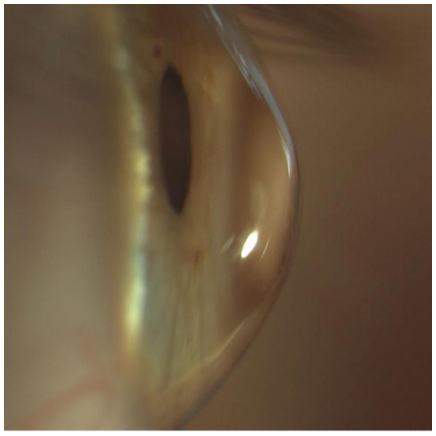
Keratoconus

What is Keratoconus?

Keratoconus is a distortion of the cornea, the transparent part of the eye which plays an important role in focusing images. The fibres making up the middle layer of the cornea are weaker than normal, which causes the cornea to bulge and thin, thus becoming distorted.

This means that images are no longer sharply focused, and tasks needing detailed vision, such as reading and driving, become difficult.

The name literally means ‘Cone shaped Cornea’ (Kerato is the Greek word for cornea). This cone shape is not visible to other people, except in extreme cases.



What is the Cause of Keratoconus?

There is no obvious single cause, and often Keratoconus occurs as an isolated event.

Keratoconus is frequently associated with allergic conditions, such as eczema, asthma and hay fever. People with itchy eyes often rub them vigorously, and there is evidence that this rubbing can initiate or make keratoconus worse.

Keratoconus may occasionally run in families with a faulty gene, but not all members of the family may be affected.

It is also more common in some ethnic groups.

How will it affect my vision?

Each person is different, but most find difficulty seeing small details. Some people report distorted or multiple images. Most people find that vision is improved if they screw up their eyes, to cut out distortions. Vision is particularly difficult after dark, as street lights and car headlights can look like starbursts.

The distortion also scatters light within the eye, so some people with Keratoconus are particularly sensitive to light and find they need to wear sunglasses, or a hat with a peak, in bright conditions.

People with keratoconus will usually need glasses or contact lenses to correct their sight and enable them to lead a normal life.

Progression

As a general rule, keratoconus starts in the teens or twenties. The condition may stabilise after a short time, or might continue for more than 20 years until finally stabilising. Progression is rare after the age of 35 years.

For some people the keratoconus remains mild, but for others the progression advances to a stage where the cornea is very steeply curved and distorted. A very steep cornea can lose its transparency in the thinnest part resulting in a scar.

In about 2% of cases the back surface of the thin cornea splits, and the cornea becomes waterlogged and opaque. This is known as Hydrops, and can be painful. It usually heals with time.

Keratoconus affects both eyes but usually one eye is affected more than the other.

Management of Keratoconus

Optical Correction of vision

If the keratoconus affects one eye only, and the visual problems are slight, some patients may not want an optical correction.

In the early stages, the changes in the cornea are usually smooth, and can be corrected with glasses. An increase in distortion may require frequent change in glasses.

If the distortion is irregular, it cannot be fully corrected with glasses. Contact lenses are more successful, as they float on the surface of the cornea, replacing the distorted surface with a smooth surface which is able to focus the light accurately.

Rigid contact lenses are usually the first choice, as they give best visual results and are more robust than soft lenses. However, other types of contact lenses, such as thick soft lenses (made especially for keratoconus), hybrid, “piggy back” or scleral lenses are also used where appropriate. The type of lens can only be determined after an eye examination and discussion. Fitting of distorted corneas is often complex and it can take some time to get the best results.

Glasses and contact lenses do not slow down the rate of progression of the Keratoconus, they just correct the vision.

People with keratoconus are eligible for NHS contact lenses. Charges may apply.

Medical / Surgical management

1. Stabilising the progression: Corneal Collagen Cross Linking

In people where the keratoconus shows progression, a surgical procedure known as corneal collagen cross-linking may be used to slow or stop the condition getting worse by strengthening the cornea.

Collagen is the main structural protein of the cornea which maintains stiffness by forming bonds between molecules. In Keratoconus these links aren’t as strong, so the cornea stretches and bulges forward.

Cross-linkage occurs naturally with age, which is thought to be the

reason why Keratoconus stabilises as people get older.
In younger people, progressive Keratoconus can be halted using the collagen cross linking procedure. This accelerates the natural collagen cross-linking process using a combination of riboflavin (vitamin B) eye drops and ultraviolet light.

This procedure would not be suitable for people where Keratoconus has already stabilised.

Corneal collagen cross linking has recently been approved by NICE (see www.guidance.nice.org.uk)

Note: People with Keratoconus are not generally suitable for the type of Laser surgery that is advertised to cancel out the need for glasses. This is because the laser surgery thins the cornea, which could make the Keratoconus worse.

2. Corneal ring segment inserts (Intacs or Kera rings)
Clear, thin ring inserts are slid between the layers of the cornea in order to alter the shape of the central corneal and make it less irregular. This requires adequate thickness and transparency of the cornea and may not be suitable for everyone.

3. Surgery to replace the cornea with donated corneal tissue: corneal transplant (or graft)
This is only considered when contact lenses are no longer tolerable, or when the cornea has lost its transparency. The affected cornea is replaced by a clear one from a deceased person.

The operation could involve replacing a partial thickness of cornea leaving the back layers intact, or replacing the whole thickness. The indications, pros and cons of each type can be discussed with your surgeon.

This is a major surgical procedure, needing monitoring for life. There are risks of transplant rejection, unpredictable visual outcomes, and development of high astigmatism. Visual recovery may take 1-2 years and, in 30-50% of patients, a contact lens may be necessary for visual correction after the operation.

Clinic Contact Numbers:

	Appointments:	Nurses answer phone:
Heartlands	**0121 424 0545**	**0121 424 1536**
Solihull	**0121 424 4463**	**0121 424 4456**
Good Hope	**0121 424 9651**	**0121 424 9667**

Keratoconus on the Internet

There is a lot of information about Keratoconus online, and support from social networking sites. Many people find that social media provide valuable sources of support and information, but it's always worth checking how reliable the source is and remembering that people with problems are more likely to post messages then those who are content.

Websites

UK Keratoconus Self Help and Support Association? www.keratoconus-group.org.uk

The National Keratoconus Foundation (USA) www.nkcf.org

Examples of Social Media:

Twitter: @KCSupportUK, @KeratoconusGB, @KCfamily

Facebook: KeratoconusGB

If you require this information in another format, such as a different language, large print, braille or audio version please ask a member of staff or email patientexperience@uhb.nhs.uk.