INTRODUCTION TO LOW VISION

KENTUCKY OFFICE OF VOCATIONAL REHABILITATION
DEAF-BLIND CONFERENCE 2019

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UKHC Advanced Eye Care

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- Primary Eye Care
- General Ophthalmology
- Cataract Surgery
- Cornea/External Eye Disease
- Glaucoma
- Neuro-Ophthalmology
- **Inherited Eye Diseases**
- Oculofacial and Orbital Surgery
- Pediatrics
- Refractive Surgery
- Retinal Diseases
- Specialty Contact Lens
- **Low Vision**

Introductions

- Kristen Piery, OD
- Primary Eye Care
- Low Vision Services

- Ramiro Maldonado, MD
- Retina Specialist
- Ophthalmic Genetics
  - *Fewer than 100 practitioners worldwide*
- Research and Treatment in Inherited Retinal Disorders

Disclosures

- None.

Objectives

- Introduce low vision services available to visually impaired patients.
- Discuss elements of a low vision exam.
- Review low vision devices and aids currently available.
- Look at future resources coming onto the market for low vision patients.

Low Vision Services University of Kentucky

- Low Vision Evaluations
- Referrals for additional services
- Device ordering through UK Optical
- Bioptic driving eligibility evaluations

So what is low vision…?

- No universal definition of visual impairment.
- Generally determined by the best-corrected distance visual acuity (BCVA) of the better seeing eye.
- Legal blindness is the term used by US government to determine eligibility for services and benefits.
- Coding for low vision in ICD-10 system starts with visual acuity of 20/70 or worse.
- My personal definition is visual impairment starts when reduced vision that cannot be corrected by glasses starts to impact a person’s daily activities.

World Health Organization Definition of Visual Impairment

- 20/30 to 20/60, this is considered mild vision loss, or near-normal vision
- 20/70 to 20/160, this is considered moderate visual impairment, or moderate low vision
- 20/200 or worse, this is considered severe visual impairment, or severe low vision
- 20/500 to 20/1000, this is considered profound visual impairment or profound low vision
- Less than 20/1000, this is considered near-total visual impairment or near total low vision
- No light perception, this is considered total visual impairment, or total blindness

Legal Blindness

- When a person's best corrected distance, central visual acuity cannot be corrected better than 20/200 in the better seeing eye.
- -OR-
- A visual field limitation such that the widest diameter of the visual field in the better eye is 20 degrees or less.

Causes of Vision Loss

- Glaucoma*
- Macular Degeneration*
- Diabetic Retinopathy*
- Injury/trauma
- Retinal dystrophy
- Inherited Retinal Conditions
- Corneal Ectasias
- Amblyopia
- Uveitis
- Cataracts
- Uncorrected refractive error

Simulation

- https://www.versanthealth.com/visionloss/

What does this mean to the patient?

- Most important question to ask is how vision loss affects the patient on a day to day basis.
  - *How does the visual condition affect their ability to make sure basic needs are being met?*
- The second most important thing is to keep the patient's goals in mind.
- Things to consider:
  - *Acquired vs Congenital Vision Loss*
  - *Treatment*
  - *Prognosis*
  - *Access to Resources*
  - *Patient's Attitude*

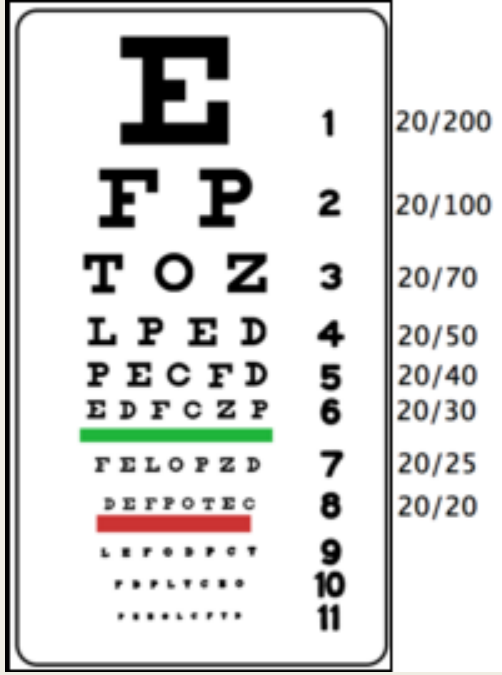
The Low Vision Exam

- History
- **Chief Complaint**
- Visual Acuity
- Visual Field
- Contrast Testing
- **Device Evaluation**
- Ocular Health Exam
- **Plan/Referral for Services**

Chief Complaint

- Guides the exam.
- Divided into three components:
  - *Visual Needs*
  - *Activities of Daily Living*
  - *Orientation & Mobility*
- Patient goals.

Visual Acuity



- Standardized measure of the sharpness or clarity of a person's vision.
- Traditionally measured with a Snellan Eye Chart.
- The term 20/20 is derived from the idea that the 20/20 line is what a person with normal vision should be able to read at 20 ft away.
  - *A person with reduced vision of ex: 20/70 means that a normal sighted person would be able to read that line at 70 ft away but a person with reduced vision would have to be at 20 ft away to read the same line.*
- Different charts and notations used for different purposes.

Device Evaluation

- Magnifiers
- Filters
- Additional Technology

Determining Magnification

- Type of Magnification:
  - *Relative Size Magnification*
  - *Relative Distance Magnification*
  - *Lens Vertex Magnification*
  - *Projection Magnification*
- Goal Magnification= Entering Visual Acuity/Goal Acuity

Magnifiers

- Hand Held
- Stand
- Digital

Hand Held Magnifiers

- Range 2x-12x
- Higher magnification=smaller viewing area
- Available with or without illumination

Stand Magnifiers

- Typically available in lower powers.
- Most are illuminated.
- Some available with guiding lines and filters.

More Stand Magnifiers

Digital Magnifiers

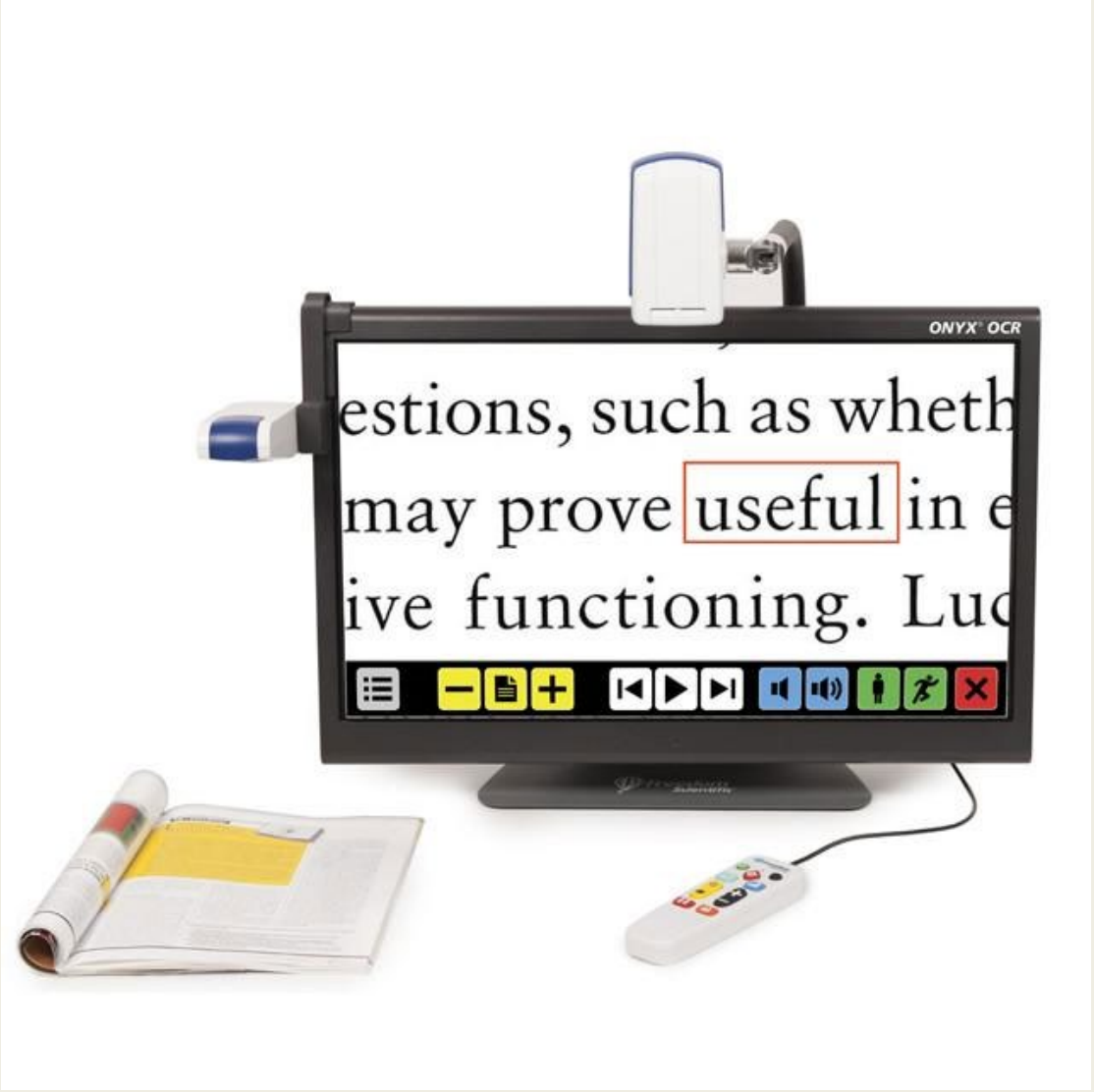
- Offer huge range in magnification 2x-22x.
- Varies contrast and background settings.
- Many with additional options such as guiding lines, text to speech, etc.
- Usually best option for anyone with 20/200 vision or worse.
- Portable and desktop options.
- $$

Portable Digital Magnifiers

CCTVs

OCR Technology

- Text to speech technology.



Filters

- Plum
- Yellow
- Amber
- Grey
- Red
- FL-41

Non Optical Aids

- Computer Software
- Smartphone Apps
- Lighting

Future of Low Vision Devices

- Esight Glasses
- Artificial Intelligence

Esight Glasses

- https://esighteyewear.com/

Special Considerations in Pediatric Patients

- Assistance in School Setting
  - *IEP/504 Plans*
- Individual Recommendations
- Standardized Testing
- Devices Selection
- Device Access at Home

Driver's Licensure
Vision Requirements In Kentucky

- Visual Acuity of at least 20/60 or better in at least one eye.
- Horizontal field of vision at least 35 degrees to both the left and the right of central fixation.
- Vertical field of vision at least 25 degrees both above and below fixation.

Bioptic Driving Requirements

- Must have a visual acuity of 20/200 or better with corrective lenses in the better seeing eye.
- Visual acuity of 20/60 or better through the bioptic telescope.
- Visual field of 120 degrees horizontally and 80 degrees vertically, in the same eye.

Additional Resources

QUESTIONS?

Thank you!

References

- https://www.cdc.gov/visionhealth/vehss/data/studies/vision-impairment-and-blindness.html
- https://www.aoa.org/patients-and-public/caring-for-your-vision/low-vision
- https://www.eschenbach.com/
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