# Optic neuritis

Optic neuritis means inflammation (swelling) of your optic nerve. It can affect your vision in the short term, but for most people, the condition normally gets better on its own and doesn’t usually cause any significant lasting loss of vision. Often, the cause of optic neuritis is unknown, and an episode of optic neuritis is not necessarily a sign of another health condition.

## What is the optic nerve?

Your optic nerves are important for sight. They carry the electrical signals from the light sensitive photoreceptor cells in your retina at the back of your eye, to your brain, where these signals are interpreted as your vision.

The start of the optic nerve, where all the individual nerve fibres from each of the photoreceptor cells in your retina come together, is known as the optic disc. Your optic disc is visible as a small circular area of your retina which can be seen by the ophthalmologist (hospital eye doctor) or optometrist (optician) when they look into your eye. From your optic disc, the nerve fibres travel together in a bundle, forming your optic nerve, to the areas in your brain that are responsible for processing vision.

Each optic nerve is made up of about 1.2 million nerve fibres. Each nerve fibre includes a long section called an “axon”. Axons are coated in a protective fatty coating called “myelin”. Myelin insulates your axons and allows an uninterrupted signal to be carried from your retina to your brain by each nerve fibre.

When the optic nerve is swollen, the signals travelling from your retina to your brain are interrupted and this can affect your vision.

## How does optic neuritis affect sight?

Optic neuritis usually causes a reduction or loss of vision in at least one eye, so that your vision becomes blurred, dim or faded. This change in vision usually comes on over the course of a few days and may continue to worsen over the first two weeks. Optic neuritis usually affects vision in one eye, but in some types it may affect both eyes.

Optic neuritis commonly affects the central area of your vision, causing it to become blurry and unclear. However, any area of your visual field may be affected. Central vision is the sight you use for reading, watching television, using a computer as well as recognising people's faces and doing close tasks that require detailed vision.

Experiencing reduced vision in one eye may also mean that you have difficulties with depth perception. This can cause problems with judging distances and may make doing certain things more difficult, such as going up and down stairs or kerbs, crossing roads or pouring liquid into a cup. You may need to take more time when doing these things.

Some people with optic neuritis describe seeing flashing or flickering lights. You may also find that your colour vision is affected. Colours, particularly reds, can appear “washed out” or less bright than usual. In addition, you may notice that you are less able to pick out objects against their backgrounds, particularly if they are a similar shade or colour, for example reading yellow text on a yellow background. This is described as having reduced contrast sensitivity.

Your vision in the affected eye may also temporarily worsen due to heat, for example after a bath or if you exercise, although this should improve again once you cool down.

When your vision is first affected it’s common to experience discomfort or pain around your eyes, which might get worse when you move your eyes. This pain should not be so great that it stops you sleeping at night. If the pain is worse than this there may be another cause and it would be important to let your GP or ophthalmologist know. This pain may be present before the change in your vision, or it may happen at the same time. It will normally only last a few days.

## What causes optic neuritis?

The most common type of optic neuritis is “demyelinating” optic neuritis. In most people, the cause of demyelinating optic neuritis is not known. This is called “idiopathic”, meaning that no cause for the inflammation can be found.

Some cases may be “autoimmune”, where the immune system mistakenly attacks healthy tissue, causing inflammation. Certain autoimmune conditions can be associated with optic neuritis including multiple sclerosis (MS), neuromyelitis optica (NMO), myelin oligodendrocyte glycoprotein (MOG), chronic relapsing inflammatory optic neuritis (CRION) and sarcoidosis.

Less commonly, optic neuritis can also be caused by infection (infectious optic neuritis), or as a reaction to how your body's immune system copes with an infection (parainfectious optic neuritis).

### Demyelinating optic neuritis

The most common type of optic neuritis is demyelinating optic neuritis. Demyelination is where the protective myelin coating on your nerve fibres breaks down. When your myelin breaks down, patches of demyelination, known as lesions, occur. These can slow down or stop the signal being carried by the nerve to your brain. This can then affect your vision. The reasons why demyelination happens are not clearly understood, but evidence suggests that the body’s own immune system causes the myelin to break down (autoimmune).

Demyelinating optic neuritis is most common in people aged between 20 and 50 years.

It’s possible to have demyelinating optic neuritis and not experience any symptoms. When the back of your eye is examined, your ophthalmologist or optometrist may see some changes to your optic disc, which show that you previously had a milder optic neuritis. However, if you have symptoms then this is said to be “acute” demyelinating optic neuritis.

People who are diagnosed with acute demyelinating optic neuritis normally have three distinctive symptoms. These are:

* **A significant change in vision in one eye**. This may temporarily worsen when your temperature increases, for example, from having a bath or doing exercise. This is known as “Uhthoff's sign”. This temporary change does not cause any long-term worsening of vision.
* **Discomfort or pain around your eyes** which may worsen with eye movements. This pain may be present before your vision changes or may happen at the same time.
* **Reduced colour vision**. Colours may appear “washed out” or less bright than usual. Some people may also experience tiny white or coloured flashes or sparkles of light.

#### Optic neuritis and multiple sclerosis (MS)

There is an association between demyelinating optic neuritis and MS. MS is a demyelinating condition that can affect any part of the central nervous system (CNS). The CNS includes the brain and spinal cord and is responsible for controlling all the functions in our bodies such as balance, movement, emotions, as well as vision. MS can have a large range of symptoms depending on which part of the CNS has been affected, and these can vary widely from person to person. In the UK it’s estimated that over 100,000 people have MS.

Most people who are diagnosed with MS are typically aged 20 to 40 years. Women are nearly twice as likely to be diagnosed with MS as men.

If you are diagnosed with demyelinating optic neuritis, your ophthalmologist may discuss the possibility that this could be linked to MS. There is evidence that people who have an acute episode of demyelinating optic neuritis have a 38 percent risk of going on to develop MS within 10 years. However, it’s important to remember that not everyone who has acute demyelinating optic neuritis will be diagnosed with MS or will develop MS in the future.

If you have any concerns about MS, it would be important to discuss these with your ophthalmologist or your GP. Only a neurologist, a specialist in conditions that affect the brain, spinal cord and nerves, can diagnose MS. This means that you will need to be referred to a neurologist for further tests, to confirm a diagnosis of MS.

#### Optic neuritis and neuromyelitis optica (NMO)

Demyelinating optic neuritis can also be associated with a rare autoimmune condition called neuromyelitis optica (NMO, also known as Devic’s disease). NMO causes swelling and inflammation of the optic nerves (causing optic neuritis) and the spinal cord (known as transverse myelitis). More information about this condition can be found on the NMO-UK website, listed at the end of this factsheet.

### Parainfectious optic neuritis

Parainfectious optic neuritis is where optic neuritis occurs because of your body's immune response to an infection and is more common in children. It usually begins one to three weeks after an infection and can be linked to viruses such as measles, mumps, chickenpox, rubella, whooping cough, coronavirus and glandular fever. This type of optic neuritis is uncommon nowadays, due to immunisation. In most people, the vision recovers on its own without the need for any treatment. However, if vision is affected severely or both eyes are affected, then intravenous (through a drip) steroid treatment may need to be given.

### Infectious optic neuritis

Infectious optic neuritis is uncommon. It can be caused by different infectious diseases, for example, Lyme disease, syphillis or herpes zoster. The risk of infectious optic neuritis can increase if you have a condition or are taking medications that affect how well your immune system is working. The treatment given for infectious optic neuritis will depend on the type of infection you have.

### Non-infectious optic neuritis

Non-infectious optic neuritis is usually due to an autoimmune response when no infection is present. Non-infectious optic neuritis can be associated with autoimmune conditions including sarcoidosis or systemic lupus erythematosus (SLE).

## How is optic neuritis diagnosed?

Optic neuritis is diagnosed by an ophthalmologist who will carry out an examination of your vision to work out how your sight is being affected. This will include checking your visual acuity (how far down the letter chart you are able to read), your visual field (whether there are any areas of your vision missing) and your colour vision. They will also examine the back of your eyes to look at the health of your retina and your optic discs.

Optic neuritis can affect all or only part of the optic nerve. For some people, the inflammation can be seen at the optic disc when the ophthalmologist or optometrist looks into your eye. Sometimes the inflammation of the nerve may not be visible because the nerve is swollen behind your eye. This is described as “retrobulbar” optic neuritis and causes pain and discomfort when you move your eyes.

You may also have some other tests to diagnose optic neuritis. These might include a detailed optical coherence tomography (OCT) scan of the back of your eye or a visual evoked potentials (VEP) test which tests how well your optic nerve is working, by checking how long it takes your brain to react to a visual signal. It is usually done by asking you to look at patterns on a screen or at moving or flashing lights while pads placed on your head and on your face, around your eyes, record the activity of your optic nerve.

You might also need to have blood tests to rule out other conditions that might be causing the changes in your vision, and to help diagnose whether there is an underlying cause for your optic neuritis such as antibodies which are present in NMO or MOG.

Sometimes, but not always, magnetic resonance imaging (MRI) scanning may be used to diagnose optic neuritis. An MRI scan produces detailed images of the inside of the body. If your ophthalmologist feels that you need to have an MRI scan, then they may refer you to a neurologist for this and for further assessment.

## Recovering from optic neuritis

For many people with optic neuritis, vision typically gets worse over a period of several days to two weeks and then begins to improve.

Optic neuritis usually gets better on its own. A large scale study, the Optic Neuritis Treatment Trial (ONTT), looked at the best way to treat optic neuritis in nearly 400 people. This trial found that regardless of whether treatment was given, over 90 percent of the people they followed for the study had an improvement in their sight within the first month from when vision loss began.

## What treatment will I need?

Not everyone with optic neuritis requires treatment. The treatment a person may require depends on the type of optic neuritis they have, as well as how it is affecting them.

### Pain relief

If you are experiencing discomfort or pain because of optic neuritis and this is very uncomfortable, your GP or ophthalmologist will be able to advise you about pain relief. It may be possible to improve things with over-the-counter pain medications. This pain or discomfort will normally only last for a few days.

### Steroids

If needed, treatment for the most common demyelinating type of optic neuritis is high dose steroids which may be given intravenously or in oral tablet form. Intravenous steroids are usually given for three to five days, for which you would need to be admitted to hospital. Sometimes this is followed by oral steroids. The dose of the tablets is slowly reduced. The period of reducing oral steroids (also called oral taper) can vary from one week up to six months. It is very rare for steroids to be required for longer than this.

If your vision is severely affected by demyelinating optic neuritis, steroid treatment may speed up recovery by a week or so, however, studies have found that this treatment makes no difference to how well your vision recovers in the long term. Therefore, the small benefit from this treatment would need to be weighed against the risks and side effects of taking high dose steroids. This means that most people with optic neuritis will not have steroid treatment.

However, if you have a rarer type of optic neuritis such as MOG, CRION or NMO, then steroid treatment can help to improve the visual recovery.

Steroid treatment may also occasionally be given if someone has poor vision in the other eye, if the symptoms are particularly severe or distressing, or if the change in vision impacts on activities which may be essential for someone's job, for example, driving.

### Immunosuppressants

Some of the rare types of optic neuritis such as MOG, CRION and NMO may also require treatment with medication to control the immune system. Some people may need this treatment long term to reduce the risk of another attack of optic neuritis. Your ophthalmologist will explain whether this form of treatment is required, based on the type of optic neuritis you have been diagnosed with.

### Treating Infection

If your optic neuritis is caused by an underlying infection, then you may need treatment with antimicrobial or antifungal medication. Your ophthalmologist would be able to discuss what course of action would be best for you.

## What about in the long term?

The initial improvement in vision happens as inflammation goes down and your optic nerve begins to recover. Recovery of your vision can happen quickly at first but may then slow down. Your vision may continue to improve over a period of six months to a year and by about nine to twelve months it’s likely to be clear what the final recovery of your vision is.

It may be difficult to predict what your vision will be like in the long term. If this is the first time you have had optic neuritis, your sight should make a good recovery, even if your vision is quite severely affected to start with. Most people diagnosed with the more common type of optic neuritis, acute demyelinating optic neuritis, will make a very good long term visual recovery.

Following an episode of optic neuritis, the ophthalmologist or optometrist may be able to see some lasting damage to the optic nerve when they examine the back of your eye or take an OCT scan. This lasting damage is known as “optic atrophy”.

For some people, this might mean that after an initial improvement they can still be left with some permanent visual changes. These can include colours appearing faded and reduced contrast sensitivity.

You may also notice that your vision isn't as sharp as it used to be and/or you struggle with your perception of depth or movement. These symptoms can be present even if your central vision is good on the letter chart when tested by your ophthalmologist or optometrist.

However, even if you do have some optic atrophy that an optometrist or ophthalmologist can see when they examine your eyes, it is still possible for you not to notice any lasting symptoms or changes in your vision.

More rarely, some people may not experience a great deal of improvement in vision and be left with reduced vision even after the inflammation has settled. This may be more common if there is an underlying condition which has caused the optic neuritis.

## Will I get optic neuritis again?

If you’ve had optic neuritis once, there is some risk that it may occur again in either eye.

For demyelinating optic neuritis, the ONTT found that 28 percent of people had another episode within five years, and this went up to 35 percent of people within 10 years. However, this does mean that 65 percent of people (more than half) had not experienced any further episodes of optic neuritis within 10 years.

For optic neuritis related to NMO or MOG, the chances of it occurring again are higher.

It may not be possible to predict whether you will experience further episodes of optic neuritis. However, you may wish to explore this with your ophthalmologist, as they may be able to give you more information based on your medical history and whether this is the first time you have had optic neuritis.

## Help to see things better

Most people with optic neuritis make a good recovery of their vision and do not have any long-term problems with their sight. A few people may be left with some long-term changes to their sight, but much can be done to help you make the most of your remaining vision and adapt to any changes.

If both your eyes have been affected, or if the affected eye was your good eye and you have a sight problem in your other eye, then you may need to make changes or use aids to make the most of your remaining sight. This may mean making things bigger, using brighter lighting or using colour and contrast to make things easier to see. We have a series of leaflets with helpful information on living with sight loss, including how to make the most of your sight. You can find out more about our range of titles by calling our Helpline.

You should ask your ophthalmologist, optometrist or GP about low vision aids and getting a low vision assessment. During this assessment, you’ll be able to discuss the use of magnifiers and aids to help you to see things more clearly.

Local social services should also be able to offer you information on being safe in your home and getting out and about safely. They should also be able to offer you some practical mobility training to give you more confidence when you are out.

If you have sight changes, you may be worried about finding work, or staying in your job. Our Employment team can provide specialist support and advice about employment for people with sight loss. You can contact this team via our Helpline.

## Coping

Being diagnosed with an eye condition can be very upsetting. You may find that you are worried about the future and how you will manage with a change in your vision. All these feelings are natural.

It can sometimes be helpful to talk about how you are feeling with someone outside of your circle of friends or family. At RNIB, we can help with our telephone Helpline and our Sight Loss Counselling team. Your GP or social worker may also find a counsellor for you if you feel this might help.

Your eye clinic may also have an Eye Care Liaison Officer (ECLO), who can be on hand to provide you with further practical and emotional support about your eye condition.

## Further help and support

### RNIB Helpline

If you need someone who understands sight loss, call our Helpline on **0303 123 9999**, say "**Alexa, call RNIB Helpline**" to an Alexa-enabled device, or email **helpline@rnib.org.uk**. Our opening hours are weekdays from 8am-8pm and Saturdays from 9am – 1pm

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

**RNIB**

Grimaldi Building

154a Pentonville Rd

London N1 9JE

**rnib.org.uk**

### Sight Advice FAQ

Ask the Sight Advice FAQ website your questions about sight loss and get helpful answers: sightadvicefaq.org.uk

### Connect with others

Meet or connect with others who are blind or partially sighted online, by phone or in your community to share interests, experiences and support for each other. From book clubs and social groups to sport and volunteering, our friendly, helpful and knowledgeable team can link you up with opportunities to suit you. Visit **rnib.org.uk/connect** or call our Helpline.

## Other useful contacts

**MS Society**

Helpline: **0808 800 8000**

Email: **helpline@mssociety.org.uk**

**NMO-UK**

Phone: **0780 783 1349**

Email: **info@nmouk.org**

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