

Slide 1

How Low Vision Affects the
Functional Ability of Patients

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Slide 2

Low Vision vs. Blindness

- Totally Blind – no sight at all
- Legally Blind: **Best corrected** visual acuity in both eyes is 20/200 or worse **OR Visual Field is less than 20 degrees**
- Low Vision: **Any level of visual loss** that decreases a persons ability to carry out their normal daily activities.

Slide 3

Jeopardy Answer

The most common cause of
vision loss in people over 50 and
fourth most common cause of
legal blindness in the US

What is.....

Slide 4

Macular Degeneration

Slide 5

Macular Degeneration

- In 2013 moderate to severe disease affected 13.4 million people
- Ages 50 to 60 : About 0.4% of people
- Ages 60 to 70 : 0.7%
- Ages 70 to 80 : 2.3%
- Ages over 80 : **Nearly 12% of people**

Slide 6

*The estimated number of
people in the USA in 2016
over age 80 who have severe
macular degeneration:*

960,000

Slide 7

This number is projected
to rise to **2,280,000**
by 2030

Slide 8

Other Common Causes of Low Vision

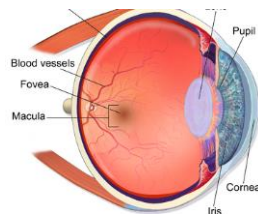
- Glaucoma
- Diabetes
- Corneal Disease
- Retinitis Pigmentosa

Slide 9

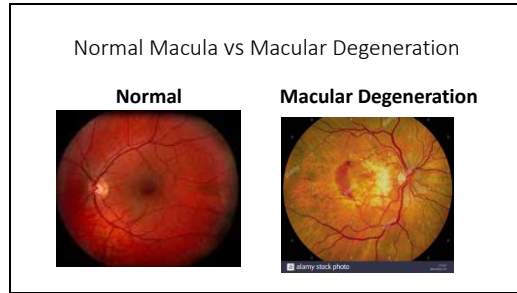
Macular Degeneration

Anatomy:

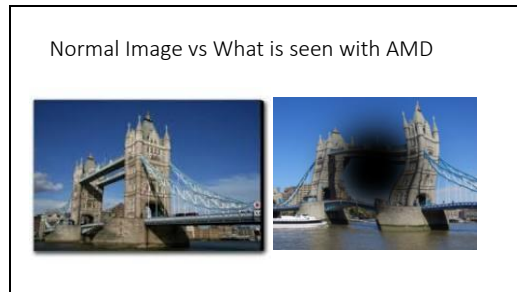
The Macula is a small (5.5 mm diameter) part of the retina. The retina covers the entire inside of the eye, but the macula contains the vast majority of the cones, is nourished more by the vascular arcade and provides us with our clear precise vision and color vision.



Slide 10



Slide 11



Slide 12

- Problems Experienced by Patients with Macular Degeneration**
(and similarly Stargardts Disease)
- Can't recognize faces
 - Can't read small print or even large print in advanced cases
 - Can see better with the use of bright light
 - Difficulty writing
 - Difficulty seeing colors or may see colors that aren't there
 - Can't read medicine bottles, instructions, consent forms etc
 - Difficulty reading, watching TV, using phone – BORED and LONELY
 - They look normal and they can see small items on the floor so people don't realize how poor their vision actually is

Slide 13

Disease Progression

Dry = Slow and there is no treatment

Wet = Sudden, but there is treatment

Slide 14

What do they experience at home?

Early Stages:
(Acuity 20/25 to 20/40)

- A need for increased lighting
- Difficulty reading low contrast items such as a newspaper
- A need for magnification for the smallest print like obituaries, classifieds and medicine bottles

Slide 15

More Moderate Disease
(Acuity 20/50 to 20/80)

- It is difficult to read recipes, newspapers, and mail
- It is difficult to see the numbers on a thermostat or the stove or washing machine
- It is difficult to measure with a ruler or measuring tape
- Computer use is difficult
- People begin to stop their hobbies and activities

Slide 16

They fear losing their drivers license
They fear going blind

Slide 17

More Advanced Disease
(Acuity 20/80 to 20/200 or less)

- Cannot read menus in restaurants
- Cannot recognize faces so lose some friends
- They are afraid to walk for fear of falling so exercise less
- Stop more of their social activities like golf and cards
- Unable to read mail or continue with record keeping and finances

Slide 18

Robbed of Independence

- Can no longer drive – ***this is the number one complaint for all people with macular degeneration – especially in Florida***
- Unable to read their own mail
- Unable to take care of their own finances
- Afraid to walk – become isolated – legs become weak – more danger of falling

Slide 19

Loneliness, Frustration and Depression are Common

Slide 20

In a Hospital or Rehab Setting

- They don't know who is talking to them – introduce yourself when you enter the room
- Don't show them things without explaining what you are showing. Instruments, instructions, devices all need to be explained rather than shown. Let them touch them as you explain. Use specific words. Instead of "right here" say "in the center" or "on the right".
- Ask if you can help them make a call or turn on the TV or find something they may have misplaced

Slide 21

Realize that they may be depressed rather than moody and it may be from more than the current issue you are treating.

Provide a mental health consult

Refer to agencies that help with vision loss.

Encourage your facility to have low vision reading devices available

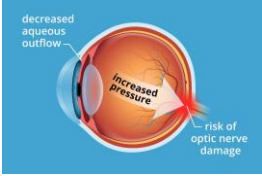
Slide 22

Glaucoma

Glaucoma is an optic nerve disease, but is caused by increased pressure in the eye.

Aqueous humor is always being produced in the eye and escaping through channels and into the blood stream. If the channels are blocked or the production increases, more aqueous builds up than can leave the eye.


This buildup causes pressure to increase and push on the weakest part of the eye – the optic nerve. The pressure causes a “cupping” and damage to the nerves.



The diagram illustrates the eye's internal structure. A label 'decreased aqueous outflow' points to the drainage angle where fluid exits the eye. A label 'increased pressure' points to the interior of the eye, which is shown with a red, inflamed appearance. A label 'risk of optic nerve damage' points to the optic nerve at the back of the eye, which is shown being compressed by the increased pressure.

Slide 23



Normal Optic Nerve vs Glaucoma Damage



The image shows three fundus photographs. The first on the left shows a normal optic nerve with a healthy, pinkish-red color and a well-defined margin. The two images on the right show glaucoma damage, characterized by a pale, yellowish optic nerve and a deep, cupped appearance of the optic disc.

Slide 24

What is seen with Glaucoma

Normal Image	What someone sees with Glaucoma
	

The slide compares a normal image of two children holding a soccer ball with an image of the same scene as seen through a tunnel, representing the visual field loss associated with glaucoma.

Slide 25

Problems Experienced by Patients with Glaucoma (and similarly Retinitis Pigmentosa)

- Denial that anything is wrong
- Unable to see in the periphery
- Difficulty in dim light – eyes take a long time to adjust
- Particularly sensitive to bright light – need sunglasses indoors
- May be able to read easily but cannot walk safely
 - Bump into door jambs and items in the way
 - Trip over objects in their path
 - Difficulty on stairs

Slide 26

In a Hospital or Rehab Setting

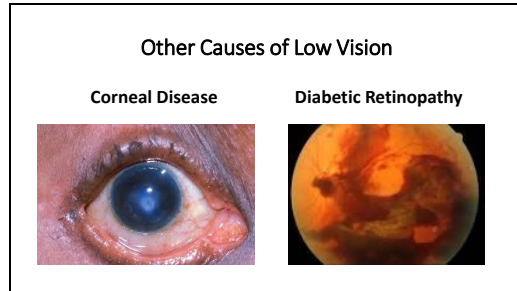
- They may need help while walking – give them your arm to hold
- Do not flip on bright lights or turn lights off and then ask them to look at something – it will take their eyes time to adjust.
- If asking them to exercise or do therapy, try to do it in a dimly lit room rather than one with sunny windows.
- Ask if you can help them find something. They will often misplace things that are sitting right next to them because they can't see them. Make sure anything you move goes back to the place it started.

Slide 27

They are less often depressed and often do not realize how bad their vision has become

Referrals to low vision and blindness agencies is appropriate.

Slide 28



Slide 29

With opacities on the surface or in the vitreous the result is often the same:

- The vision fluctuates from day to day or hour to hour
- There is an overall diffuse haze
- The problems associated with these two are many and treating the underlying disease causing the problem is necessary
- They will still require magnification or help the same as previously mentioned when their vision is poor.

Slide 30

Do not assume that the ophthalmologist is taking care of the appropriate referrals or counselling.

Slide 31

The most common question from my clients is

**“Why didn’t my doctor tell me
what devices and agencies are
available?!”**

Slide 32

Most People do not know where
to turn for help

Slide 33

Their kids research the internet

They buy magnifiers without knowing how
to use them or what power they need.

Their kids buy them kindles and iPads for
reading larger print – usually frustrating

Some advice from friends who have ARMD

Slide 34

It is best for rehab professionals to be informed:
What Help is Available?

Slide 35

Various Services Available

- VA Hospital
- Division of Blind Services
- Lighthouse for the Blind
- Teachers of the Visually Impaired in schools
- Low Vision Clinics
- Low Vision Aid Vendors
- Orientation & Mobility Specialists teach independent movement with a cane, dog or other techniques
- Rehabilitation Teachers teach life skills for the Visually Impaired
- Occupational Therapists – trained to teach life skills for any medical problem or disability. Not all are trained in low vision
- Social workers and Therapists to help with depression
- Home Health Agencies
- Support Groups – too numerous to mention

Slide 36

VA Hospitals

- This service is only for Veterans. No spouse or family member.
- They must be registered as a patient at the hospital first.
- The general medicine doctor refers them to optometry
- Optometry refers to in-house low vision specialist
- Low Vision Specialist recommends services
- There are regulations on vision level and what can be made available to these patients
- Some special centers have a blindness rehabilitation unit where inpatients receive training and equipment
- This entire process can take several months or more
- But the cost is entirely covered by the VA

Slide 37

VA Blind Rehabilitation Centers

- Residential inpatient programs that provide comprehensive adjustment to blindness training and serve as a resource to a geographic area usually comprised of several states. BRCs offer a variety of skill courses designed to help blinded Veterans achieve a realistic level of independence.

Orientation and mobility	Communication skills
Activities of daily living	Manual skills Visual skills
Computer access training	Social/recreational activities

- The Veteran is also assisted in making emotional and behavioral adjustments to blindness through individual counseling sessions and group therapy meetings.

Slide 38



Slide 39

Florida Dept of Education
Division of Blind Services

Primarily for people who are in school or working

An educational/vocational resource

Senior Citizens are NOT eligible for many services

For those who are eligible, the help is in the form of counseling, training and purchasing equipment to make the school or work environment accessible

Slide 40

DBS Blind Babies Program

- Provides community-based early intervention education for children from age 0 to 5 who are blind or visually impaired
- Helps ensure that visually impaired and blind children enter school as ready to learn as their sighted classmates.

Slide 41

DBS Children's Program

To facilitate blind and visually impaired children's fullest participation within the family, community, and educational settings and supplements services already offered by the school system

Enables students to transition from school to Vocational Rehabilitation or other appropriate community programs.

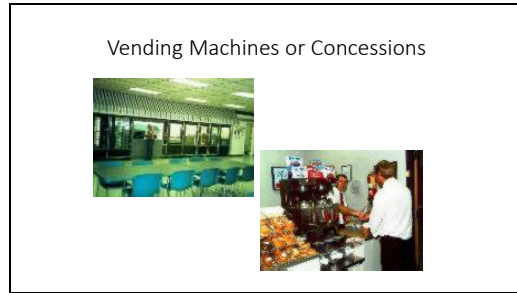


Slide 42

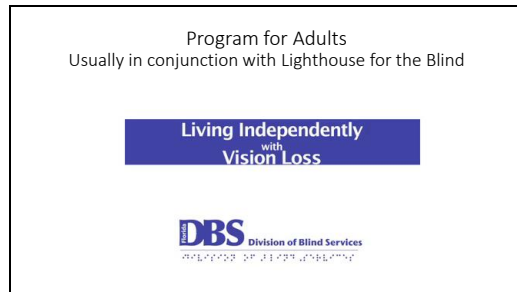
DBS: Blind Business Enterprise

- To provide people who are legally blind with rewarding and profitable entrepreneurial ventures, broaden their economic opportunities, and invigorate all blind people to be self-supporting, while dispelling misconceptions about blind people by showcasing their abilities.
- Administers one of the largest vending and food service programs operated by people who are legally blind in the United States.

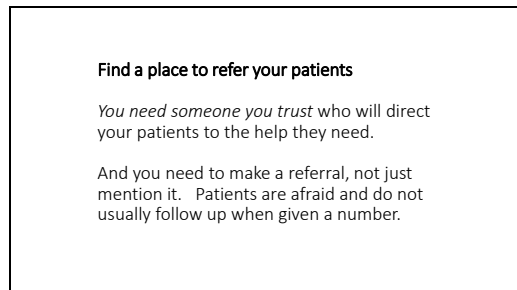
Slide 43



Slide 44



Slide 45



Slide 46

Referral Choices

- Low Vision Clinics
- Local Lighthouse
- Low Vision Consultant or Vendor
- Occupational Therapy Services
- Home Health Agencies

Slide 47

Low Vision Clinics

- Many different providers
- Some concentrate on particular low vision aids
- May or may not refer patients for further services or rehabilitation

Slide 48

Lighthouses for the Blind

- Each lighthouse is independent. They all function differently and are not one organization
- They all offer rehabilitation services
- Some are more full service than others
- Some services are in house and the patient has to travel to them, some are in satellite locations or at the patient's home.
- Usually services are provided free for all age groups

Slide 49

Low Vision Consultant or Vendor

- Independent contractors – usually with a background in optometry or opticianry or ophthalmic technology
- They travel to patients homes and have magnifiers, low vision aids and assistive technology available for sale
- May or may not refer patients for further services or rehabilitation

Slide 50

Occupational Therapy

- Medical professionals covered by insurance and Medicare
- Rehabilitation services provided in the patients own home
- Some have basic low vision aids available to sell or provide through Medicare
- May or may not refer patients for further services or rehabilitation

Slide 51

Home Health Agencies

- Be careful who you use
- They all say they provide low vision services
- Many of them are not trained in low vision and do not have particular expertise
- They mean they can work with a patient even if he or she has low vision, but many are not trained to specifically handle low vision problems or provide magnifiers or assistive technology.
- Usually do not refer patients for further services or rehabilitation.

Slide 52

Types of Low Vision Aids

- Glasses
- Telescopes and Biotopic Spectacles
- Optical Magnifiers
- Electronic Magnifiers
- CCTVs
- Daily Living Aids

Slide 53

Glasses

- A good refraction is key, even if the vision is poor – make sure the patient has had an eye exam and is using up to date glasses.
- Overlooked astigmatism or an outdated prescription can make poor vision worse
- The very best clarity is important to maximize functional vision
- Not many people use high plus lenses as aids

Slide 54

Telescopes and Bioptics



Slide 55

Telescopic Lenses

Usually for distance use
Apply caps for near use

Best for people with specific needs and
the ability to stay at one working distance:
dentists, surgeons, lawyers, students, etc.

NOT FOR USE WHILE WALKING

Slide 56



Slide 57

Hand Magnifiers

- Many varieties of magnifiers
- All for near use
- Some include lights or stands

As the power increases, the size of the lens decreases, giving a large image through a small window

Best in powers up to 6X even though available much stronger

Slide 58



Slide 59

Electronic Magnifiers

Magnification from 1.5X to 25X
Change in contrast and background
Greater working distances
Large screen allows a wider field of view, even with high magnification
Can freeze and save images for later viewing

Used with any acuity level, but usually preferred by those with 20/80 or lower vision

Slide 60

CCTV

Closed Circuit TV for reading print, viewing photos and documents. Allows for reading entire pages at high magnification



Slide 61

CCTV

Can also be used for near or distance viewing.

Can be large, small, simple to operate or sophisticated



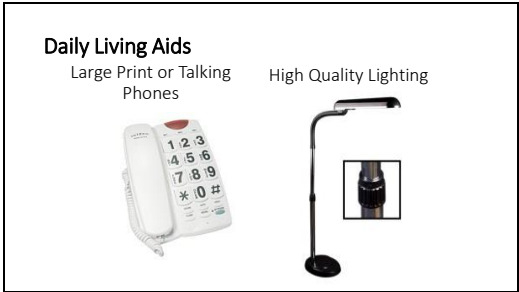
Slide 62



Slide 63



Slide 64



Slide 65

Payment

- VA supplies aids to vets
- DBS supplies aids for vocational rehab
- Schools/DBS supplies aids for students

• Non working adults have to self pay - Not covered by Medicare or Insurance

• Some Lions Clubs provide them to those in need

Slide 66

Review

- Your patients with vision loss have special needs
- Remember that they often cannot see as well as it seems
- Introduce yourself and explain what you are doing
- Allow time for adjustment to light changes and for doing many tasks
- They need your help even if they don't tell you so
- Many items and professionals are available
- Refer these patients for low vision help. Don't assume their ophthalmologist will do it.

Slide 67

Feel free to contact me for suggestions or further information

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