

NAME: HARDING-UDOH TITANIA B. MATNO: 18/ENG08/007 DEPARTMENT: BIOMEDICAL ENGINEERING

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DEPARTMENT: BIOMEDICAL ENGINEERING

COURSE: PHS212; HUMAN PHYSIOLOGY II

### Question

Write short notes on any two eye defects

### **ASTIGMATISM**

Astigmatism is a common vision problem caused by an error in the shape of the cornea. With astigmatism, the lens of the eye or the cornea, which is the front surface of the eye, has an irregular curve. This can change the way light passes, or refracts, to your retina. This causes blurry, fuzzy, or distorted vision. Farsightedness and nearsightedness are two other types of problems with the way light passes to your retina. Farsightedness is called hyperopia. Nearsightedness is called myopia.

The two main types of astigmatism are corneal and lenticular. A corneal astigmatism happens when your cornea is misshapen. A lenticular astigmatism happens when your lens is misshapen.

It's not known what causes astigmatism, but genetics is a big factor. It's often present at birth, but it may develop later in life. It may also occur as a result of an injury to the eye or after eye surgery. Astigmatism often occurs with nearsightedness or farsightedness.

Astigmatism can occur in children and adults. Your risk of developing astigmatism may be higher if you have any of the following:

1. a family history of astigmatism or other eye disorders, such as keratoconus (degeneration of the cornea)
2. scarring or thinning of your cornea
3. excessive nearsightedness, which creates blurry vision at a distance
4. excessive farsightedness, which creates blurry close-up vision
5. a history of certain types of eye surgery, such as cataract surgery (surgical removal of a clouded lens)

The symptoms of astigmatism may differ in each person. Some people don't have any symptoms at all. The symptoms of astigmatism include:

1. blurry, distorted, or fuzzy vision at all distances (up close and far away)
2. difficulty seeing at night
3. eyestrain
4. squinting
5. eye irritation
6. headaches

An optometrist or ophthalmologist diagnoses astigmatism through a comprehensive eye examination. An optometrist is a doctor who diagnoses vision problems and eye diseases. An ophthalmologist is a doctor who provides medical and surgical treatment of vision problems and eye diseases. There are several tests optometrists and ophthalmologists may use during your eye examination to diagnose astigmatism.

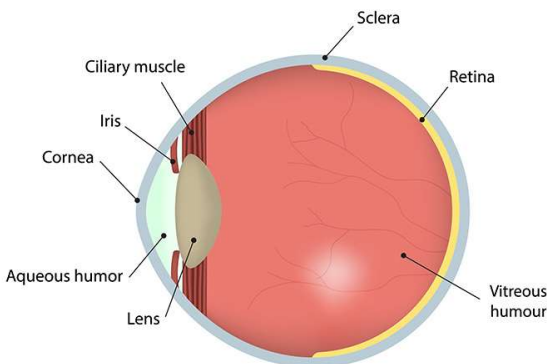
### The treatments for astigmatism

Mild cases of astigmatism may not require treatment. A doctor may treat astigmatism that causes vision problems by using one of the following methods.

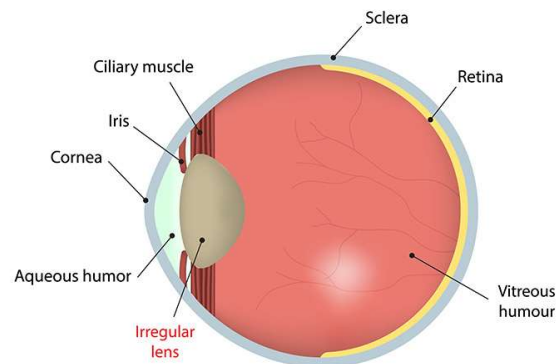
1. Corrective lenses; Corrective eyeglasses and contact lenses prescribed by a doctor are the most common and least invasive treatments for astigmatism.
2. Orthokeratology (Ortho-K); Orthokeratology (Ortho-K) is a treatment that uses rigid contact lenses to temporarily correct the irregular curvature of your cornea. You'll wear rigid contact lenses for limited periods of time. You may wear them during sleep and then remove them during the day. Some people have clear vision during the day without corrective lenses when undergoing Ortho-K. The benefits of Ortho-K are only present when using it. Your vision will return to its previous state after stopping Ortho-K.
3. Surgery; A doctor may recommend refractive surgery if you have a severe case. This type of surgery involves using lasers or small knives to reshape your cornea. This will permanently correct your astigmatism. The three common surgeries for astigmatism are laser in situ keratomileusis (LASIK), photorefractive keratectomy (PRK), and radial keratotomy (RK). All surgeries carry some risks. Talk to your doctor about the risks and benefits before getting surgery for astigmatism.

# Astigmatism

## Healthy Eye



## Eye with Astigmatism



## **PRESBYOPIA**

Presbyopia is the normal loss of near focusing ability that occurs with age. Most people begin to notice the effects of presbyopia sometime after age 40, when they start having trouble seeing small print clearly — including text messages on their phone.

You can't escape presbyopia, even if you've never had a vision problem before. Even people who are nearsighted will notice that their near vision blurs when they wear their usual eyeglasses or contact lenses to correct distance vision.

Though presbyopia is a normal change in our eyes as we age, it often is a significant and emotional event because it's a sign of aging that's impossible to ignore and difficult to hide.

In parts of the world where there is no access to vision care, presbyopia is much more than an inconvenience — it's a leading cause of vision impairment that reduces people's quality of life and productivity.

### **Presbyopia symptoms**

When you become presbyopia, you either have to hold your smartphone and other objects and reading material (books, magazines, menus, labels, etc.) farther from your eyes to see them more clearly. Unfortunately, when you move things farther from your eyes they get smaller in size, so this is only a temporary and partially successful solution to presbyopia. If you can still see close objects pretty well, presbyopia can cause headaches, eye strain and visual fatigue that makes reading and other near vision tasks less comfortable and more tiring.

### **Treatment**

Presbyopia can be treated with eyeglasses (including reading glasses), contact lenses and vision surgery

