

# Macular Injury following Exposure to Laser

## Patient and Guardian Information

### What is laser energy?

Laser is a unique kind of light energy created artificially which produces a narrow beam of concentrated light. The light contained in a laser is of only one colour or wavelength and contains much higher energy than normal “white” light. Lasers can be produced at many different powers. Some are relatively weak; for example, those used at supermarket checkouts to read bar codes. Others, however, can be of a very high power and pose risk of injury to human tissue.

### How laser can cause injury to your eye?

Laser light enters your eye just like normal light. The surface layers of the eye are transparent and not damaged by laser light as it simply passes through these layers (i.e. your cornea, pupil and lens). However, when the laser is focused on the back surface of your eye (the retina) the laser energy is absorbed into these layers resulting in the production of heat. It is this heat which causes tissue damage and the loss of cells within that area of the retina.

The amount of lost tissue is dependent on the power of the laser, the frequency of laser exposure and the duration of laser exposure. Usually, only a very small area of retina is affected. This can, however, result in small blind spots (scotoma) in your vision, if the centre of your retina (the macula) is involved. Rarely, this can cause reduction in vision if the very centre of the macula (fovea) is affected.

### What are the symptoms of a laser eye injury?

Exposure of laser to an eye does not normally cause pain but can result in a dazzling sensation or a superimposed spot in your vision called an “afterimage”. These symptoms are often short-lived and should clear up after a few hours without causing permanent damage. Longer lasting (>24hrs) spots in your vision or blurring may represent a more serious injury to your eye and should be examined by an eye specialist.

With more serious macular injuries, patients may complain of blurred vision and it is also common to be aware of a missing spot (scotoma) in the centre of your vision. This may be apparent, for example, as a small spot of missing letters when reading a page of text.

### Prognosis

The impact on a patient’s vision depends on the location and size of the injury. If the injury is away from your central

retina, there may be minimal to no visual impact. However, as patients tend to stare at a laser, the majority of injuries occur at the centre point of the retina or “macula” and may be visually symptomatic.

The prognosis with macular laser injuries is good overall with most patients maintaining good to normal visual acuity. There is also the potential for improvement over time when there are small levels of visual loss. As with all injuries there are degrees of severity and, although rare, more severe injuries may result in significant visual loss with the affected eye not reaching the visual driving standard.

### Complications following retinal laser injury

It is rare to experience complications from a retinal laser injury. But patients need to be aware of some potential problems that may arise.

One potential complication is bleeding into the jelly (vitreous) of the eye. This could happen close to the time of the initial injury and, in most cases, the blood will clear over a period of weeks.

Another rare but potential complication, is the growth of abnormal blood vessels at the site of the laser injury (choroidal neovascularisation). This type of abnormal blood vessel growth can occur when there are small breaks in the layers of the retina and may arise many years after the initial injury, leading to sudden blurring and distortion of vision. This complication can potentially be very serious for your sight and require treatment to control the growth of these abnormal blood vessels.

### Advice if you or your child has access to handheld lasers.

Looking at a laser by accident, even for a split second, may still cause permanent eye damage as some lasers which are available to the public can be very powerful. Therefore, the most important thing to do is **NEVER** intentionally look directly at any laser.

Lasers should always be stored securely away from children or vulnerable people and **NEVER** given to children to play with as “toys”.

If it is discovered that children are using lasers as toys, these lasers should be **REMOVED AND DISPOSED OF IMMEDIATELY**.