

# Corneal Cross-linking (CXL)

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**You have been given this leaflet because your ophthalmologist has recommended treatment with corneal cross-linking.**

## **What is corneal cross-linking (CXL)?**

CXL is a treatment for patients with conditions causing corneal distortion such as keratoconus, pellucid marginal degeneration (PMD) and post-LASIK ectasia. These conditions are diseases of the cornea, the clear window at the front of the eye, which becomes gradually thinned and weaker, causing increasing blurring of vision.

CXL uses ultraviolet light and vitamin B2 (riboflavin) drops to stiffen the cornea. In this way, CXL mimics the normal stiffening of the cornea that occurs as we age. The aim of treatment is to stop the progressive distortion and prevent your condition getting worse. It is successful in more than 90% of cases.

After treatment, you will still need to wear glasses or contact lenses. Your eye will be sore for about one week after the procedure. Although vision is often hazy at first, most patients can resume wearing contact lenses and return to work after one week. As with all operations, there are risks - CXL is safe, but there is a small chance (about 1 in 30) of vision continuing to deteriorate afterwards.

## **Which patients benefit from CXL?**

The treatment is recommended for patients whose corneal shape scans ('corneal topography') show that their condition is getting worse, or for those who are at particularly high risk of worsening keratoconus. Keratoconus usually stops getting worse by the mid-30s because of natural crosslinking with age, CXL is not normally required for older patients.

## **What evidence is there that it works?**

CXL is the only treatment currently available that appears to stop keratoconus from getting worse. Evidence from clinical trials showed that CXL can stop keratoconus from getting worse in up to 90% of treated eyes. Vision is better after treatment in about 50% of eyes treated with CXL. It is important to note that the main aim is to prevent deterioration, rather than improve vision.

## **Will I have both eyes treated at the same time?**

If you need CXL for both eyes, we can offer you treatment for both at the same time. If you would prefer to delay the second eye treatment, please request this at the clinic appointment prior to your treatment.

## **What happens during CXL?**

CXL is performed as a day-case procedure by an experienced ophthalmologist at the Norfolk & Norwich University Hospital (NNUH). Although the procedure takes less than 30 minutes, there is usually some waiting time before treatment and you will also need to stay for a short while afterwards to check that you have everything you need to go home. Please be prepared to spend up to two hours in the department.

You will be asked to lie flat. Anaesthetic drops are used to numb the surface of your eye before a small prop is placed to keep your eyelids open.

The surface skin of your eye (epithelium) is gently brushed clear and vitamin B2 drops are applied every few minutes for at least ten minutes. Following this, the ultraviolet light is shone at your eye for ten minutes. A soft 'bandage' contact lens is placed on your eye at the end of the procedure.

## **What happens after CXL?**

You will be given eye drops to use after the procedure. The contact lens will remain in your eye until the surface has healed, about seven days. If the bandage lens falls out during this time, please throw it away – do not attempt to reinsert it. The anaesthetic drops will wear off later on the day of your procedure, and your eye will be gritty, red and sensitive to light for several days. Everyone's experience of pain is different, with some patients reporting very little discomfort and others describing the first few days as very painful.

Your eyes could be light sensitive and many patients find sunglasses helpful. Your vision will be quite blurred at first, but will clear gradually over the first few weeks. It is normal to experience fluctuating pain within the first two days after surgery. If you experience increasing pain three or four days after the procedure, this could be a sign of an infection and you should contact the Eye Department. Infection is rare, affecting less than 1% of patients.

You will be monitored for up to five years to confirm that your corneal shape has remained stable. CXL can be repeated if the shape does not stabilise after your first treatment.

## **Do I need to take time off work or studies?**

Yes. You should allow at least one week off while most of the surface healing occurs, or two weeks if your job involves a lot of computer work and the treatment is being done on your better eye. You will be putting eye drops in every one-to-two hours for the first few days, and then every four hours for the following week.

Day to day activities such as watching television or using a computer will not do any damage to your eye, but you might find it more comfortable to rest with your eyes closed early on.

## **What should I do, or not do, after CXL?**

It is important to put the eye drops in regularly as instructed. Wash and shower normally, but try to avoid getting water in your eyes. You may exercise, but should not swim before the surface of your eye has healed.

You should avoid driving until your follow-up check-up at the Eye Clinic. It is normally safe to resume contact lens wear once the eye's surface layer has healed. This typically happens around the end of the second week after your procedure.

## **What are the risks of CXL?**

CXL is very safe, but like all operations your eye needs time to heal and problems do occasionally occur. About 3% of patients can lose some vision in the treated eye as a result of corneal haze scarring, corneal surface shape irregularity or infection. In most cases, this visual loss is potentially reversible with a corneal transplant.

Without CXL treatment, at least 20% of all patients with keratoconus will eventually require a corneal transplant. The risk of transplantation for those patients who have keratoconus requiring CXL treatment is probably higher.

For further information, please speak to your doctor or nurse who will be happy to answer questions or visit [www.keratoconus-group.org.uk](http://www.keratoconus-group.org.uk)

### Your Feedback

We want your visit to be as comfortable as possible - talk to the person in charge if you have any concerns. If the ward/department staff are unable to resolve it, then ask for our Patient Advice and Liaison (PALS) information. Please be assured that raising a concern will not impact on your care.

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### OUR VALUES

#### **Collaboration**

We work positively with others to achieve shared aims

#### **Accountability**

We act with professionalism and integrity, delivering what we commit to, embedding learning when things do not go to plan

#### **Respect**

We are anti-discriminatory, treating people fairly and creating a sense of belonging and pride

#### **Empowerment**

We speak out when things don't feel right, we are innovative and make changes to support continuous improvement

#### **Support**

We are compassionate, listen attentively and are kind to ourselves and each other



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communication for all

The hospital can arrange for an interpreter or person to sign to assist you in communicating effectively with staff during your stay. Please let us know.

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