

Expand Your Practice

How to Integrate Low Vision Into Everyday Patient Care and Improve Outcomes

03/18/2022 | VEE | Alexis G. Malkin, OD, FAAO

Disclosures

- Dr. Malkin has received honoraria from Eschenbach Optik for educational seminars
- Dr. Malkin has received travel stipends from Eschenbach Optik and Designs for Vision

Lecture Objectives

- To understand how to incorporate functional history questions into the standard case history in order to better identify which patients have functional goals
- To be able to prescribe appropriate near devices, technology solutions, and other low vision strategies for primary low vision patients
- To develop an understanding of how to appropriately bill and code low vision exams

Defining Low Vision

- The American Academy of Ophthalmology considers referral to low vision to be the standard of care for the following patients:
 - Vision loss that cannot be corrected and interferes with activities
 - Vision worse than 20/40 in the better seeing eye
 - Scotoma
 - Field loss
 - Contrast sensitivity loss

Defining Low Vision

- AOA definition: anyone with uncorrectable reduced vision

Clinical Definition

- Includes both the AOA and the AAO definitions
- Permanently impaired vision in both eyes that causes **functional limitations**

Defining Low Vision Rehabilitation (LVR)

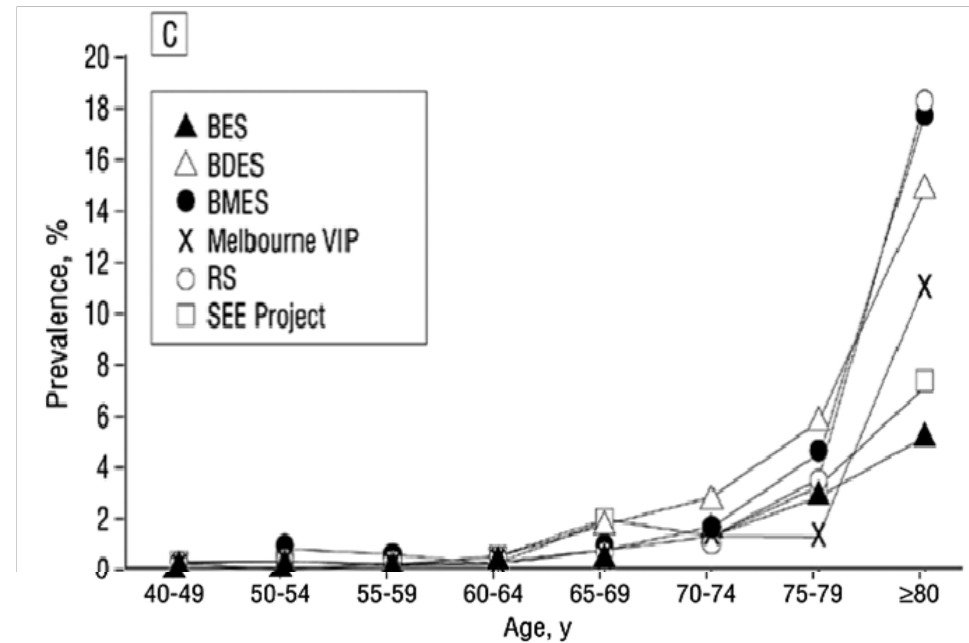
- **Rehabilitation**: rehabilitation of people who are visually impaired involves the coordination of care and a team approach
- Can include social, educational, and vocational measures to help the individual to achieve the **optimal level** for him/her in society.
 - Independence and self-sufficiency
 - Social integration
 - Access to resources
 - Employment

Efficacy of Low Vision Rehabilitation (LVR)

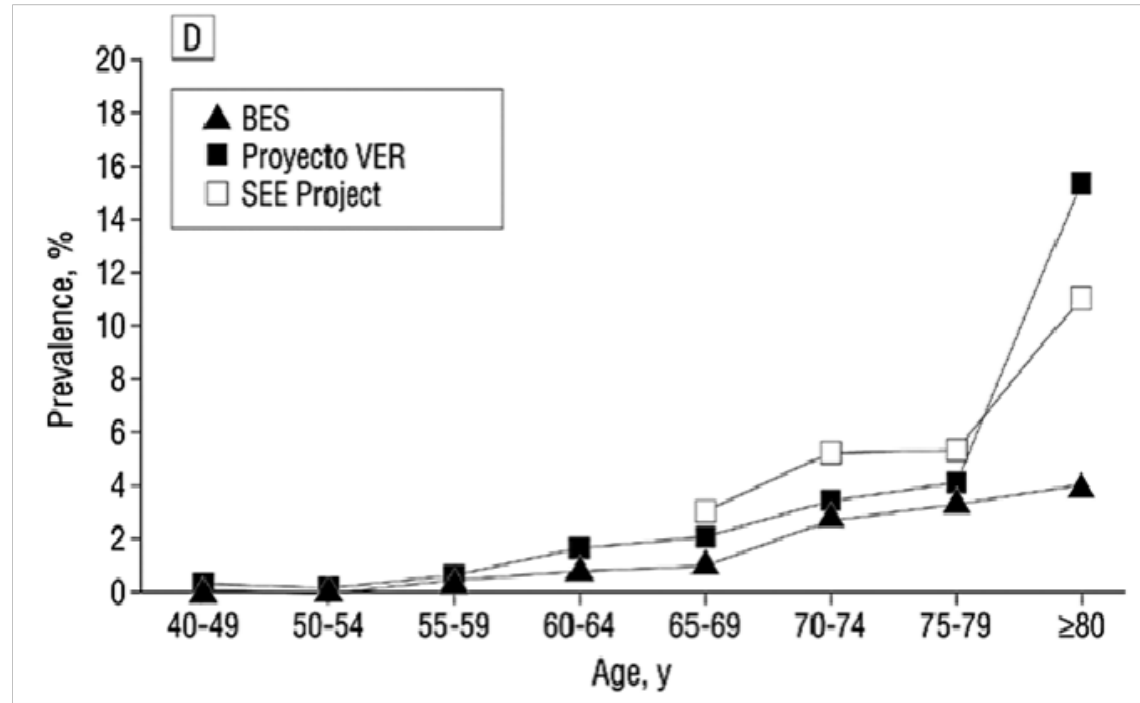
- LOVIT I (2008) and LOVIT II (2017) showed good efficacy of LVR in patients with moderate and severe vision impairment
- LVROS (2015) showed good outcomes for usual care outside the VA population
- Gothwal et al (2015) showed similarly good outcomes at LV Prasad Eye Hospital in Hyderabad, India

Who has low vision?

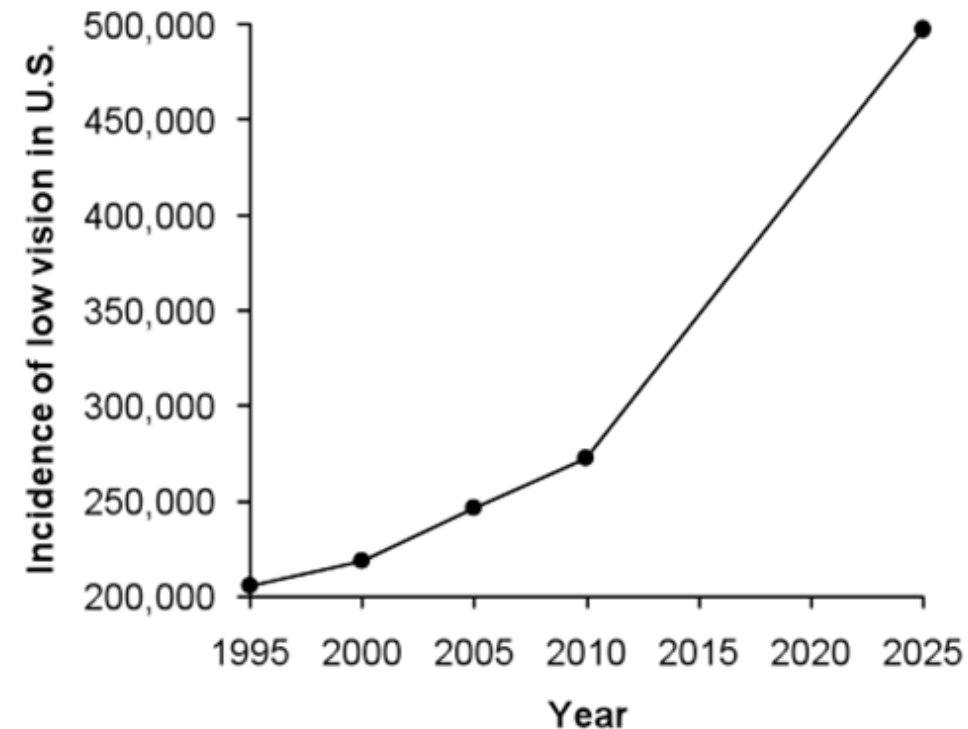
Prevalence Rate of LV in Caucasians



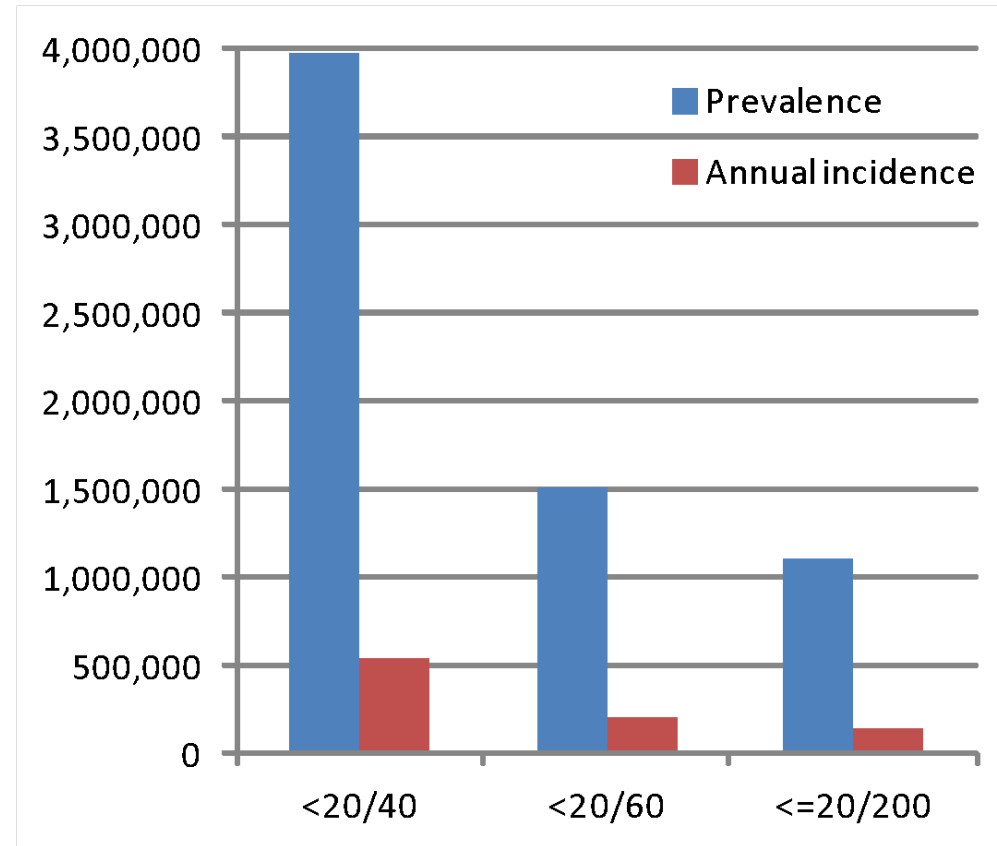
Prevalence Rate of LV in Blacks and Hispanics



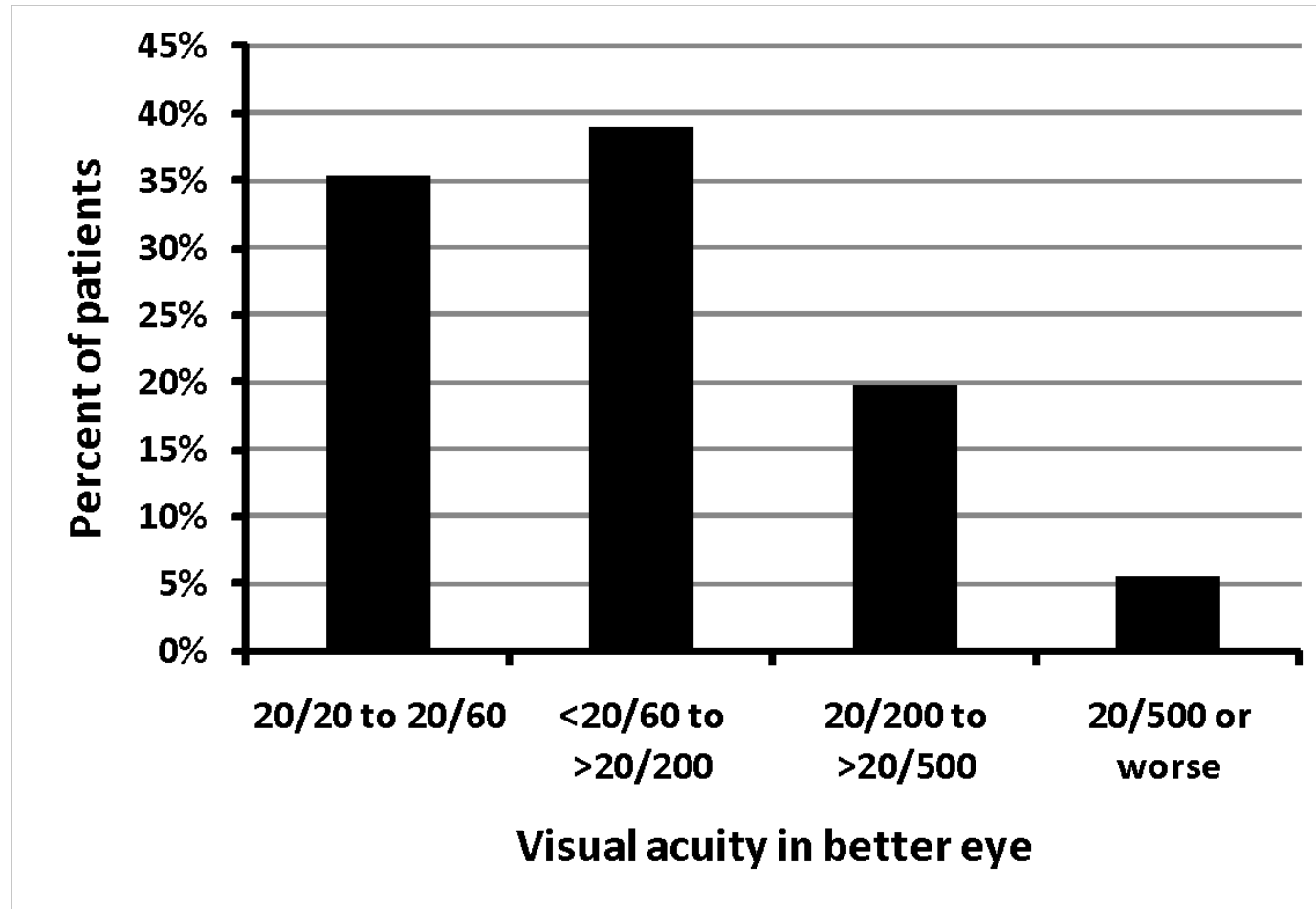
- About 1.25% of the US population is considered visually impaired
- This incidence is expected to double by 2025



National Prevalence/Incidence

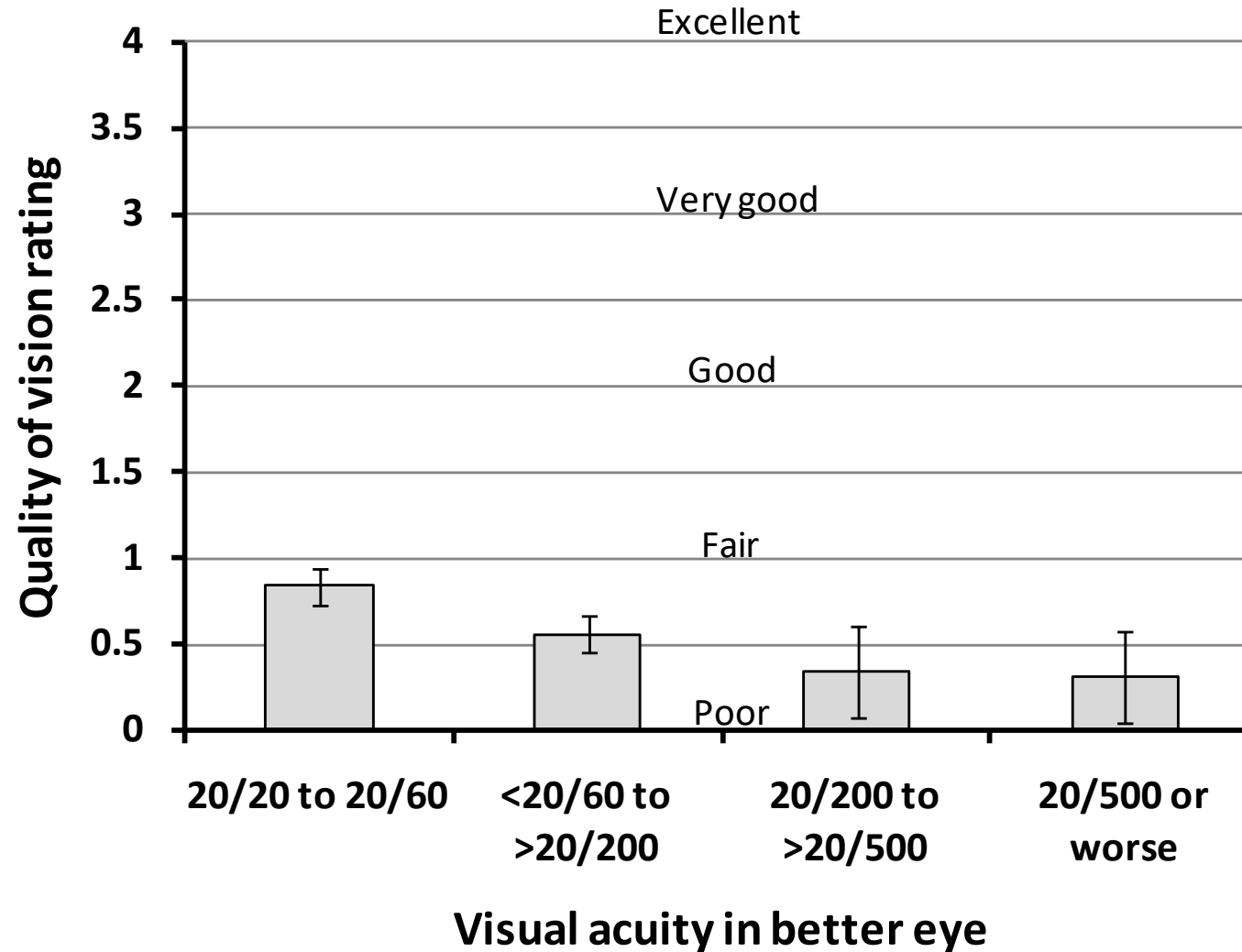


Presenting VA of LV Patients



Goldstein, 2012

Visual Quality vs Visual Acuity

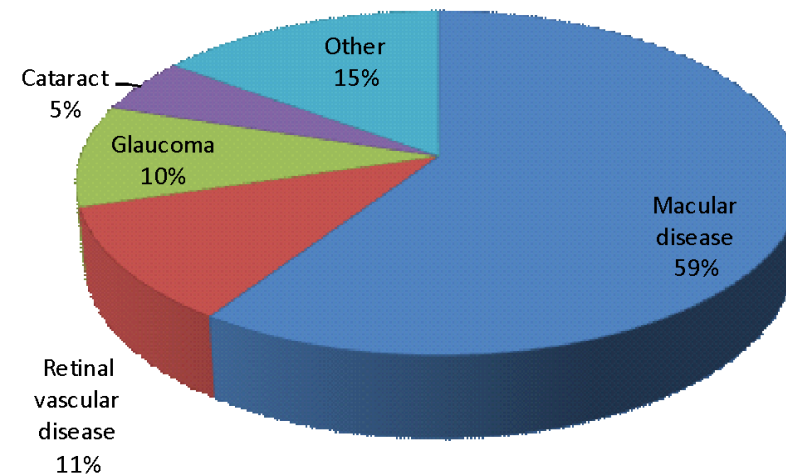


Defining the Problem: Who are the LV Patients?

Most cases of low vision in the United States are caused by age-related eye diseases:

- Macular degeneration (59%)
- Diabetic Retinopathy and other retinal vascular diseases (11%)
- Glaucoma (10%)
- Cataract (5%)

Causes of Low Vision



Blindness

- “Blindness”
 - There has been a historical tendency in the United States to equate the term blindness with total loss of vision
- As many as 70% of a typical client population in an agency for the blind is visually impaired **or has residual vision**

Legal Blindness In the USA

- The term “legal blindness” is often misunderstood by patients and has often been responsible for limitations in
 - Employment potential
 - Educational potential
 - Insurability of patients with visual impairment

Legal Blindness in the US

- **Legal Blindness**: best corrected vision of 20/200 (6/60) or less in the better eye and/or a total visual field diameter of 20 degrees or less in the better eye.
 - Worse than 20/100
- Massachusetts Commission for the Blind

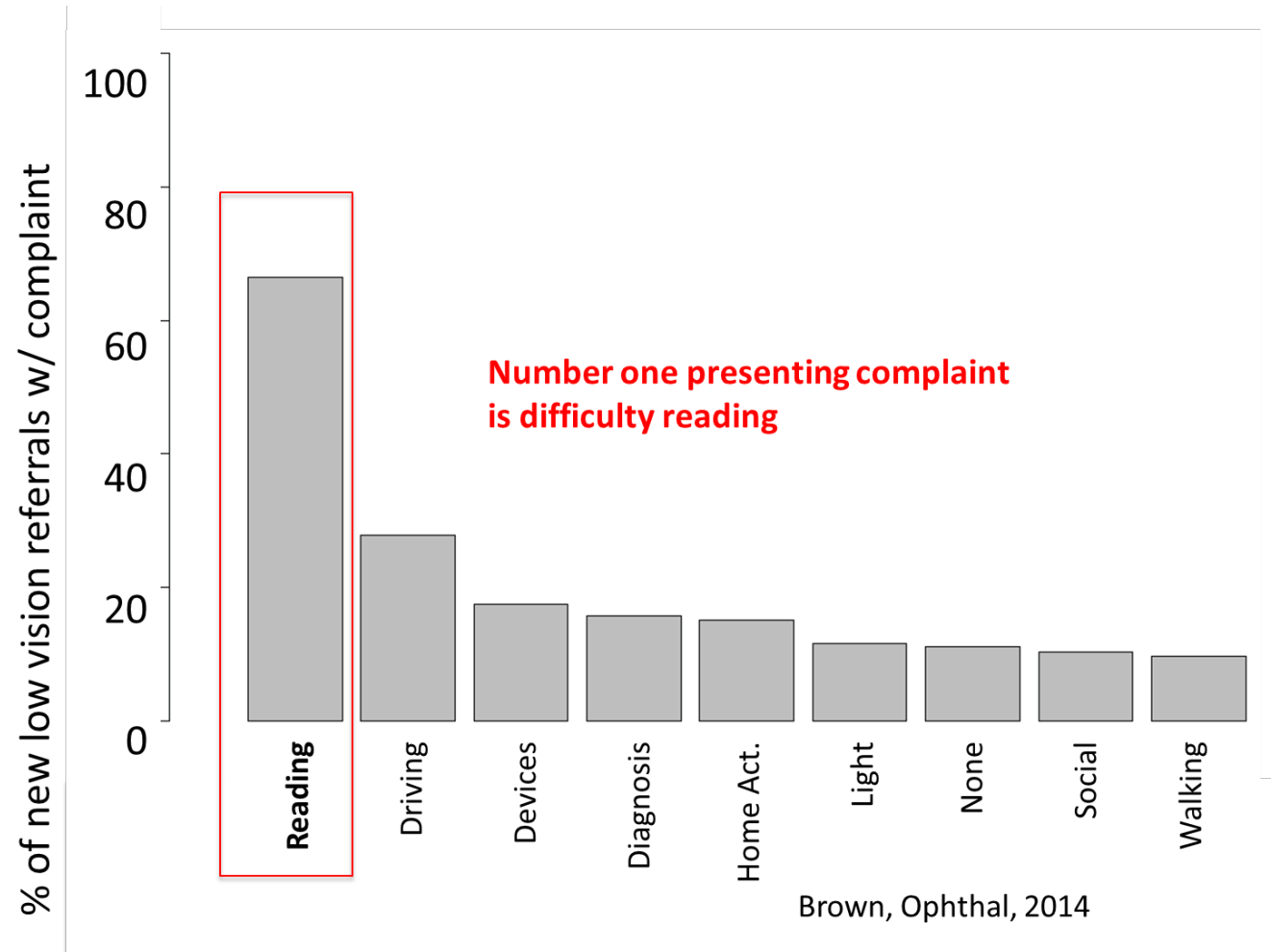
Low Vision Case History

- Be able to apply appropriate terminology and classifications of visual impairment in order to **communicate** with patients
- Be able to **ask basic questions** about functional difficulties, and rehabilitation goals to anticipate the level of care
- Be able to **recognize** psychological factors (e.g. depression, grief, motivation) that may affect adjustment to vision loss
- Be able to **prescribe** low vision devices and resources for the specific low vision goals

Case History

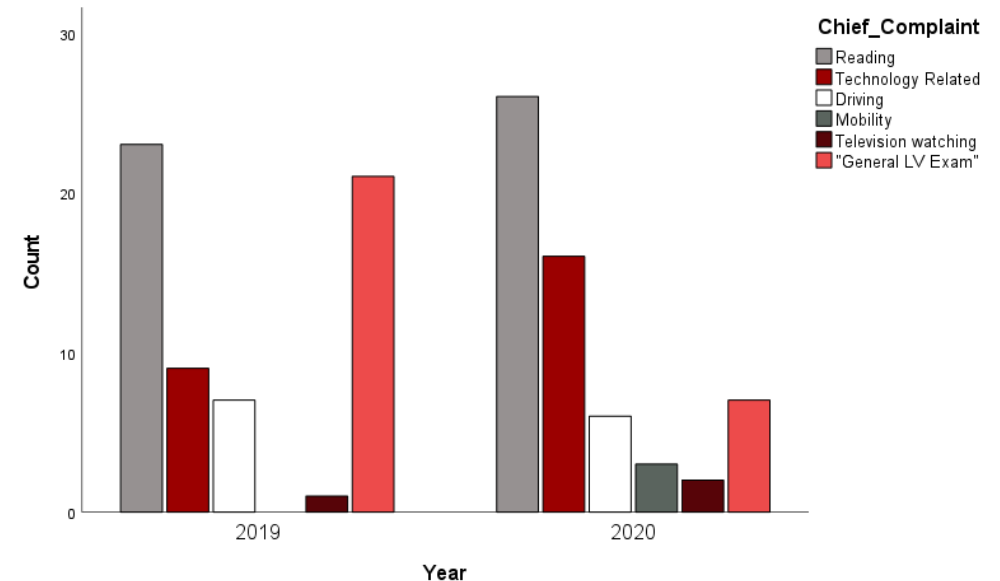
- We should uncover the patient's functional deficits not just the anatomical problem and do this in terms of **loss of ability** to perform necessary daily activities.
- As you listen to the patient consider 2 basic questions:
 - What can't the person do that was possible before?
 - What are they asking for in terms of help they wish we could provide?

Presenting Complaints

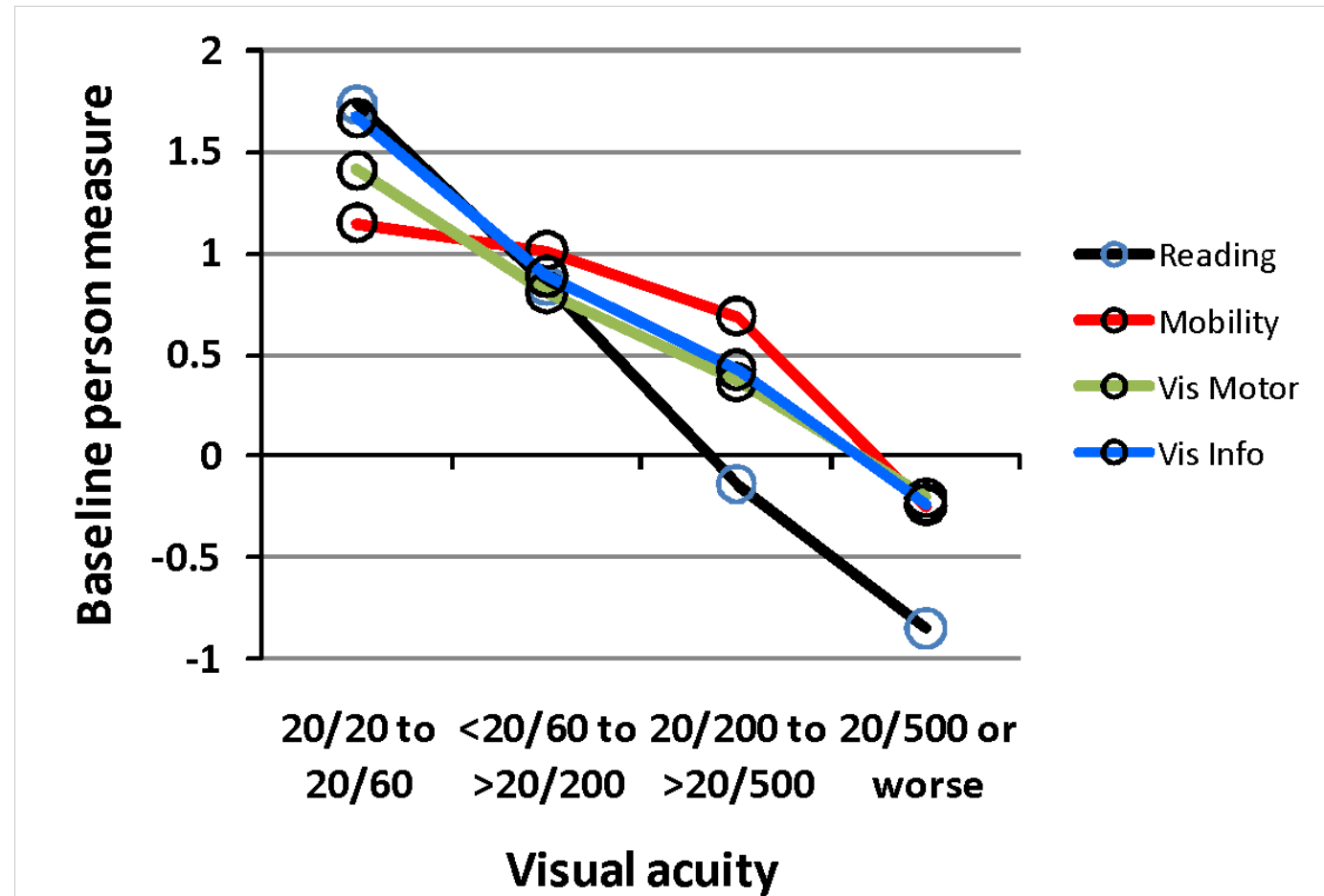


Chief Complaints of LV Patients

- Aigbe and Ross (2021) found that in both 2019 and 2020, low vision patients continued to have a chief complaint related to reading
- However, it was notable that in 2020 the chief complaint of difficulty with technology nearly doubled and became the second most common chief complaint in the sample



Functional Effects



Goldstein, Arch Ophthal, 2012; Low Vision Research Network Study Group

Low Vision Functional History/Functional Domains

1. Reading
2. Visual Information/ Seeing
3. Mobility
4. Visual Motor Skills/ ADLs
5. Driving

Measuring Acuity

- Differing charts can provide differing acuities
 - Variable contrast
 - Variable lighting
 - Fewer/more letters per line



Low vision loves logmar



Refractive Error in Low Vision

Sunness et al. retrospectively reviewed the first record for 739 low vision patients.

Results:

- Improvement of 2 lines or more of visual acuity in 81 patients (11%)
- Improvement of 4 lines or more in 22 patients (3%)
- When stratified by diagnosis, higher rate of improvement with:
 - Macular degeneration
 - Myopic degeneration/ progressive myopia
 - Status post retinal detachment

Sunness, Janet S. et.al., Improvement of Visual Acuity by Refraction in a Low-Vision Population
Ophthalmology: Journal of the AAO , Volume 117 , Issue 7 , 1442 - 1446

Trial Frame Refraction

- Don't overlook retinoscopy (even over habitual Rx)
- Remember the pathology— recently pseudophakic, trabeculectomy, corneal irregularity, s/p scleral buckle
- Other reasons to change Rx? (fall risk, spectacle disrepair)



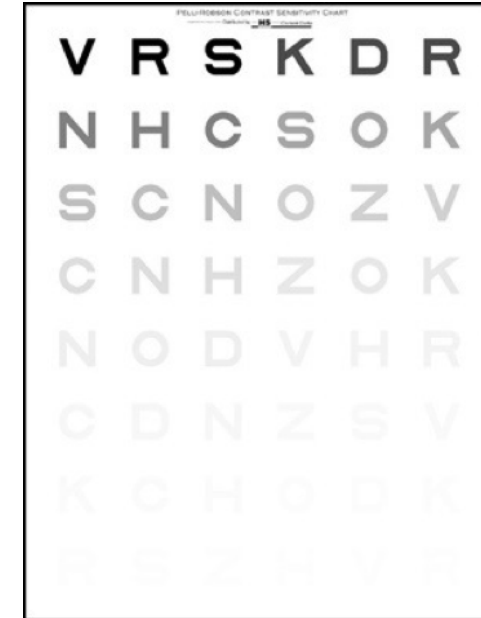
Just Noticeable Difference

- Loose lenses allow for easier comparisons of large lens changes
- Want bigger differences between lenses when acuity is more impaired
- 20/100 = JND of 1.00 or +/- 0.50
- 20/200 = JND of 2.00 or +/- 1.00
- Hand-Held JCC is needed



CONTRAST SENSITIVITY TESTING

- MARS chart is portable and easy to store when not in use
- If no CST chart available, ask directed questions
 - Difficulty seeing facial detail
 - Hard to see stairs/steps
 - Tripping on uneven ground
 - Overall haze in vision
 - Hard to read digital displays



INTERPRETATION OF THE CONTRAST SENSITIVITY FUNCTION

Log Contrast Sensitivity	Categorical Interpretation
1.52- 1.48	Near Normal
1.04- 1.48	Moderate Loss
0.52- 1.00	Severe Loss
<0.48	Profound Loss

THE READING ASSESSMENT

- Letter Acuity has limited use
- Consider a continuous text card
- Consider keeping a supply of “real-world” reading items in the office (newspaper, paperback book, medicine bottle)



MNREAD™ LOW-VISION READING ACUITY CHART 2		
M size	Snellen	logMAR
4.0	20/250	1.6
3.2	20/180	0.9
2.5	20/125	0.8
2.0	20/100	0.7
1.6	20/80	0.6
1.3	20/63	0.5
1.0	20/50	0.4
0.8	20/40	0.3
0.6	20/32	0.2
0.5	20/25	0.1
0.4	20/20	0.0

Methods to Determine Starting Power (Equivalent Power – Feq) for 1M

1. Inverse of the Distance Acuity Method
2. Inverse of the Near Acuity Method
3. Acuity Reserve Rule
4. The NECO Favorite: Inverse of the Last Good Reading Method

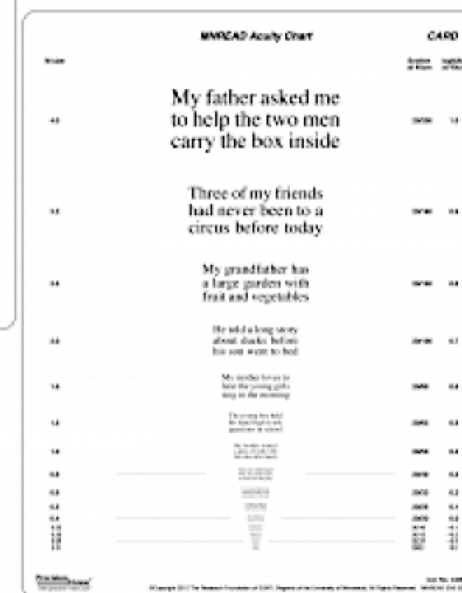
MNREAD



- M size is listed 8M to 5M on the front and 4M to .13M on the back side.
- The vocabulary is selected from 3rd grade reading material
- Available in the following languages : English, Spanish, French, Italian, and Portuguese
- Available on Apple iTunes:
- <https://itunes.apple.com/us/app/mnread/id1196638274?ls=1&mt=8>

MNREAD Reading Acuity

Last Good Reading (Critical Print Size) = the smallest print at which the patient can read at their maximum reading speed



Inverse of the Last Good Reading Method

To Determine Feq from MNRead note the following:

1. Note the spectacle correction the patient is wearing at near
2. Ask the patient to hold the card where it is in best focus and measure this distance
3. Ask the patient to read starting from large print levels
4. Note maximum reading speed (even if only qualitative, i.e. slow, moderate, fast)
5. Note critical print size (can determine either with stop watch, or by listening... **when do they start to slow down?**)
6. Note the threshold

Inverse of the Last Good Reading (Critical Print) Method

Example:

1. Patient wearing +3.00 over trial frame refraction
2. Holds card at 30 cm
- 3. Last Good Reading (CPS)= 2.0M**
4. Threshold print size = 1.6M

$$F_{eq} = 2.0M / 0.30m = 6 \text{ D}$$

Next: decide on Spectacle, Hand or Stand magnifier.

Optical Device Selection



1. High Near Addition
 - (aka Microscope) or Prism Half Eye Spectacles
 - Custom rx available through Chadwick



2. Hand Magnifier



3. Stand Magnifier

PRISM HALF EYES AND MICROSCOPES

Advantages:	Disadvantages:
Spectacles are “normal” as a reading strategy	Close working distance
Wide Field of View	Limited depth of field
Custom rx’s can include cyl or aniso	Hard to get a light in, if needed
Ready-made versions also available	Training and reinforcement often needed
Binocularity possible if < about +10	Binocularity impossible if > about +10

TASK-SPECIFIC SPECTACLES: INTERMEDIATE

- Cannot prescribe solely based on Feq, must prescribe based on the working distance of the task
- Consider for use with other low vision aid such as video magnification (CCTV) or stand magnifier
- Occasionally prescribe for eating/seeing faces at table
- Card-playing/bridge glasses

Mini case

- 66 yo musician with AMD in both eyes
- Exudative OD, non-exudative OS
- CC: hard to see sheet music especially fine detail
- Has tried enlarging sheet music but still not sufficient



www.ocutech.com

- BCVA at distance
2/12.5 OD, 2/5 OS
- Right scotoma OD and OS
- Assessed both 1.7X and 2.2X
Sightscope with reading cap
- Best function for visualizing finger positions with higher power. +2.00 reading cap provided good working distance and clear focus

MAGNIFIERS

- Understanding goals will help determine most appropriate magnifier
 - Headlines vs copy of an article?
 - Spot reading mail vs completing bills
- Consider trade off between FOV and mag
- Both illuminated and non-illuminated have a role



HAND HELD MAGNIFIERS

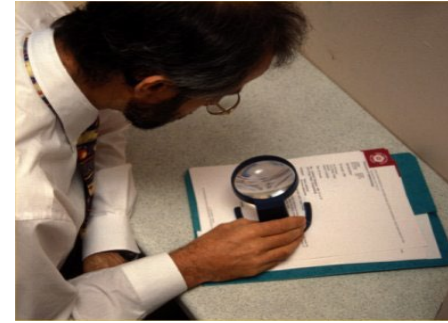
SUMMARY:

Advantages:	Disadvantages:
Familiar approach	Requires good “hand control”
Eye relief is flexible, but affects FOV and angular MAG	Not hands free
Small, portable	Smaller FOV than spectacles
Compatible with spectacle rx’s	Training and reinforcement often needed regarding: <ul style="list-style-type: none">- Use with bifocals- Focal distance- Field of view and distance from spec plane
LED lighted options available	

- 59 yo male with PDR OU
- BCVA 20/200 OD, NLP OS
- MNRead with +3.00 add:
.3/3.2M
- What is the Feq?
- Patient has used 16D LED HM in the past but is no longer finding this sufficient. After extended near assessment, patient was able to achieve 0.8M spotting print with a 20D LED HM with accuracy



STAND MAGNIFIERS



- A stand magnifier is like a hand-held device except the lens housing has a fixed distance spacer or stand that is placed on top of the print and remains on the page during use. Patients must be trained to keep the stand magnifier **flat** on the printed material.
- An **add or accommodation** is required

STAND MAGNIFIERS SUMMARY:

ADVANTAGES:	DISADVANTAGES:
Stable hand position (SM is dragged along and maintains contact with the page)	Accommodation or near ADD power must be appropriate
Great LED Lighting available !!!	Bulky – not portable
Eye relief can be variable depending on the presbyopia and Add	Writing and manipulation difficult to impossible
Can get additional mag in combination with near add using Enlargement Ration (ER)	May need raised surface or writing stand to bring device closer to spectacle plane

Video Magnification

- Higher magnification
- Greater stamina
- Comfortable working distance
- Wide Field of View
- New models allow greater flexibility
- Many portable and transportable options available
- Allow for contrast enhancement
 - Black on white
 - Or.. White on black



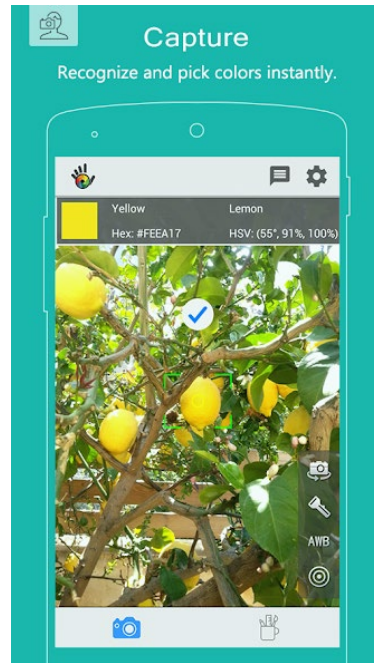
VIDEO MAGNIFICATION SUMMARY:

Advantages:	Disadvantages:
Can provide very high levels of magnification and wide field of view!!	Not portable!
Can also provide contrast enhancement	Large size
Patient can maintain normal posture and excellent stamina	Nausea
Binocular viewing possible!!	Using x,y table may require training
Can write with it!	High cost

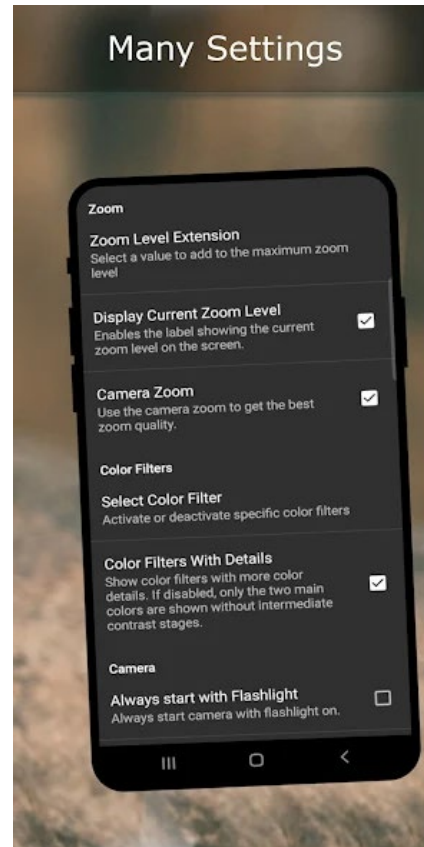
E-READER SUMMARY:

ADVANTAGES:	DISADVANTAGES:
It's "normal"	Enlargement limitations
Some models provide contrast enhancement and reverse polarity	Screen resolution variable
Can alter line spacing and type face	Requires Wifi
Some models have text-to-speech	Requires familiarity with electronics or family/care-giver support
Can be used in combination with prism half eyes!!	Buttons or Menus often not in large print

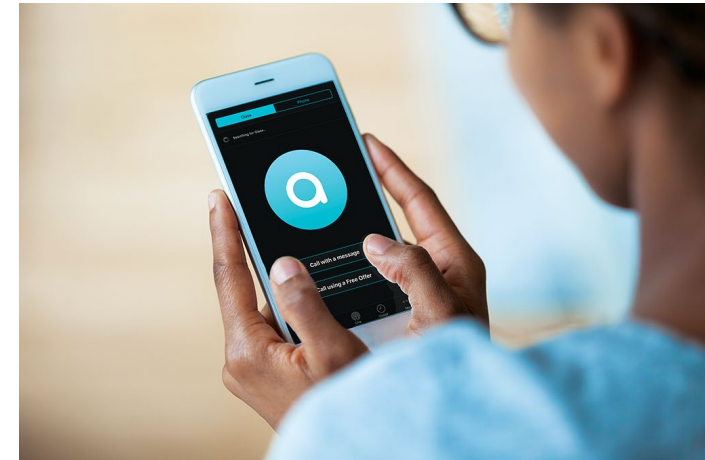
Apps



Color Grab



WeZoom



Aira



Seeing AI



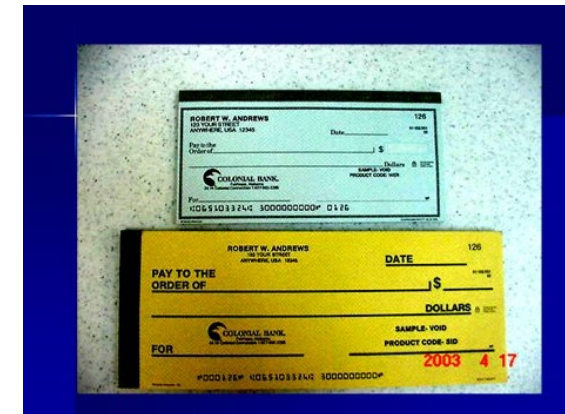
Bard Mobile



NFB
Newsline

Activities of Daily Living

- Nonoptical aids such as audio devices (e.g., watches, labels), large-print bank checks, large-button telephones, signature templates, and needle threaders
- Modification of lighting, pattern, and contrast to increase visibility
- Tactile or Braille labeling
- Computer adaptations using magnification, audio-screen readers and text to speech using optical character recognition
- Cell phone accessibility options



- Meal prep: expiration dates, handling knives, operating stoves
- Medication management
- DM, HTN and other health management
- Ability to dial a telephone for help and implement an emergency evacuation plan
- Risk of falling
- Independent ambulation/referral to orientation and mobility specialist and/or physical therapist

American Academy of Ophthalmology, Preferred Practice Patterns, 2013

Billing E/M Codes

- Billing is based on either:
 1. Medical Decision Making
 - not typical low vision billing
 2. Time spent
 - more typical low vision billing
 - time must be documented thoroughly

Billing based on time

- Total Time Spent can be used for code level selection, independent of counseling and/or coordination of care portion of service
- Activities contributing to time spent:
 - Preparing to see the patient (for example, review of tests)
 - Obtaining and/or reviewing separately obtained history
 - Performing a medically appropriate examination and/or evaluation
 - Counseling and educating the patient/family/caregiver
 - Ordering medications, tests, or procedures
 - Referring and communicating with other health care professionals (when not separately reported)
 - Documenting clinical information in the electronic or other health record
 - Independently interpreting results
 - Communicating results to the patient/family/caregiver
 - Care coordination (when not separately reported)

Billing Based on Time:

New Patient E/M Code	Typical Time (2020)	Total Time (2021)
99201	10 minutes	Code deleted
99202	20 minutes	15-29 minutes
99203	30 minutes	30-44 minutes
99204	45 minutes	45-59 minutes
99205	60 minutes	60-74 minutes
Established Patient E/M Code	Typical Time (2020)	Total Time (2021)
99211	5 minutes	Time component removed
99212	10 minutes	10-19 minutes
99213	15 minutes	20-29 minutes
99214	25 minutes	30-39 minutes
99215	40 minutes	40-54 minutes

ICD-10 VISION IMPAIRMENT CODES

(Version date: 1/8/18)

Determination of ICD-10 Code for OUTPATIENT Services

1. Identify the Vision Impairment Category of each eye based on visual acuity (VA) or central visual field (VF).
2. Use the table below to determine the appropriate code to use.
 - a. Finger Count (CF) at 1 m (3 ft) = 20/1200 equivalent.
 - b. For VA with no letters on 20/100 equivalent line or for Central VF of 20° or less in EACH EYE, use "Legal Blindness" code, H54.8, BEFORE other vision impairment codes.
3. Use other visual disturbance codes as appropriate.
4. Remember to also code for medical/pathological condition, i.e., cause of vision impairment.

Vision Impairment Categories

DESIGNATION	CATEGORY	VA	CENTRAL VF
NORMAL VISION		>20/70	
LOW VISION	1	20/70 to 20/200	
	2	<20/200 to 20/400	
BLINDNESS	3	<20/400 to 20/1200	20 deg to 11 deg
	4	<20/1200 to LP	≤10 deg
	5	NLP	

Vision Impairment Code Table

Code begins with:
H54.

and continues with:

Code begins with: H54. and continues with:		VISION IMPAIRMENT CATEGORY – RIGHT EYE						
		BLINDNESS			LOW VISION		NORMAL VISION	
		5	4	3	2	1		
VISION IMPAIRMENT CATEGORY – LEFT EYE	BLINDNESS	5	0X55	0X45	0X35	1225	1215	42A5
		4	0X54	0X44	0X34	1224	1214	42A4
		3	0X53	0X43	0X33	1223	1213	42A3
	LOW VISION	2	1152	1142	1132	2X22	2X12	52A2
		1	1151	1141	1131	2X21	2X11	52A1
	NORMAL VISION	415A	414A	413A	512A	511A		

Visual Disturbance Codes

CONDITION	RIGHT EYE	LEFT EYE	BILATERAL	UNSPECIFIED EYE
CENTRAL SCOTOMA	H53.411	H53.412	H53.413	H53.419
GENERALIZED CONTRACTION OF VF	H53.481	H53.482	H53.483	H53.489
HETERONYMOUS BILATERAL FIELD DEFECT			H53.47	
HETERONYMOUS HEMIANOP(S)IA				
	RIGHT SIDE	LEFT SIDE	UNSPECIFIED SIDE	
HOMONYMOUS HEMIANOP(S)IA, QUADRANTANOP(S)IA	H53.461	H53.462	H53.469	
GLARE SENSITIVITY				H53.71
DECREASED CONTRAST SENSITIVITY				H53.72
METAMORPHOPSIA				H53.15

Functional Visual Impairment

LVR does not always happen because of:

- Not being treated with primary low vision or
- Not being referred to advanced low vision practitioners
- Denial/lack of follow through on referral

Consequently, patients without access may experience years of significant functional loss

All Optometrists need to treat primary care patients with visual impairment or refer to someone who can provide the LVR

Perceived Barriers in the US

- Practitioners who do no low vision also don't integrate primary low vision strategies (high add, low mag, etc)
- Reported barriers for providing low vision care included:
 - Cost of exam/devices
 - Patients are not interested/would not go
 - Not feasible to stock devices in office

Take Home Message

- We can all manage primary low vision in our practices
- Refer if you are not able to manage it
- Providing LVR leads to better outcomes and ultimately a better practice

Low Vision Inventory to Consider for Your Clinic

Basic LV Aid Diagnostics

- Lighted Hand Held Magnifiers:
 - +6D, +8D, +10D, +12D, +20D
- Lighted Stand Magnifiers:
 - +10D, +12D
- Prism Half Eyes:
 - +4 w/ 6Δ BI, +6 w/ 8Δ BI, +8 w/ 10Δ BI
- Telescope: 2X Binocular System, 2X and 4X monocular
- Fit Over Filters: Yellow, Amber, Gray, Plum
- Electronic Magnification: Portable or desktop unit



On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Conference Advisory Board considers content and speakers for future meetings to provide you with the best education possible.

