Geriatric Eye Care

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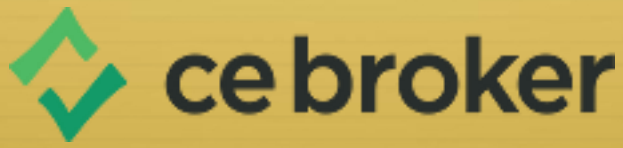

Approved for
1.0 contact hour

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Becoming Sense-Sensitive

- Why is this important?
- Unaddressed sensory impairments can intensify feelings of isolation and depression.
- Sensory abnormalities can be minor annoyances, but they can also be major threats to a senior's health and safety
- Early detection affects the success of some treatments
- Older adults can experience severe forms of sensory deprivation

Goals and Objectives

- Discuss 5 common eye disorders that cause vision changes and are NOT normal.
- Discuss the anatomical and physiological changes that occur in the aging eye.
- Discuss the leading causes of vision loss in the elderly.

Vision

- As people age their eyes change
  - Lenses can lose rigidity or form cataracts
  - Pupils may become slower to adjust
  - It can take longer to adjust to changes in lighting
  - Glare can become especially bothersom

Definitions

- Normal vision: Visual acuity of 20/20 or better
- Visually impaired: Visual acuity of 20/50 or worse
- Legally blind: Best corrected vision of 20/200 or worse
- Totally blind: No light perception.

Presbyopia

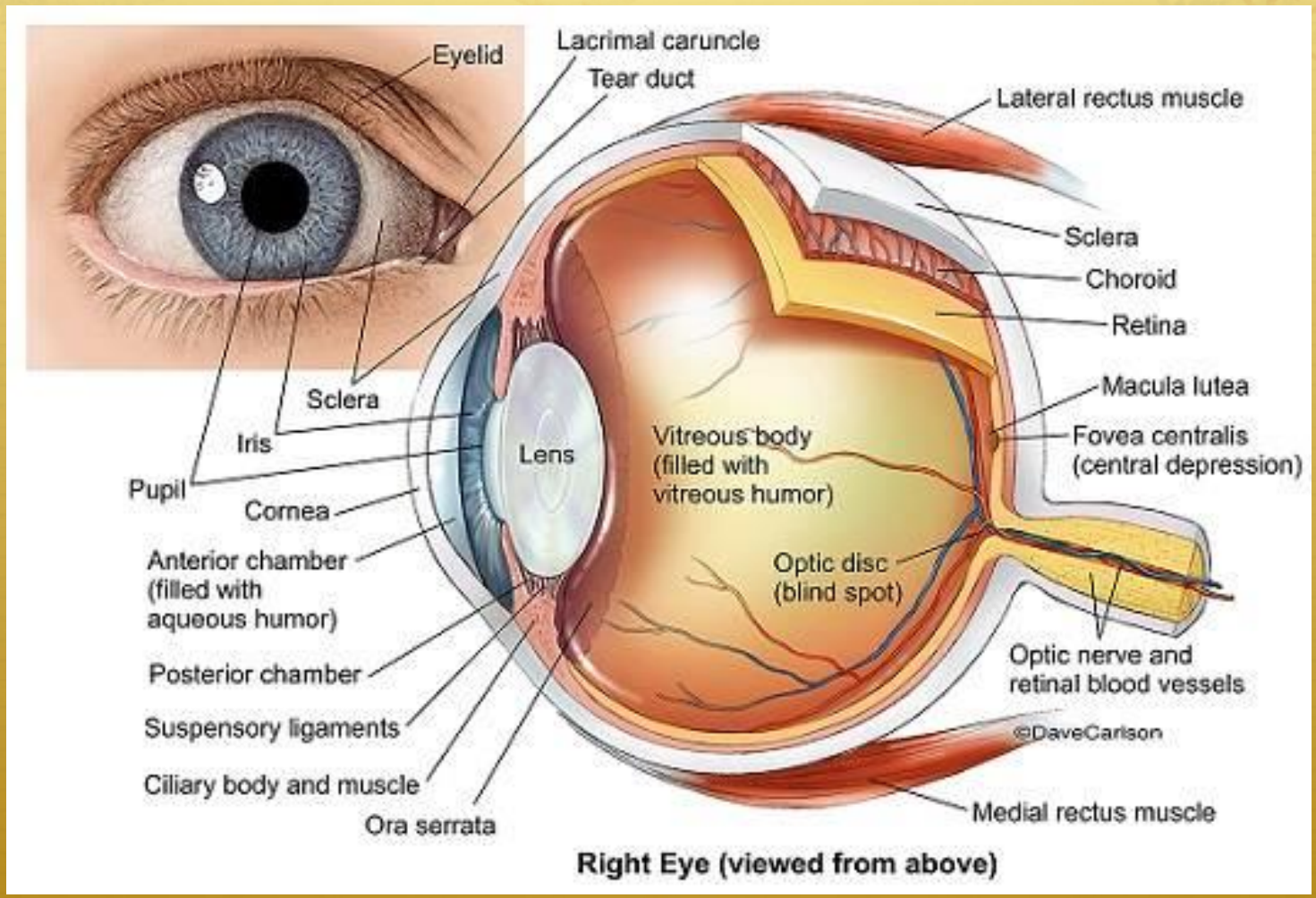
- Loss of elasticity in the lens of the eye
- Leading to a decrease in the eye's ability to change the shape of the lens to focus on near objects such as fine print and
- Decreased ability to adapt to light

Anatomy of the eye

- As the eye ages, most of the anatomical and physiological processes gradually decline.
- The eyelids experience a loss of elasticity and tone, and tear production by the lacrimal gland may decrease with aging.
- By age 65 years, 1 in 3 Americans has some form of vision impairing eye disease.

Anatomy of the eye

- The **eye** is our organ of sight.
- The **eye** has a number of components which include but are not limited to the cornea, iris, pupil, lens, retina, macula, optic nerve, choroid and vitreous.
- Cornea: clear front window of the **eye** that transmits and focuses light into the **eye**.


Eyelid
Lacrimal caruncle
Tear duct
Lateral rectus muscle
Sclera
Choroid
Retina
Macula lutea
Fovea centralis
(central depression)
Sclera
Iris
Pupil
Lens
Vitreous body
(filled with
vitreous humor)
Cornea
Anterior chamber
(filled with
aqueous humor)
Optic disc
(blind spot)
Posterior chamber
Optic nerve and
retinal blood vessels
Suspensory ligaments
©DaveCarlson
Ciliary body and muscle
Ora serrata
Medial rectus muscle
Right Eye (viewed from above)

Visual acuity

- *Static acuity*, the ability to resolve stationary details, declines with increasing age.
- *Dynamic acuity*, the ability to resolve the details of a moving target, also declines as one gets older.
- Detection of movement is also, to some extent, a function of luminance.
- The minimum amount of light needed for vision is known as the absolute threshold.

Psychological Aspects

- The realization that one's vision is deteriorating is often associated with psychological reactions such as;
  - grief,
  - confusion,
  - anger,
  - fear,
  - anxiety,
  - diminished security, and
  - fluctuations in appetite.

Psychological Aspects

- Older adults with new visual impairments face a significant challenge at a time when they may also be experiencing other major life changes, such as general health limitations or loss of a spouse (Branch).
- “Loss of independence and the ability to enjoy leisure activities are predominant concerns for the older adult with visual impairment” (Ringering).

Common Eye Disorders

- Cataracts
- Glaucoma
- Macular degeneration – 2 types
  - Wet
  - Dry
- Diabetic retinopathy

Cataracts

- Cataracts - are responsible for 51% of world blindness, representing around 20 million people (WHO, 2010).
- Cataracts are so common in older adults that some almost consider them an inevitable consequence of old age and often fail to report during history and physical exams.
- As a person ages, any one **type**, or a combination of any of these **three types of cataracts**, can develop over time

Types of Cataracts

- There are **three** primary **types** of age-related **cataracts**:
- A **nuclear cataract** forms deep in the central zone (nucleus) of the lens. Nuclear cataracts usually are associated with aging.
- A **cortical cataract** is characterized by white, wedge-like opacities that start in the periphery of the lens and work their way to the center in a spoke-like fashion. This type of cataract occurs in the lens cortex, which is the part of the lens that surrounds the central nucleus.

Types of Cataracts

- A **subcapsular cataract** occurs at the back of the lens. People with diabetes or those taking high doses of steroid medications have a greater risk of developing a subcapsular cataract.

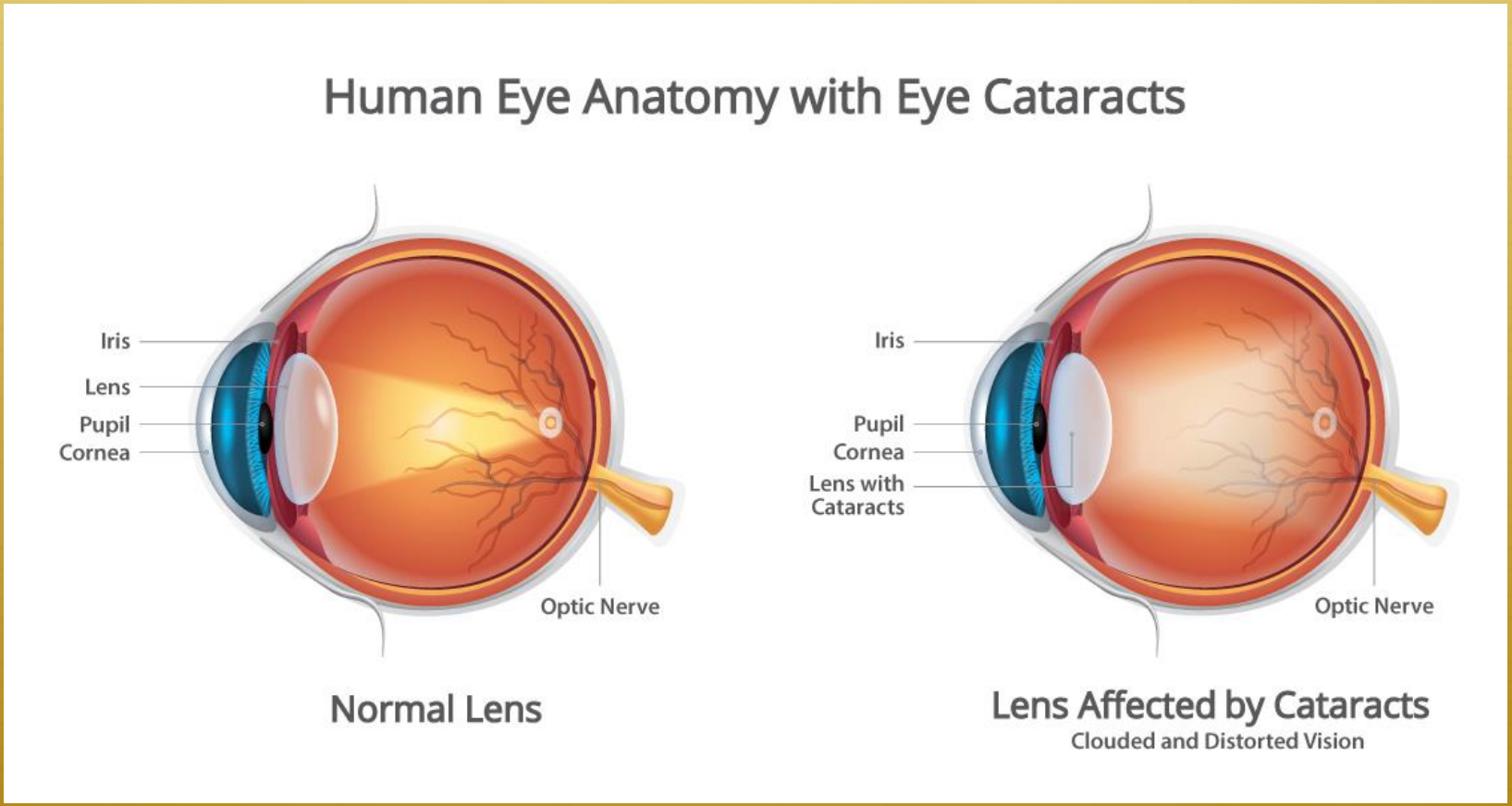
Risk Factors of Cataracts

- Advancing Age is the biggest risk factor for the development of cataracts.
- Diabetes
- Uveitis
- Intraocular tumor
- Long term use of medications – corticosteroids
- Excessive exposure to sunlight
- Blunt or penetrating trauma
- Excessive exposure to heat or radiation
- Additionally, tobacco use, family history of cataracts, high alcohol intake, lack of dietary antioxidants.

Diagnosis

- Cataracts cause no pain or discomfort
- Gradual opacity of the lens – which affects ability to see clearly.
- This causes
  - Decreased visual acuity
  - Sensitivity to glare
  - Altered color perception
- They may report blurred or distorted vision

Anatomy of the eye



Assessment

- The person may present with a fall due to visual changes.
- Some older adults will disclose that their reading vision has increased and they no longer need reading glasses.
- “Second sight”
- Eventually the pupil changes color to cloudy white.

Screening Tools

- The most common objective finding is that decreased visual acuity, e.g., measured by Snellen test.
- The Snellen chart tests distance.
- Other screening tools include Rosenbaum or Jaeger cards which test near sightedness.

Screening Tests

- If no screening tools are available, have patient read a few lines from a newspaper.
- If patient can read both the headline and a sentence of the smallest print, there is normal visual acuity.
- If only the headline is read there is moderate impairment and
- If neither can be read, there is severe impairment if neither can be read.

Interventions

- Although change in their glasses is the first option, when quality of life becomes affected, the most effective treatment is surgery.
- Surgery relatively safe
- Done in out-patient facility

Surgical Procedure

- The opaque lens is removed and replaced with an artificial intraocular lens.
- This is the most common operation among older adults
- 95% report better vision after surgery.

Benefits of Surgery

- Increased visual acuity
- Better depth perception
- Increased peripheral vision
- Leading to better outcomes related to ADL's,
  - Improved quality of life and
  - Decreased risk of falls.
- Cataract surgery offers a safe, effective treatment to maintain independence and improved quality of life.

Complications of Surgery

- Retinal detachment
- Infection
- Macular edema

Post surgery

- Patients will initially need to avoid bright sunlight
- May need to wear sunglasses for brief time
- Patients need to avoid
  - Straining
  - Lifting
  - Bending

Glaucoma

- Glaucoma is a group of degenerative eye diseases with various causes that leads to a progressive optic neuropathy
- Optic nerve is damaged by high intraocular pressure (IOP)
- Results in blindness

Glaucoma

- Is a leading cause of visual impairment and the 2nd leading cause of blindness in the U.S.
- Occurs more often in those over age 40 years
- Increased incidence with age
- Cause is unknown
- Two major types of glaucoma
  - Acute – closed angle
  - Chronic – open angle

Glaucoma

Risks and warning signs

- Unlike cataracts, there are some ethnic distinctions with development of glaucoma
- African Americans tend to develop earlier than Caucasians
- Females more often than males

Glaucoma

- The majority of cases of glaucoma are open angle (95%)
- Increased intraocular pressure causing atrophy and cupping of the optic nerve head causing visual field deficits that can progress to blindness.
- Vision changes include
  - Loss of peripheral vision
  - Intolerance to glare,
  - Decreased perception of contrast
  - Decreased ability to adapt to the dark

Acute Glaucoma

Closed angle – Medical emergency

Blindness can occur from prolonged narrow angle glaucoma

- Presents with
  - Severe eye pain in one eye
  - Blurred vision
  - Seeing colored halos around lights
  - Red eye
  - Headache
  - Nausea and vomiting

Chronic Glaucoma

- Open angle or primary angle- can include one or both eyes
- Occurs gradually
- Peripheral vision is slowly impaired
- Signs and symptoms include
  - Headaches
  - Tired eyes misty vision
  - Seeing halos around lights
  - Symptoms worse in the morning

Glaucoma

Contributing factors

- Eye trauma
- Small cornea
- Family history
- Small anterior chamber
- Cataracts
- Some medications

Glaucoma Interventions

- Early detection is important
- Treatment is essential to prevent loss of vision
- Once vision has been lost to glaucoma, it cannot be restored.
- Diagnosis made using tonometer to measure IOP
  - Normal IOP is 10-21 mmHg

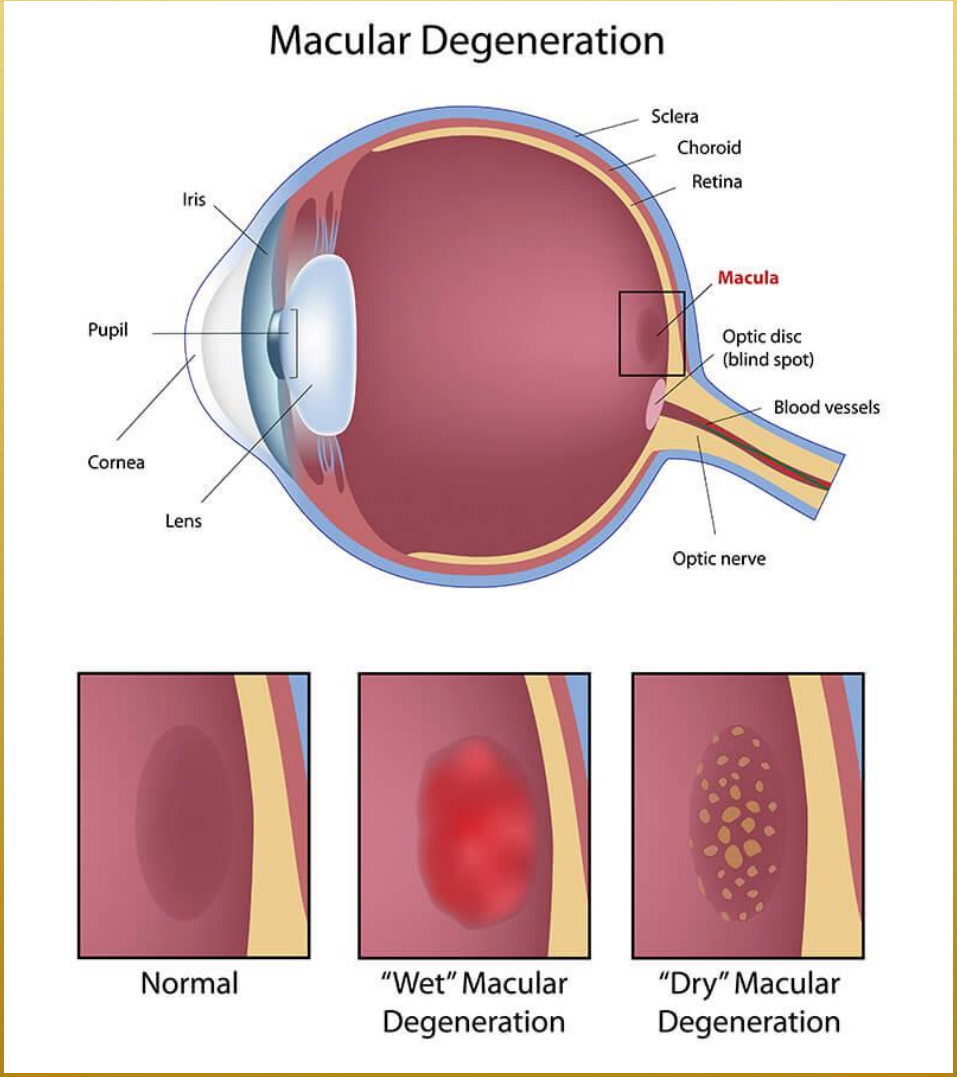
Glaucoma Treatment

- Aimed at reducing IOP
- Medications to decrease pressure may be given
- Surgical iridectomy to lower IOP may prevent future episodes of acute glaucoma
- In chronic glaucoma, there is no cure.
- Treatment is aimed at managing IOP through medication and eyedrops

Macular Degeneration

- Age-related macular degeneration (ARMD) is the most common cause of blindness for those over age 60
- Affects more than 12 million Americans over age 40
- Occurs in approximately 10% of long-term care residents aged 66-74, increases to 30% for those age 75-85
- About 11 million people in U.S. have some form of ARMD
- Number expected to increase to approximately 22 million by 2050

Macular Degeneration



Risk Factors

Age	Smoking
Hypertension	Diabetes mellitus
Family history	Female gender
Obesity	Caucasian
Prolonged exposure to ultraviolet light	Diet high in fat and/or low in nutrients and antioxidants
Inactivity has been linked to ARMD – most likely related to increased risk for cardiovascular disease	

Assessment and Diagnosis

- Results from damage or breakdown of the macula and subsequent loss of central vision.
- Generally associated with the aging process, it can also result from injury or infection.
- Two types are noted
  - Dry – non-exudative
  - Wet - exudative

Macular Degeneration

- Dry macular degeneration
  - Affects 90% of those with the disease
  - Has a better prognosis
  - Progresses slowly
  - More subtle changes in vision than wet type
- Wet macular degeneration
  - Comes on suddenly
  - Causes more severe loss in vision

Interventions

- No cure
- Medications to treat ARMD
- The treatment for early dry AMD is generally nutritional therapy, with a healthy diet high in antioxidants to support the cells of the macula.
- If AMD is further advanced but still dry, supplements are prescribed, to add higher quantities of certain vitamins and minerals which may increase healthy pigments and support cell structure.

Macular Degeneration

- It is crucial to remind patients not to just assume the visual changes are “due to aging”, but that they may be treatable.
- Many people avoid seeking treatment for fear that nothing can be done and that they could lose their drivers license.

Diabetic Retinopathy

- It is a complication of diabetes mellitus
- A leading cause of blindness among adults age 25-74.
- Blindness results from the breakage of tiny vessels in the retina as a complication of diabetes mellitus.
- Exact mechanism is unknown

Risk Factors/Warning Signs

- No early warning signs
- Essential that the older adult with diabetes have a dilated eye exam annually.
- Early diagnosis and treatment can prevent much of the blindness that occurs from this disorder.

Stages of Diabetic Retinopathy

Stage	Description	Pathophysiology
Stage 1	Mild non-proliferative retinopathy	Micro-aneurysms in the retina
Stage 2	Moderate non-proliferative retinopathy	Blockage of some blood vessels supplying retina
Stage 3	Severe non-proliferative retinopathy	Blockage of many blood vessels supplying retina
Stage 4	Proliferative retinopathy	Advanced stage, new blood vessels that are abnormal and easily breakable form to compensate for blockage of circulation to retina, these vessels may break and leak to cause macular edema and blurred vision

Interventions for Diabetic Retinopathy

- The first three stages of diabetic retinopathy are not treated.
- The first priority in treating proliferative retinopathy is to treat the cause of vitreous hemorrhage itself.
- For more severe cases of bleeding in the eye, a vitrectomy may be needed.
- When blood collects in the center of the eye, a vitrectomy allows removal of the vitreous gel that has blood in it
- The blood vitreous gel is replaced with a saline type solution.

In Conclusion…

- Addressing the sensory impairment will ensure adequate quality of care, limiting the impact on the daily life functioning.
- Knowing the awareness of these changes will determine whether or not older people can make adaptive changes as a consequence of such loss.
- Understanding whether or not the sensory system tends to lose functioning, will help clinicians achieve a better comprehension of challenges experiencing this loss.

Evaluation

- To receive credit for this program, you will need to complete an evaluation form.
- Go to http://www.wshep.com
- Click on Evaluation of Eye Care
- Thank you for your participation.
- Be sure to check our additional programs at
- http://www.wilsonshepard.com