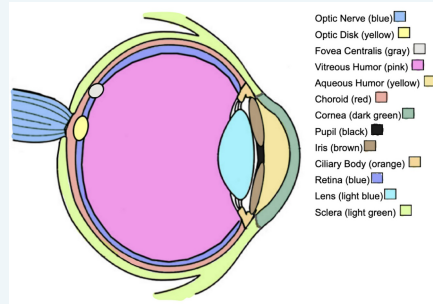


Anatomy of the Eye



- Pupil- how much light enters the eye
- Ciliary body- changes the shape of the lens (focusing)
- Choroid- contains vessels that supply blood
- Retina- contains the cells that are sensitive to light (rods and cones)
- Lens- focuses light to the back of the eye
- Sclera- the white part of the eye
- Optic nerve- transmits visual information to the brain
- Cornea- the transparent layer at the front of the eye

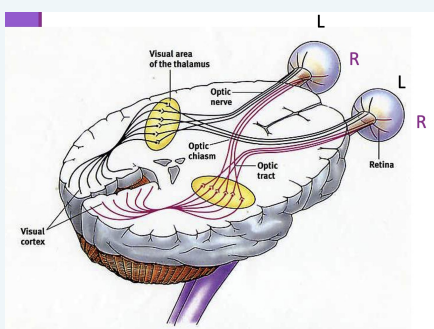
Elements of Vision

- sight
- eye movement

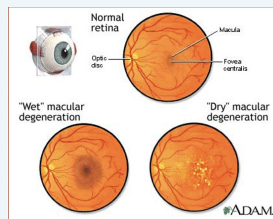
Components of Sight

Visual Acuity	the level of detail a person sees
Visual Field	the total area one sees in a single view
Contrast Sensation	the ability to distinguish shades of light, dark, and similar colors
Light Modulation	the ability to adapt to changing light conditions
Visual Perception & Interpretation	the processing of information once it reaches the brain

Visual Pathway Overview



Macular Degeneration



Macular Degeneration

a group of conditions that cause central vision loss

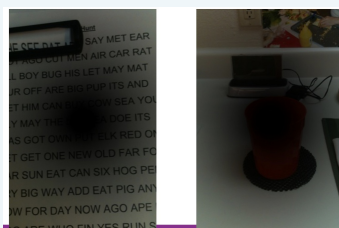
Macular degeneration (AMD) is when the retinal pigment epithelium (RPE) layer begins to malfunction.

Most AMD starts out as dry and some progress to wet

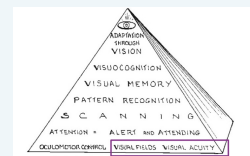
Dry AMD is the build up of deposits called **drusen**, which causes macular scarring

Wet AMD is the development of a cluster of blood vessels under the macula

How People see with AMD

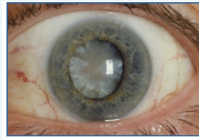


Hierarchy of Visual Perceptual Processing



Refractive Error

Cataracts image



Cataracts

Cataract is the clouding of the crystalline lens in your eye

Cataract surgery is one of the most common surgeries performed

If left untreated, the cataract will dull color and blur vision

Clients with cataracts will have **decreased contrast sensitivity**

Myopia	the problem with the lens ability to focus on the image with adequate power; the power is not strong enough resulting in undershooting the fovea/retina (focal length is too short)	concave or negative (-) lens
--------	---	------------------------------

Hyperopia	problem with the lens ability to focus on the image with adequate power; power is too strong and overshooting the fovea (focal length to too long)	convex or positive (+) lens
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Astigmatism	the shape of the cornea itself is misshaped impeding the ability to properly bend or refract light/image resulting in a distorted image	misshaped cornea
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Refractive Error is due mishaped

What does 20/20 mean?

You can see at **20 feet** as a person with standard vision can see at **20 feet**

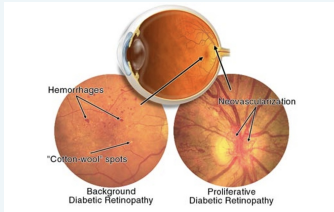


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Diabetic Retinopathy



Diabetic Retinopathy

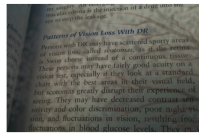
Diabetes causes damage to small blood vessels and the eye is not spared

DR causes a number of different visual problems ranging from "floaters" to total blindness

Background diabetic retinopathy is the early stage of DR

Proliferative diabetic retinopathy is a more severe form of DR.

How people see with DR



What is low vision?

Low vision is defined as a visual impairment that cannot be corrected by medical or surgical intervention and is severe enough to interfere with the performance of activities of daily living but allows some usable

Four Types of Vision Loss

Central Field Loss	Age-related Macular Degeneration (AMD) or Stragardts Macular Degeneration (genetic)
Peripheral Field Loss	Glaucoma or retinitis pigmentosa
Visual Field Cuts	Neurological conditions stroke, brain injury, Parkinson's, and Multiple sclerosis

Four Types of Vision Loss (cont)

Diffuse Vision Loss Usually caused by diabetic retinopathy

Functional Implications of Central Field

Difficulty reading

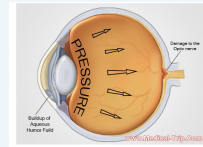
Decreased contrast sensitivity (e.g. poor detailed vision)

Excessive head movement to search for items in their environment or during reading

All things that require detailed vision will be affected (e.g. reading bills, text messages, following recipes, driving, etc)

Self care is **NOT** affected

Glaucoma



Glaucoma

Glaucoma is caused by increased pressure in eye

Glaucoma causes peripheral vision loss and will untreated can cause blindness

Fortunately, glaucoma is very treatable with eye drops and surgery

The key to treatment is catching it before it damages the optic nerve and cause vision loss

How people see with glaucoma



Retinitis Pigmentosa (RP)

Retinitis pigmentosa is a progressive hereditary eye disease that causes deterioration of the retinal cells

People usually start noticing that they have night blindness, then they start losing their peripheral vision

Central vision is spared in the beginning, but the visual fields so small that they can only see small pinholes

RP will eventually cause total blindness

Retinitis pigmentosa image

