# Light sensitivity (photophobia)

Light sensitivity or “photophobia” is common in people diagnosed with eye conditions or sight loss. Light sensitivity is where the light level in the environment is too bright and causes discomfort. For some people, this discomfort can be extreme and can further reduce their usable vision.

## How we see

Light rays enter the front of your eye through the clear cornea and lens. It is very important that both the cornea and lens are clear as this allows the light to pass directly through the front of your eye to the retina. The tearsform a protective layer at the front of your eye. It’s important that the tears are clear and smooth so that light can enter smoothly at the front of the eye.

The iris is the coloured part of your eye and has muscle cells which control the amount of light coming into your eyes. The iris automatically changes the size of the pupilwhich allows different amounts of light into your eye.

Our pupilis the dark hole in the middle of the coloured part of your eye. The pupil gets smaller (constricts) in bright conditions to let less light in and gets bigger (dilates) in darker conditions to let more light in.

The middle of your eye is filled with a jelly-like substance called the vitreous. The vitreous is clear and allows light to pass directly from the front to the back of your eye.

The retina is made up of light sensitive cells (called photoreceptors) that convert light into electrical impulses which then travel along the optic nerve to our brain. Our brain processes these signals so that we can "see” the world around us.



Image description: Diagram of cross section of eye (labels: cornea, pupil, iris, lens, vitreous gel, retina, macula, fovea, optic nerve)

We have two types of photoreceptors – cones and rods.

Cone cells are mainly found in the centre of your retina, at the macula, where light is focused by the eye. Cone cells enable you to see detail and colour, for example for reading, but only work well if there is a good amount of light.

In dim or low light conditions, we don’t see in as much detail and colour is difficult to detect. In dim light we rely on rod cells which are concentrated in your peripheral retina. Rods help you to see things that aren’t directly in front of you, for example when moving around, but do not allow you to see things in fine detail.

Light enters our eyes directly from sources of light such as lamps or computer screens but is also reflected from the objects we look at. This allows us to see things that don’t produce light themselves. Different objects reflect and absorb different amounts of light allowing us to see colour and shadow.

## What is glare?

Glare is where bright or reflected light can affect our ability to see or is uncomfortable to look at. Many people with low vision need more light than usual to read. However, too much or the wrong sort of light can cause problems with glare.

There are two types of glare; discomfort glare and disability glare.

### What is discomfort glare?

Discomfort glare occurs when a light source is just too strong for our eyes. It may cause us to “screw up” or shade our eyes; it can even cause us to close our eyes. It makes us want to look away from the light source, because it is uncomfortable to look at, but it doesn’t cause a reduction in vision.

A good example of when we might experience discomfort glare is moving from a dark room into bright sunlight. As our eyes adjust to the brighter level of light, it can sometimes feel uncomfortable or painful. Usually in these situations within a few seconds, our eyes adapt to the new level of light and we can see comfortably again. As you get older this adaption naturally takes longer, but it can also take longer or be more difficult if you have an eye condition or sight loss.

### What is disability glare?

Disability glare reduces how well we can see. Disability glare can be caused by eye conditions and can occur with ordinary light sources and levels of light.

Disability glare doesn’t necessarily cause discomfort but can reduce how much detail we can see. This type of glare generally reduces contrast, making it difficult to distinguish objects.

A common eye condition which can often cause disability glare is cataract, the clouding of the natural lens of the eye. Normally the lens is clear, so light can pass smoothly through it to the retina at the back of the eye. When the lens is cloudy this causes light passing through it to scatter inside the eye causing glare. An example of this is when someone with cataracts is driving at night and the oncoming headlights can cause light to scatter and reduce their level of vision.

Any eye condition which causes vision to be reduced can cause disability glare. The brighter the light source the more glare it can cause. If glare is very intense it can completely impair vision, this is sometimes called “dazzle”.

## What eye conditions can cause light sensitivity and glare?

Many eye conditions can cause light sensitivity and glare, some examples include:

* ocular albinism – this is when some people are born with a lack of pigment in the eye
* aniridia – a condition where the iris is missing from birth
* cataracts – clouding of the lens inside the eye
* macular degeneration – a condition affecting the macula, the area in the eye responsible for our central, detailed vision.
* uveitis – inflammation inside the eye, such as iritis
* inherited retinal dystrophies such as retinitis pigmentosa
* conditions which affect the front surface of the eye such as conjunctivitis, dry eye or corneal problems.

If you start to experience light sensitivity, it’s important to see an optometrist (also known as an optician) to have your eyes checked. An optometrist will be able to examine the health of your eyes to check for any underlying eye condition which could be causing your light sensitivity.

If you suddenly become sensitive to light or your light sensitive worsens, this should be checked as soon as possible, as it can indicate the worsening or development of a new condition. Much less commonly, sudden severe light sensitivity can be the first sign of a more serious condition such as meningitis, which can cause light to become painful very quickly. If you are in any doubt it is always best to have any new symptoms checked by a doctor or optometrist.

## Other causes of light sensitivity

Some medications can have light sensitivity as a side-effect. Examples of these can include; non-steroidal anti-inflammatory drugs, antibiotics, acne medication and diuretic drugs used to treat high blood pressure.

People who suffer from migraine tend to be more sensitive to light, to a marked degree during a migraine headache, as well as to a lesser degree at other times. Sometimes, certain types of light or patterns can trigger migraine. More information about migraines can be found on the Migraine Trust website; their details are listed at the end of this factsheet.

Other medical or health conditions can also make someone more sensitive to light. Examples can include blepharospasm, progressive supranuclear palsy (PSP), fibromyalgia, or following a stroke or traumatic brain injury. The reasons why these conditions are associated with light sensitivity isn’t fully understood because the sensitivity to light seems to occur in the processing areas of the brain, not the eyes. Despite this, reducing the amount of light entering the eye as described in this factsheet, can still help relieve these symptoms.

## Light sensitivity without a cause

Some people have light sensitivity even though they don’t have an eye condition. Unfortunately, some people are sensitive to light without there being a physical cause and for some people this can cause a lot of difficulty. Typically, these people will have always been light sensitive which stays the same or only gradually increases as they get older.

It’s important to remember that there is a spectrum of light sensitivity. Some people are just more sensitive to light than others. People who have a lighter coloured iris may be more prone to being light sensitive than those with a darker iris. Some level of light sensitivity is normal for everyone especially in very bright sunny conditions.

## Can light sensitivity or glare be treated?

If the light sensitivity is a symptom of an underlying eye condition such as cataract, then treatment for your cataract can help to solve the glare problem. Treating eye conditions like uveitis often means that your eye becomes less light sensitive.

Unfortunately, not all eye conditions can be treated. If your eye condition cannot be treated medically then there are still things that can help you cope with light sensitivity and glare.

## How can I cope with light sensitivity and glare?

The most obvious way to cope with glare is to limit the amount of light entering your eye.

### Sunglasses

Tinted lenses in a pair of glasses (sunglasses) can help to reduce the amount of light entering your eyes and help with glare.

The lightness or darkness of the tint is largely a matter of personal choice as well as a balance between being dark enough to help with glare while still getting enough light to make the most of your vision. It is important if you have low vision, not to choose a tint that is too dark, as this might further reduce your level of sight.

Using the least amount of tint while you are inside is best, as the darker things are, the more the light will bother you when you move into brighter conditions outside.

It is important to protect your eyes from harmful UV light contained in sunlight. Sunglasses should have an UV filter. Make sure your sunglasses have a CE or British Standard (BS EN ISO 12312-1) mark to show that they offer proper UV protection. Clear prescription glasses and many contact lenses now normally have some UV filtering included as standard.

Some people find light activated sunglasses, known as “photochromic” lenses, which get darker in brighter conditions outside, helpful; although this is a personal choice. Photochromic lenses darken when exposed to UV light so they only become darker when you’re outside and not when you’re inside or in the car.

Polarised lenses can cut down on reflected glare from flat surfaces, for example light reflected off water or snow or off the bonnet of a car and might be helpful if you find reflected glare is a problem for you.

If you drive, it is important to get advice from your optician on the level of tint to wear during the day when you’re driving. This is important as your lenses need to let in enough light to drive safely and meet DVLA regulations. The Highway Code warns against using any form of tint for night driving.

If you have an issue with glare when driving at night you might want to talk with your optometrist about using clear lenses with an anti-reflection coating. Some people find that they can help reduce glare when driving at night. Your optician will be able to explore this further with you.

### Eye shields

Eye shields or wrap-around shades are larger than normal sunglasses. They have built-in sides which stop the light entering from above and to the sides. They can also be worn over your normal spectacles. These can be very helpful if you are very light sensitive but need to wear a glasses prescription. The fit of eye shields is very important. Everyone has a different shaped head and it’s useful to try on several pairs of these to find the ones which fit closest to stop light from coming in around the edge of the frame.

Eye shields can also come in a variety of different coloured tints. Different coloured tints or filters limit a certain wavelength of light which can often help. The colours of these tints range from yellows to reds to greens.

There is no strong evidence to suggest that a particular shade of tint suits a specific eye condition. Choosing a tint colour is generally a matter of personal choice. For example, two people with macular degeneration may prefer two completely different coloured tints. However, people with conditions where light is scattered in the eye (for example, cataract) often find filters that block out short wavelengths (blue blocking tints), such as yellow or amber tints, helpful. You might like to try out a range of different coloured tints to see if there’s one that works best for you. You might find that you prefer different tints in different situations, for example indoors and outdoors, or in summer and winter.

The general advice for choosing the darkness and colour of the tint is to try out a range of tints in the environments that cause you difficulties and choose the tints that reduce the symptoms.

The advice about sunglasses and eye shields can help anyone with light sensitivity. Wearing sunglasses will not harm your eyes or make them lazy.

### Moving around outside

Shading your eyes with your hand or wearing a baseball cap or hat with a wide brim can help cut down on glare.

Some eye conditions can make moving between areas with different lighting levels difficult; for example, when moving from sunlight into a dim room, or vice versa. It may be necessary to pause and put sunglasses on or take them off and give your eyes time to adjust. It’s important that you don’t feel rushed and to give yourself time. Often, these changes in light levels occur at the entrance to buildings, which can be particularly dangerous, as there are often steps in these places.

### Lighting

Many people with a sight problem find that using a task light for activities such as reading allows them to see much better. Using an adjustable lamp allows you to direct light to where you need it the most. The best position for an adjustable lamp is below your eye level, between you and what you want to look at. Direct the light source at what you want to look at. Using an adjustable lamp in this way can reduce the amount of glare you experience when doing close work.

Many people also find that making some adjustments to lighting in the home may help. Using shades, dimmer switches and blinds can help with glare and allow you to change the direction of light in a room. You might also find it helpful to keep the light level throughout your home at the same level to avoid having to cope with the effect of moving from one light level to another. More information about lighting in and around the home for visually impaired people can be found on the Thomas Pocklington Trust website; their details are listed at the end of this factsheet.

## Where can I get advice about tints or eye shields?

You can speak to an optometrist or dispensing optician at your local opticians practice for more advice about different lens options for light sensitivity including tints and photochromic or polarised lenses. Dispensing opticians are qualified in the dispensing and fitting of spectacles and lenses, and can give professional advice about suitable lenses and frames for adults and children.

If you have sight loss, a low vision specialist can give you advice on coping with glare. They can talk to you about the best way to use lighting to avoid glare. This is especially important since it can be difficult to balance the amount of light someone with a sight problem needs for tasks such as reading and the fact that they may have a problem with glare.

Your eye doctor (ophthalmologist), optometrist or GP can refer you to your local low vision clinic for a low vision assessment. A low vision assessment looks at ways to help people with sight loss make the most of their vision. The specialist can also explore different types of eye shields to see which one may help with symptoms of glare. Low vision assessments are available for adults and children and the assessment will be tailored to their individual needs.

You can also try out a range of eye shields as well as other equipment to help with daily living at your local sight loss society resource centre. You can search for your local sight loss society or low vision service via our Sightline directory [www.sightlinedirectory.org.uk](http://www.sightlinedirectory.org.uk).

There is much more information on lighting and low vision in our Starting out – Making the most of your sight leaflet. You can also look at the range of eye shields we have on our RNIB shop at shop.rnib.org.uk although it is usually best to try them out before you buy.

## Precision tinted lenses

Precision tinted lenses may help some people who experience symptoms of discomfort when looking at pages of text or repeating patterns, causing letters to change shape or size or text to move around. This is known as visual stress rather than disability or discomfort glare. Precision tinted lenses are also said to help some people with migraine, dyslexia or epilepsy but more research is needed to learn about this.

There are some specialist optometrists who can assess for signs of visual stress and help determine whether a specific colour of tint may be helpful for someone to reduce their symptoms. Usually coloured overlays (coloured sheets of see-through plastic which you place on top of a page of text) would be given for you to use to see what effect this has on your symptoms. If this helps, a special test called colorimetry can be used to determine the colour of tint (placed in a pair of glasses) that might be most helpful to reduce these visual symptoms. Colorimetry can test thousands of different colour combinations, and people may find that a precise colour, which is different for each person, to help with their visual symptoms.

Colorimetry is not available on the NHS, as evidence is limited as to how well it works, and it doesn’t help everyone with these conditions or visual symptoms. Some opticians’ practices offer this test privately.

You can find more information about colourimetry on the websites of the International Institute of Colorimetry and the Society for Coloured Lens Prescribers; their details are listed at the end of this factsheet.

## Sources of support

If you have questions about anything you’ve read in this factsheet, or just want to speak to someone about your eye condition, please get in touch with us. We’re here to support you at every step.

Our Helpline is your direct line to the support, advice and services you need. Whether you want to know more about your eye condition, buy a product from our shop, join our library, find out about possible benefit entitlements, or be put in touch with a trained counsellor, we’re only a call away.

It’s also a way for you to join RNIB Connect, our community for anyone affected by sight loss. RNIB Connect is free to join and you’ll have the chance to meet other people with similar experiences in our helpful, welcoming and supportive community.

Give us a call today to find out how we can help you.

**RNIB Helpline**

**0303 123 9999**

**helpline@rnib.org.uk**

We’re ready to answer your call Monday to Friday 8am to 8pm and Saturday 9.30am to 1pm.

You can also get in touch by post or by visiting our website:

**RNIB**

105 Judd Street

London WC1H 9NE

rnib.org.uk

### Other useful organisations

**Thomas Pocklington Trust**

Tel: 0208 995 0880

Web: www.pocklington-trust.org.uk

Email: [**info@pocklington-trust.org.uk**](mailto:info@pocklington-trust.org.uk)

The Thomas Pocklington Trust lighting guide for people with sight loss can be found on the following link:

https://www.pocklington-trust.org.uk/project/lighting-around-home-guide-better-lighting-people-sight-loss/

**Migraine Trust**

Tel: 0203 951 0150Web: [**www.migrainetrust.org**](http://www.migrainetrust.org)

**International Institute of Colorimetry**

Tel: 0207 520 9430

Web: www.colorimetryinstitute.org

Email: [**info@colorimetryinstitute.org**](mailto:info@colorimetryinstitute.org)

**Society for Coloured Lens Prescribers**

Web: www.s4clp.org

Email: secretary@s4clp.org

## We value your feedback

You can help us improve our information by letting us know what you think about it. Is this factsheet useful, easy to read and detailed enough – or could we improve it?

Send your comments to us by emailing us at [eyehealth@rnib.org.uk](mailto:eyehealth@rnib.org.uk) or by writing to the Eye Health Information service, RNIB, 105 Judd Street, London WC1H 9NE.

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