

Information on Astigmatism

What is astigmatism?

Astigmatism is a condition in which the eye is out of focus. Both distance vision and near vision are affected.

What causes the eye with astigmatism to be out of focus?

In eyes with astigmatism the cornea, the clear dome covering the front of the eye, is not quite perfectly round. The curvature, if measured closely, is a little flatter in one direction (say, horizontally) and a little steeper in the other direction (say, vertically).

This difference in curvature causes a difference in focus for lines of different orientations. For example, when looking at the letter "E" on the eye chart, the person with astigmatism may see the vertical line in focus, but the horizontal lines out of focus, or vice versa.

In some patients with astigmatism the flattest and steepest corneal curves are oriented at an angle, instead of horizontally and vertically. These people see shadows of blurriness extending at angles from the letters or objects they view.

What causes astigmatism?

The cause is unknown. Protein in the corneas of people with astigmatism may be more flexible than normal, making the corneas more likely to get out of round.

Is astigmatism always a problem?

No. Small amounts of astigmatism may not be noticed.

What signs might indicate astigmatism?

Eye strain. Squinting. Headaches.

When are children given glasses for astigmatism?

Children usually do not require glasses prior to grade school unless the astigmatism is fairly severe, or much different in one eye than the other. Older children and adults do not tolerate as much blurriness and require glasses for smaller amounts of astigmatism.

Can astigmatism cause amblyopia?

Yes. If one eye has much more astigmatism than the other, a young child can begin to ignore the eye. Patching of the better eye will be required in addition to glasses to correct the astigmatism.

Can a person have astigmatism as well as myopia or hyperopia?

Yes. People often have myopia (nearsightedness) or hyperopia (farsightedness) in addition to astigmatism.

How is astigmatism indicated on the glasses prescription?

On the glasses prescription the correction for myopia (-) or hyperopia (+) is the number in the first column, marked "Sph" (for sphere); the astigmatism correction is the number in the second column, marked "Cyl" (for cylinder).

Can astigmatism change over the years?

Yes. Infants typically show a decrease in astigmatism during the first year or two of life. After that, changes in astigmatism tend to be unpredictable.

Can astigmatism be corrected with contact lenses as well as glasses?

Yes. Glasses are preferred for young children, but contact lenses are an option for older children. Smaller amounts of astigmatism can be well corrected with soft contact lenses or gas permeable lenses. Greater amounts of astigmatism may require a type of contact lens known as a toric lens, with a back surface which matches the different curvatures of the cornea, rather than being perfectly round.

Is surgery available for astigmatism?

Yes. The laser surgery (PRK, LASIK) and radial keratotomy (RK) that one hears so much about can correct astigmatism as well as myopia (nearsightedness). Predictability and patient satisfaction are generally not quite as high for astigmatism surgery as for myopia surgery, but this may change as equipment and techniques improve.

Laser surgery for myopia and astigmatism is usually done on adults. Surgery will have to be even safer and more predictable before it is recommended for children.