last 6 months
PHQ-2 (Patient Health Questionnaire) depression screen

In the past 2 weeks, have you been bothered by
1. Little interest or pleasure in doing things?
2. Feeling down, depressed or hopeless?
   a. Not at all = 0
   b. Several days = 1
   c. More than half the days = 2
   d. Nearly every day = 3

Positive response if 3 or more points
Clinical findings

- VA (logMAR); OD 3/60, OS 3/38, OU 3/30
- No significant change of refraction
  - OD -0.75DS, OS -1.00DS Add +4.00D
- Contrast sensitivity (PR) OD 0.6, OS 0.8
- Near VA (Continuous text Lighthouse); OD 0.25/8M, OS 0.25/3.2M (improves with additional light)
• Modified Tangent screen shows OS central scotoma superior to fixation
• EV training
  ▫ Fixation inferior right
  ▫ 3M and 2M Quillmans
Assessment for near magnification

- With eccentric viewing (EV) down to right, OS near VA = 0.25/2.5M

\[ Mag = 2 \times \frac{\text{near VA in M print}}{\text{goal in M print}} \]

EVP = Mag * Reading add used for near VA

- Mag (for 1M print) = 2 \times 2.5 = 5x
- Equivalent viewing power = 5x4D = 20D
▪ CCTV and computer assessment recommended
▪ 20D devices demonstrated
  • 20D HM = 0.6M
  • 20D FFMS = 0.6M
  • 5x Esch SM = 1M
  • 5x Powerlux = 0.8M
▪ Reading slowly with all these
▪ But did borrow the HM and FFMS
• Clip-on BL
• 4x Esch telemicroscope
• Walters 1.7x and 3.5x LED
Headband magnifier = 1.2M
• **Assessment for distance magnification**
  
  ▫ **For TV**
    • 2.1x Max TV = 1.5/15
    • 5.5x Beecher-Mirage = 1.5/6
  
  ▫ **For distance spotting**
    • 4x12 monocular = 3/19
Management

- EV training
- Purchased Walters 1.7x and 3.5x Headband magnifier (for modelling), 5.5x Beecher-Mirage (for TV), desktop CCTV (for reading and writing)
- Computer modifications available in Windows and ZoomText were demonstrated.
- A further recommendation was computer training through Access-Ability
• Computer adaptations
  • Large screen
  • Decrease resolution
  • Enlarge the view/font
  • Windows 7: some accessibility under personalization e.g. magnifier, narrator, enlarging icons and mouse pointer, high contrast, uncluttered desk top
  • Windows 8 – speech recognition
  • Macs, iPads and cell phones also
• Conclusion and learning points
  ▫ Mr. M was highly motivated (clear goals, realistic expectations, willing to try anything) despite his positive score for depression
  ▫ Don’t be afraid of magnification
  ▫ EV improved fluency and tracking, rather than VA and magnification
BASIC LOW VISION EQUIPMENT

• **Diagnostic Equipment**
  - Colenbrander continuous text near vision card
  - Bailey-Lovie logMAR chart, ETDRS or Feinbloom chart
  - +/- 1D and +/-0.50D crossed cylinder
  - Amsler chart with diagonal fixation cross
  - Pelli-Robson or MARS CS chart
  - Modified tangent screen (print yourself)
• **Optical Low Vision devices**
  - **Spectacle microscopes**
    - 16D, 20D, 24D, 32D full field microscopes (available from Chadwick Optical)
    - +6D, +8D, +10D prism half eyes (e.g. prismatic eye ware from Eschenbach)
  - **Hand magnifiers**
    - Good quality 8D, 12D, 16D, 20D and 24D e.g. from Eschenbach
    - 8D, 12D, 20D pocket magnifier
- **Stand magnifiers**
  - Bright field (dome) magnifier Esch 1420
  - Range of stand magnifiers, such as Eschenbach range listed below or equivalent.

<table>
<thead>
<tr>
<th>Esch 1580 series - 3x</th>
<th>OR</th>
<th>Powerlux 3.5x (14D)</th>
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<tbody>
<tr>
<td>Esch 1554 series - 4x</td>
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<td>Powerlux 5x (20D)</td>
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<tr>
<td>Esch 1553 series - 5x</td>
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<td>Powerlux 7x (28D)</td>
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<tr>
<td>Esch 1552 series - 6x</td>
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<td>In cool blue and warm yellow light</td>
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<td>Esch 1551 series - 7x</td>
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- One portable video magnifier e.g. Ruby
Telescopes

- Esch Max TV (2.1x)
- Esch 1634-3 (3x bar-mounted binocular distance telescope)
- Esch 1634-4 (4x bar-mounted binocular distance telescope)
- 4x12 monocular (from Eschenbach and many other sources)
- 6x16 monocular
- **Tints**
  - Yellow (450 cut-off), orange (511 and 527 (or 521) cut-off), brown (550 cut-off) and polarising tints.
• **Notes**
  - Full field microscopes are also available as blank lenses and can therefore be made up in a frame of the patient's choice.
  - Be aware that high round seg. adds up to 16D are available from good laboratories.
  - B-Lovie charts are available from Precision Vision (includes low contrast VA).
  - EDTRS and MARS charts are available from Precision Vision or Good-Lite.
  - Pelli-Robson charts from Precision Vision.
  - Tints available in Chadwick flippers or fit-overs from Eschenbach.
• **References**
