

What Is Low Vision?

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Stephanie Schmiedecke OD

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Overview

Lecture 1: What is Low Vision

- Definitions
- Opportunities
- Epidemiology
- Components of Low Vision Exam
- Sighted Guide

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Let's Have Some Fun

- Please open up your pollEverywhere
- PollEv.com/drs
- Text DRS to 37607

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7:30 am classes are early!

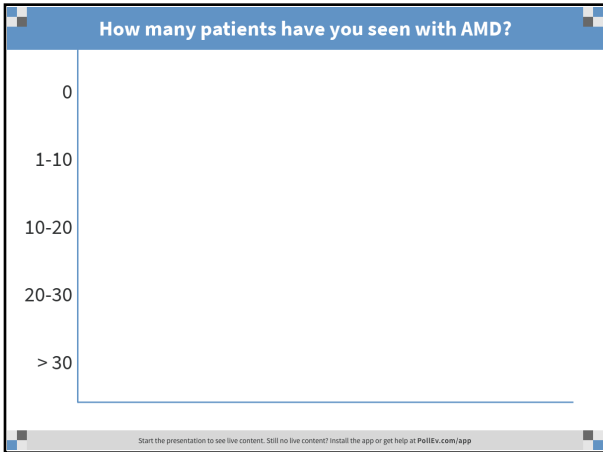
No, way! They're great

No one should have to be up this early

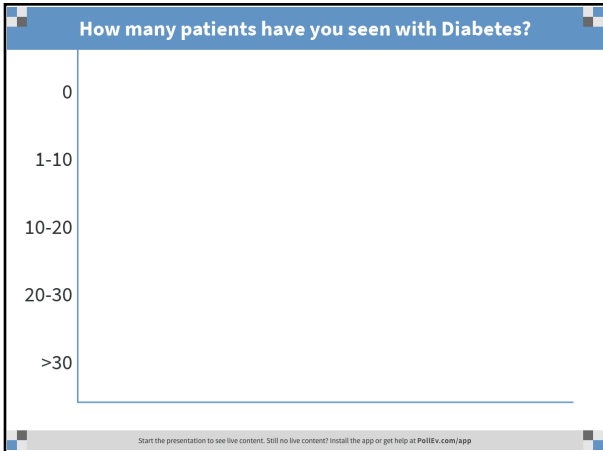
I am not sure if I am here or if I am dreaming I'm here

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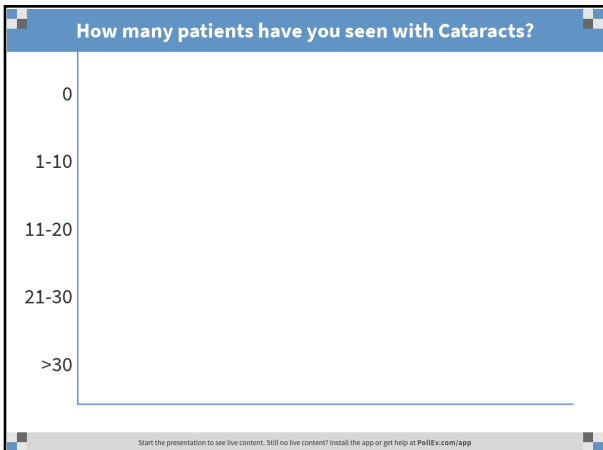
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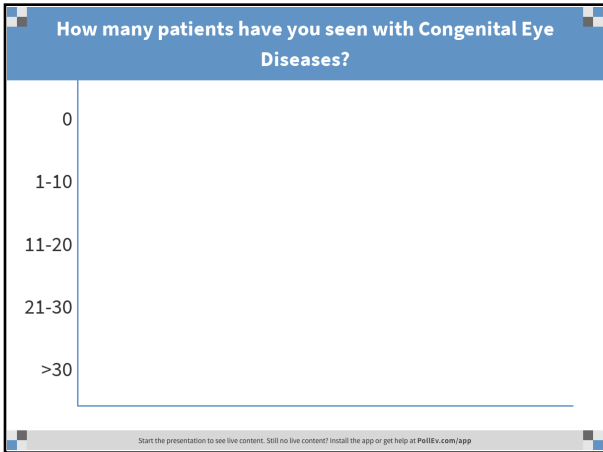
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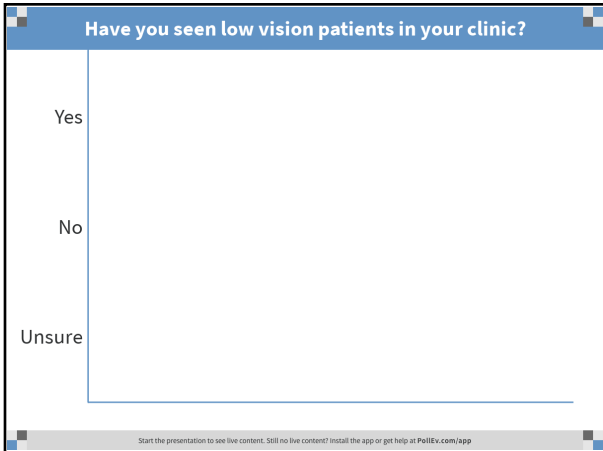
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Definitions

- **Visual Impairment:**
 - A functional limitation of the eye or visual system
 - May include reduced visual acuity, contrast sensitivity, visual field loss, photophobia, diplopia, visual distortion, visual perceptual difficulties, or any of the above combinations.
 - Example: Decreased vision due to eye disease or traumatic brain injury (TBI), cortical blindness

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Definitions

- Visual disability:
 - A limitation of the abilities of the individual to perform specific tasks.
 - The result from an impairment
 - Example: Problems reading the mail

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Definitions

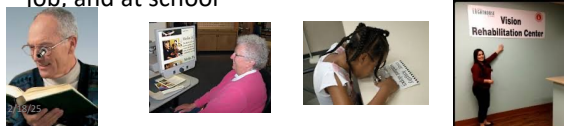
- Visual handicap:
 - A loss of personal independence resulting from vision loss.
 - A person's disadvantaged position in society, resulting from impairment and disabilities(AOA OCP Guideline)
 - Example: patient is no longer legal to drive

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What is Low Vision?

- Significant reduction of visual function
- Cannot be fully corrected by ordinary glasses, contact lenses, medical treatment and/or surgery
- Affects people of all ages...in the home, on the job, and at school



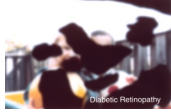
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Types of patients

- Decreased visual acuity
- Decreased visual field
- Decreased contrast sensitivity



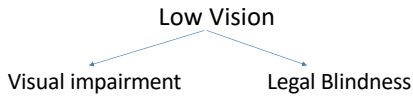
Most common causes of visual impairment include AMD, diabetic retinopathy, cataracts, and glaucoma.



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What Is Low Vision

- Visual Disability
- 2 categories of low vision



- Implies a functional loss of vision
- Low vision **is not** the same thing as legal blindness
 - A person can have functional vision loss (visual impairment) and not be legally blind.. Let's take a look

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Visual Impairment - History

Has Changed over Time:

- Old Idea: 20/70 or worse
- Academy of Ophthalmology (2016) – when VA is 20/40 or worse
- New Idea: When vision loss is not correctable with traditional glasses or contact lenses that affects a patient's visual function
- The best time to begin intervention (aka referral to low vision)
- Let's look at some examples..

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Visual Impairment

- Examples of when visual function is impaired
 - A 20/20 patient who is not happy with how they see with their vision
 - A 20/70 patient who is a bus driver having problems passing their driving exam
 - A 20/70 waitress may not have functional impairment issues so you may not need to refer them
 - NOTE: You refer the patient when they have functional complaints (aka their activities of daily living are affected)

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Dr. Fontenot – American Academy of Ophthalmology 2016 meeting

- Refer when VA = 20/40 or worse



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Low Vision

Visual Impairment

- **Any** acuity level that affects the individuals ability to do their activities of daily living
 - Reading mail
 - Watching television
 - Driving
 - Using computer
 - Work tasks

Legal Blindness

- Determined by the Social Security Administration
- 20/200 or worse (Snellen equivalent) in the better seeing eye
- OR**
- Visual field defect where the widest diameter of the field in the better eye is no greater than 20 degrees

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Let's dive a little deeper into legal blindness..

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Legal Blindness - History

- 1935 – Social Security adopts a definition for legal blindness
 - This enables those who qualify to receive disability - \$\$\$
- 2007 – changes were necessary with the addition of new testing equipment for vision (Goldman -> Humphrey VF, Snellen chart -> ETDRS chart, Feinbloom chart)



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How the Charts Compare – Snellen Equivalents

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Depending on the chart you use, a patient could be better than 20/200, but they are still considered legally blind according to the definition

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Let's Check Your Knowledge: Quiz Time

- Patient 1
 - OD: 20/70
 - OS: 20/200

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Patient 1 OD: 20/70 OS: 20/200 Is this patient legally blind?

Yes

No

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Patient 1 OD: 20/70 OS: 20/200. Is this patient legally blind in one eye?

Yes

No

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Patient 1 OD: 20/70 OS: 20/200 Is there more information that you might want to have before you answer?

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Why Practice Low Vision?

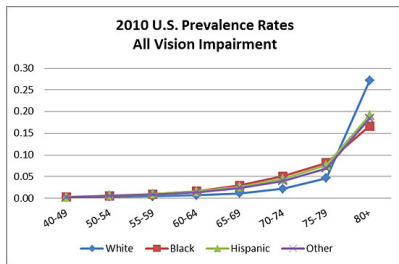
- Supply and Demand
 - Due to knowledge of optics, ODs are probably best suited to treat low vision patients.
 - Lack of interest
 - Lack of training
 - RESULT: Few specialized low vision ODs in the country
 - 160 residencies (ASCO)
 - 24 low vision residencies (<https://natmatch.com/ormatch/directory/ascopr22.html>)

– But, is there a need for low vision?

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2010 U.S. Age-Specific Prevalence Rates for Vision Impairment by Age and Race/Ethnicity



https://www.nei.nih.gov/eyedata/vision_impai
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Supply and Demand – Trending Towards Low Vision

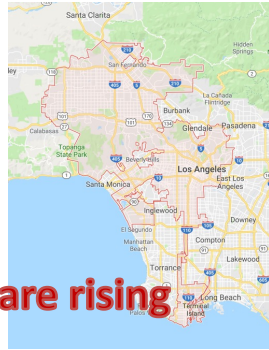
- Demand:
 - Eye Disease Prevalence Research Group (EDPRG) (2004)
 - Age 40 years and older
 - 20/40 or worse
 - 3.3 million people (2.7%) of the population
 - Baltimore Eye Survey (1990), Massof (1995), US Census
 - Similar statistics
 - Approximately 3% of US population over age 40 is visually impaired
 - What is a common eye disease that hits around age 40?
CATARACTS
- Now let's look at more recent numbers ->

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Opportunity for Optometrists

- In 2010
 - 316 million Americans in US
 - 142 million Americans > 40
 - 4 million of them with vision loss
 - 1.2 million with blindness
 - 2.9 million with low vision
 - Los Angeles has 4 million people!!



The numbers are rising

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A Worsening Problem: Baby Boomers

- Acquired Low Vision Increases with Age
- In 1995, there were 33.9 million Americans over the age of 65
- By 2030, there will be approximately 70 million
 - These people will need low vision care.
 - Optometry is best equipped to provide it

https://www.nei.nih.gov/eyedata/adultvision_usa

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Getting to Know the Baby Boomers

(Mather 2016)

- Born 1946-1964
 - 2017
 - Ages: 53-71 (46% over age 65)
- 98 million in 2060 (24% of US population)
- They're working longer
 - 23% men > 65 working
- They're living longer
 - Average life expectancy in America is now 79 yrs. (2013) from 68 yrs. (1950)
- They're more overweight
 - 2012 – 40% age 65-74 were obese
- Women are living alone, in 2014
 - 65-74 – 27%
 - 75-84 - 42%
 - > 85 – 56%
- Alzheimer's disease expected to triple to 14 million people (in 2050)
- By 2030, projected 2.3 million Americans will need nursing home care (1.3 million today)

Source: Fact Sheet: Aging in the United States from Population Reference Bureau

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Common Eye Conditions of Baby Boomers

Prevalence of Adult Vision Impairment and Age-Related Eye Diseases in America

Estimated Number of Cases by Vision Problem Age ≥ 40	
AMD*	2,069,403
Cataract	24,409,978
Diabetic Retinopathy	7,685,237
Glaucoma	2,719,379

* Age-related macular degeneration, age 50 and older
(Based on 2010 U.S. Census populations. Total Population ≥ 40 = 142,648,393.)



Last Reviewed: April 2016

Source: National Eye Institute https://nei.nih.gov/eyedata/adultvision_usa

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Disease Processes in Low Vision: Stroke / Brain Injury

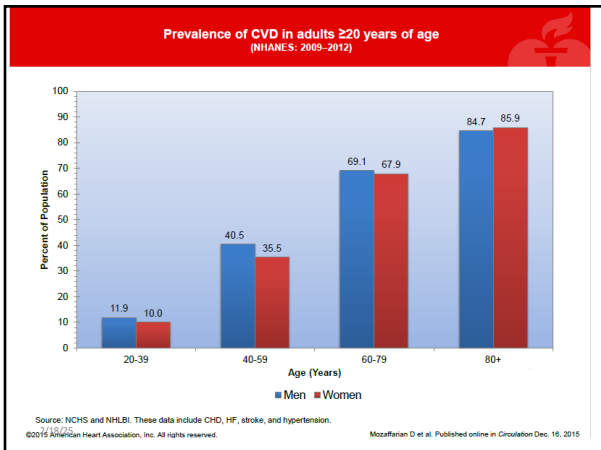



- 795,000 people have a stroke each year (1 every 40 seconds)
- It is a leading cause of disability and leading PREVENTABLE cause of disability
- #5 killer in the US (129,000/yr)
 - Heart attack (#1), cancer (#2)
 - Used to be #3
- 40 million people > 65 will have suffered a stroke by 2010 in US
 - 27 million currently

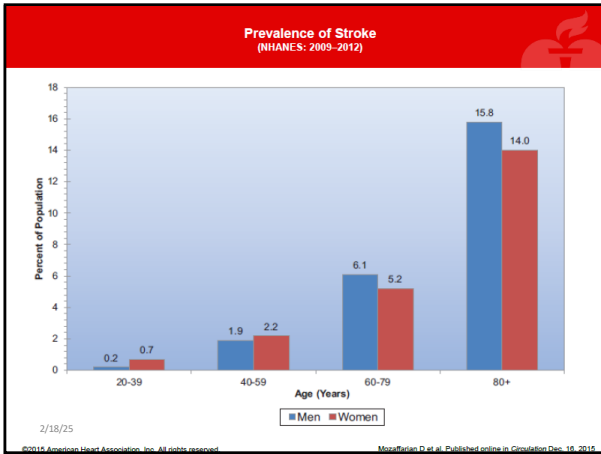
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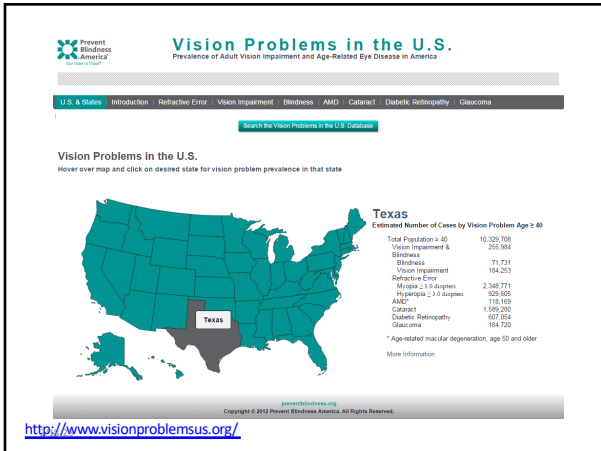
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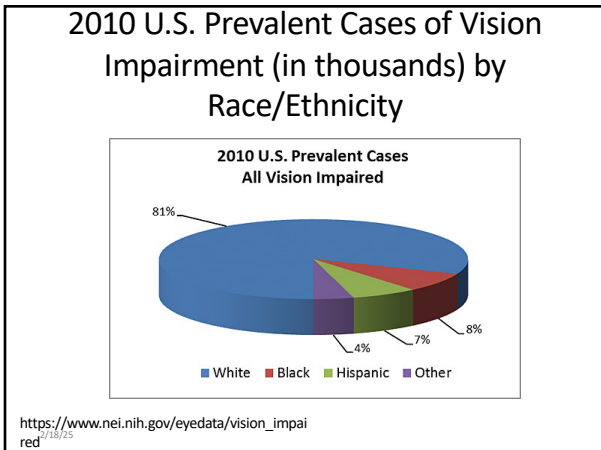
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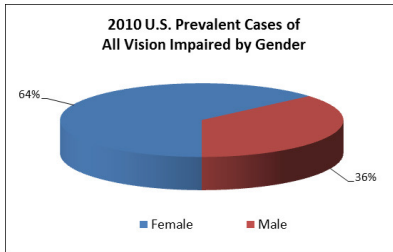
Are men or women more likely to get low vision when they are older? ->



2/18/25 <https://www.gettyimages.com/photos/male-vs-female?loweduse=availableforus&family=creative&license=rf&phrase=male%20vs%20female&sort=bestlicense>

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2010 U.S. Prevalent Cases of Vision Impairment (in thousands) by Gender

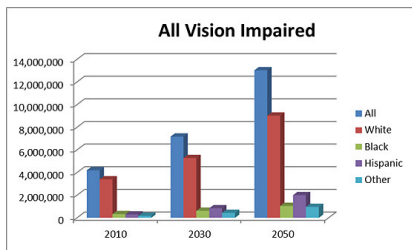


https://www.nei.nih.gov/eyedata/vision_impai
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Projections for Vision Impairment (2010-2030-2050)

Graph shows low vision is expected to increase



https://www.nei.nih.gov/eyedata/vision_impai
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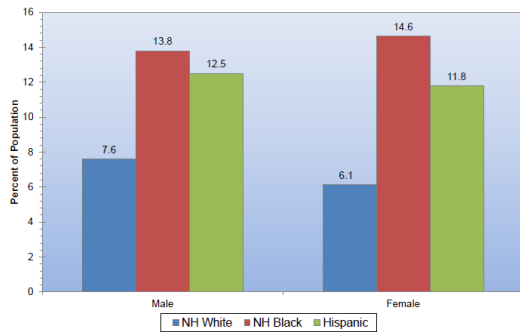
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- Low Vision also happens in younger patient populations too (acquired and congenital)
- One of the biggest preventable diseases causing blindness is seen commonly here in San Antonio ->

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Age-adjusted prevalence of physician-diagnosed diabetes in adults ≥20 years of age (NHANES: 2009-2012)



Source: NCHS and NHLBI. NH indicates non-Hispanic.
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 ©2015 American Heart Association, Inc. All rights reserved. Mozaffarian D et al. Published online in Circulation Dec. 16, 2015

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Diabetes and Vision Loss

- Center for Disease Control
 - 30 million Americans have DM (~ 10% of US)
- How many people in the US have Low Vision?
 - 39 Million
- What do we hear more about? DM or LV?

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2017 JAMA Estimates of Incidence and Prevalence of Visual Impairment, Low Vision, and Blindness in the US

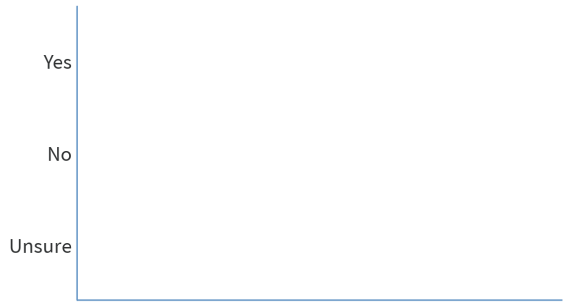
- 20/40 or worse – 3.9 million
- 20/40-20/60 – 1.4 million

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OK, knowing what you know now, have you have seen low vision patients in your clinic?

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There is a need for Low Vision Care



NOW WE KNOW THAT THERE IS A NEED FOR LOW VISION SERVICES



BUT, WHERE ARE THEY ARE RECEIVING CARE IF THERE ARE ONLY ~24 LOW VISION RESIDENTS GRADUATING EVERY YEAR?

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Where are these patients receiving care?

- **They AREN'T!!!**
 - < 5% of patients who need care are being referred
- **Reasons:**
 - Professionals
 - Lack of professional resources
 - Fear of losing patients with referrals
 - Lack of communication between doctor and patient*
 - Patients
 - Don't think they are ready
 - Don't want the "stigma"
 - Just not aware of the resources
 - Transportation/Financial issues
- **How can we change this?**
 - Education across professionals and patients




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VisionAware™
 or independent living with vision loss

New Research: Patients not Referred for Low Vision Services in a Timely and Efficient Manner

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Posted on 12/1/2014 by Maureen Duffy



Last month, at the 2014 American Academy of Optometry Annual Meeting, a group of student researchers from the New England College of Optometry presented survey data that identified (a) patient barriers to low vision services and (b) the actions optometrists can take to improve the efficiency of referrals to low vision specialists.

Their research revealed a discrepancy between what primary care optometrists and low vision specialists define as low vision (i.e. a functional versus numerical definition), in addition, this discrepancy creates a situation in which many patients who could benefit from low vision services are not being referred. The research group concluded that "developing a standardized definition [of low vision] would be advantageous to help normalize the referral and treatment processes."

Mindshift: to think not only about the VA #'s but their visual function

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WOULD YOU PRESCRIBE GLASSES TO SOMEONE WHOSE CC = BLURRY VISION, ENTERING VA'S AREN'T 20/20, BUT CAN BE CORRECTED TO 20/20?

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LOW VISION OPTOMETRIST
JOB SECURITY
LOW DAILY PATIENT VOLUME
CAN MAKE A NICE LIVING

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When to Introduce Low Vision?

- **At the diagnosis** – patient education
 - At 20/40 initiate low vision services (or sooner if sx)
 - Give resources/literature
 - Consider doing some basic low vision in your practice
- Surgical Referrals
 - Patient Education before referral for treatment
- Optometry to Optometry Referrals

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The Low Vision Exam Overview

- This course is designed as if you were going through the low vision exam step by step
- Let's look at the basic characteristics of a low vision exam
- Note that it is similar to what you already do in primary care exams, but you're looking at how the patient functions on a daily basis in their daily activities of living
- Like primary care, your goal is to help them see the best they can with glasses, but now also can add magnifiers, telescopes, and other low vision aids

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Low Vision Evaluation

- Observation
- Detailed case history
- Functional assessment
- Goal determination
- Patient education
- Visual acuity
 - Distance
 - Near
 - M notation
- Visual field assessment
- Contrast sensitivity assessment
- Trial frame refraction
- Device evaluation
- Formulate plan and make appropriate referrals



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Low Vision Examination

- Observation
- Detailed case history
- Functional assessment
- Goal determination
- Patient education



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Patient Observation

- Observation provides a tremendous amount of information concerning the patient's primary needs.
- If patient walks slowly, shuffles feet, or bumps into objects, INTERVENE and demonstrate Sighted Guide Technique.
- If patient easily walks into the office, approaches office staff, Sighted Guide Technique may not be necessary.

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Before the exam starts: SAFETY!

- Sighted Guide
 - Visually impaired person is escorted by a sighted person to get to their destination safely (afb.org)
 - Technique to this – will learn in lab
 - Ask the patient in the waiting area if they need assistance
 - The low vision exam occurs in the waiting area (to be discussed in later lectures)

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Before the exam starts: SAFETY!

- Orientation & Mobility techniques
 - Basics must be understood by OD and staff
 - Demonstrate proper techniques to patient and caregivers
 - For additional training and reinforcement, referral to an O&M specialist may be necessary
 - Professional who instructs persons with low vision to navigate their environment
- Question: Which diseases may not result in a need for O&M training?
 - Answer: those without peripheral field loss

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Low Vision Examination: Overview

- Observation
- Detailed case history
- Functional assessment
- Device determination (based on refraction and goals)
- Rehabilitation Plan/Patient education



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FUNCTIONAL ASSESSMENT

Equivalent to the exam testing that you do in PC exams

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Low Vision Examination

- Visual acuity
 - Distance
 - NEVER use finger counting!!
- Near
 - M notation!!
 - Measuring working distance is a must
 - Let patient hold the material where they prefer



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Functional Assessment: Field Testing



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Functional Assessment: Contrast Sensitivity Testing



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Low Vision Evaluation: Refraction and Device Evaluation

- Trial frame refraction
- Device Evaluation
 - Based on goals and case history



- Formulate plan and make the appropriate referrals

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Levels of Low Vision Services You Can Provide

- Basic
- Intermediate
- Advanced

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Levels of Low Vision Service: What fits your comfort level?

- **Basic (20/40 to 20/70)**
 - Great time to initiate low vision
 - Appropriate Referral to Low Vision Providers
 - Provide Resources and/or Pamphlets
 - Devices to consider at this stage:
 - Filters
 - High Adds

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Levels of Low Vision Service: What fits your comfort level?

- **Intermediate (20/70 to 20/200)**
 - Hand Held Magnifiers
 - Low Powered Monoculars
 - Eccentric Viewing (EV) training
 - Refer to *Certified* Low Vision Therapists
 - Longer appointment times

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Levels of Low Vision Service: What fits your comfort level?

- **Advanced (\geq 20/200) Legal Blindness**
 - High Powered Monoculars/Telescopes
 - Electronic Magnifying Systems
 - *Certified* Orientation and Mobility Training Specialists
 - Multiple appointments/training

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Final Thoughts

- The low vision population is growing daily
- There are many patients who need quality care
- Team approach to vision loss, as with any rehabilitation program is vital to maximize success
- Low Vision is the art of optometry

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What is one thing that you learned from today's lecture?

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Questions?



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