

# **EYE/VISUAL SYSTEM**

**BY**

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# SYNOPSIS

- GENERAL TERMS
- OPHTHOMOLOGY
- OPHTHOMOLOGIST
- OPTOMETRIST
- ANATOMY& PHYSIOLOGY OF THE EYE
- PATHOLOGY/DISEASES
- MEDICAL TERMINOLOGIES& ABBREVIATIONS

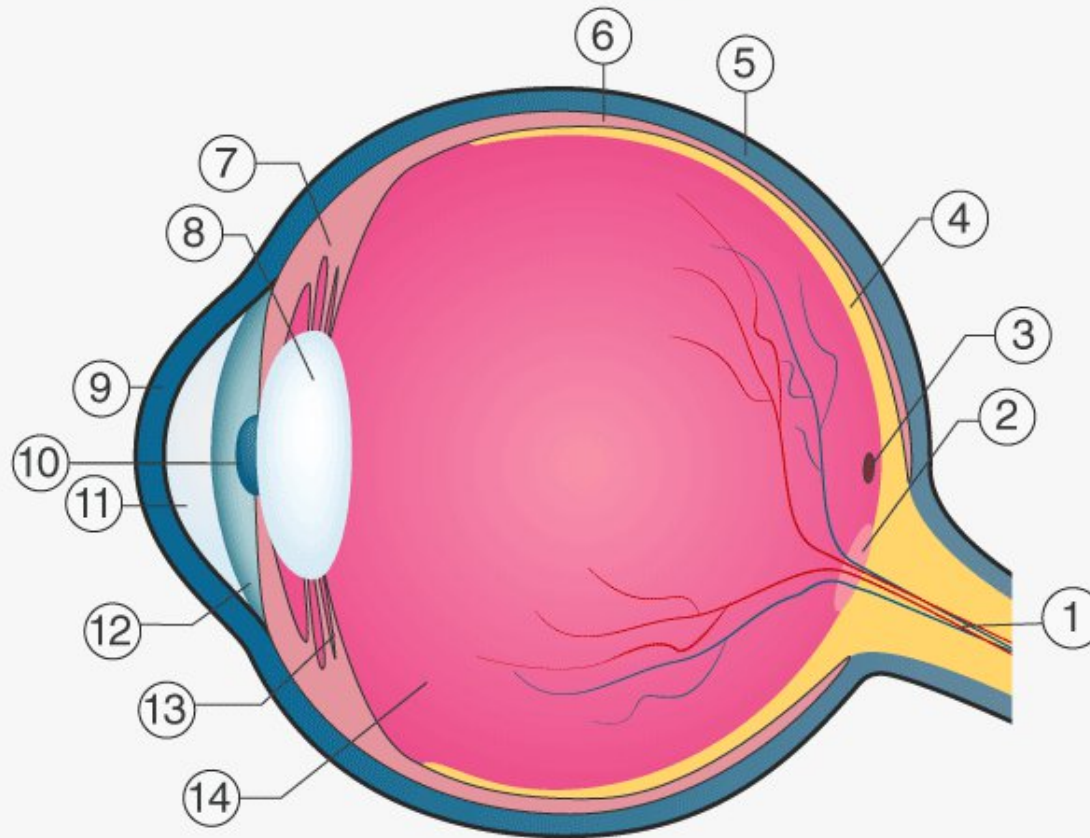
# INTRODUCTION

- **Eyes** are organs of the visual system. They provide living organisms with vision, the ability to receive and process visual detail, as well as enabling several photo response functions that are independent of vision.
- Eyes detect light and convert it into electro-chemical impulses in neurons (neurones).
- In higher organisms, the eye is a complex optical system which collects light from the surrounding environment, regulates its intensity through a diaphragm, focuses it through an adjustable assembly of lenses

# GENERAL TERMS

- **OPHTHOMOLOGY**
- The branch of medicine concerned with the diagnosis and treatment of disorders of the eye.
- **OPHTHOMOLOGIST**
- a specialist in the branch of medicine concerned with the study and treatment of disorders and diseases of the eye.
- **OPTOMETRIST**
- Trained to examine the eyes to detect defects in vision, signs of injury, ocular diseases or abnormality and problems with general health, such as high blood pressure or diabetes.

# STRUCTURE OF HUMAN EYE



- |                        |                  |                   |          |
|------------------------|------------------|-------------------|----------|
| 1 Optic nerve          | 2 Optic disc     | 3 Fovea centralis | 4 Retina |
| 5 Sclera               | 6 Choroid        | 7 Ciliary body    | 8 Lens   |
| 9 Cornea               | 10 Pupil         | 11 Aqueous body   | 12 Iris  |
| 13 Suspensory ligament | 14 Vitreous body |                   |          |

# ANATOMY OF EYE

- **The External Structure of an Eye**
- The parts of the eye that are visible externally include the following:-
- **Sclera:** It is a white visible portion. It is made up of dense connective tissue and protects the inner parts.
- **Conjunctiva:** It lines the sclera and is made up of stratified squamous epithelium. It keeps our eyes moist and clear and provides lubrication by secreting mucus and tears.
- **Cornea:** It is the transparent, anterior or front part of our eye, which covers the pupil and the iris. The main function is to refract the light along with the lens.
- **Iris:** It is the pigmented, coloured portion of the eye, visible externally. The main function of the iris is to control the diameter of the pupil according to the light source.
- **Pupil:** It is the small aperture located in the centre of the Iris. It allows light to enter and focus on the retina.

# The Internal Structure of an Eye

- The internal components of an eye are:
- **Lens:** It is a transparent, biconvex, lens of an eye. The lens is attached to the ciliary body by ligaments. The lens along with the cornea refracts light so that it focuses on the retina.
- **Retina:** It is the innermost layer of the eye. It is light sensitive and acts as a film of a camera. Three layers of neural cells are present in them, they are ganglion, bipolar and photoreceptor cells. It converts the image into electrical nerve impulses for the visual perception by the brain.
- **Optic nerve:** It is located at the posterior portion of the eyes. The optic nerves carry all the nerve impulses from the retina to the human brain for perception.
- **Aqueous Humour:** It is a watery fluid present between the cornea and the lens. It nourishes the eye and keeps it inflated.
- **Vitreous Humour:** it is a transparent, jelly-like substance present between the lens and the retina. It contains water (99%), collagen, proteins, etc. The main function of vitreous humour is to protect the eyes and maintain its spherical shape.

# PATHOLOGY OF EYE

- Ophthalmic Pathology is the sub-specialty of Pathology and Ophthalmology that focuses on diseases of the eye and its neighboring tissues
- **Common Eye Disorders and Diseases**
- Refractive Errors.
- Age-Related Macular Degeneration.
- Cataract.
- Diabetic Retinopathy.
- Glaucoma.
- Amblyopia.
- Strabismus.



# Refractive Errors

- Farsightedness (hyperopia)
- a common vision condition in which you can see distant objects clearly, but objects nearby may be blurry.
- Nearsightedness (myopia)
- a common vision condition in which near objects appear clear, but objects farther away look blurry. It occurs when the shape of the eye — or the shape of certain parts of the eye — causes light rays to bend (refract) inaccurately.

# Refractive Errors

- Presbyopia
  - a refractive error that makes it hard for middle-aged and older adults to see things up close.
- Astigmatism
  - a common and generally treatable imperfection in the curvature of the eye that causes blurred distance and near vision.
- Glaucoma
  - a group of eye diseases that can cause vision loss and blindness by damaging a nerve in the back of your eye called the optic nerve
- cataract
  - a cloudy area in the lens of your eye (the clear part of the eye that helps to focus light).

# MEDICAL TERMINOLOGIES

- **Amblyopia:** Reduced visual acuity in the absence of sufficient eye or visual pathway disease to explain the level of vision.
- **Anisometropia:** Difference in refractive error of the eyes.
- **Anophthalmos:** Absence of a true eyeball.
- **Blepharitis:** Inflammation of the eyelids.
- **Keratitis** (KEHR-uh-TI-tis). Pathologic condition. Corneal inflammation, characterized by loss of luster and transparency, and cellular infiltration.
- **Accommodation:** The adjustment of the eye for seeing at near distances, accomplished by changing the shape of the lens through action of the ciliary muscle, thus focusing a clear image on the retina.
- **Acquired:** Contracted after birth.
- **Agnosia:** Inability to recognize common objects despite an intact visual apparatus.

# MEDICAL TERMINOLOGIES

- **Albinism:** A hereditary deficiency of melanin pigment in the retinal pigment epithelium, iris, and choroid.
- **Alternate cover test:** Determination of the full extent of heterotropia and heterophoria by alternately covering one eye and then the other with an opaque object, thus eliminating fusion.
- **Amaurosis fugax:** Transient loss of vision. Usually reserved for transient loss of vision due to retinal embolus.
- **Amblyopia:** Reduced visual acuity in the absence of sufficient eye or visual pathway disease to explain the level of vision.
- **Ametropia:** See Refractive error.
- **Amsler grid:** A chart with vertical and horizontal lines used for testing the central visual field.
- **Angiography:** A diagnostic test in which the vascular system is examined. The ocular circulation can be highlighted by intravenous injection of either fluorescein, which particularly demonstrates the retinal circulation, or indocyanine green, to demonstrate the choroidal circulation.
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- Blepharoptosis (ptosis): Drooping of the eyelid.
- Blepharospasm: Involuntary spasm of the lids.
- Blind spot: "Blank" area in the visual field, corresponding to the light rays that come to a focus on the optic nerve.
- Canaliculus: Small tear drainage tube in inner aspect of upper and lower lids leading from

# ABBREVIATIONS

- AMD-Age-related Macular Degeneration
- HEENT-Head Eyes Ears Nose Throat
- LASIK-Laser Insitu Keratomileusis
- OD-Right Eye
- OS-Left Eye
- OU-Both Eyes
- VA-Visual Activity
- VF-Visual Field
- L&A- Light and Accommodation