

Neuropathic pain (Neuralgia)

Neuropathic pain (neuralgia) is a pain that comes from problems with nerve signals. There are various causes. It is different to the common type of pain that is due to an injury, burn, pressure, etc. Traditional painkillers such as paracetamol, anti-inflammatories and codeine usually do not help very much. However, neuropathic pain is often eased by antidepressant or anti-epileptic medicines - by an action that is separate to their action on depression and epilepsy. Other pain-relieving medicines and techniques are also sometimes used.

What is neuropathic pain?

Neuropathic pain can arise from incorrect nerve signalling either within the brain and spinal cord (central nervous system) or from incorrect signalling affecting the nerves outside the brain, the peripheral nerves.

Pain is broadly divided into two types - nociceptive pain and neuropathic pain.

Nociceptive pain

This is the type of pain that all people have had at some point. It is caused by actual, or potential, damage to tissues. For example, a cut, a burn, an injury, pressure or force from outside the body, or pressure from inside the body (for example, from a tumour) can all cause nociceptive pain. The reason we feel pain in these situations is because tiny nerve endings become activated or damaged by the injury, and this sends pain messages to the brain via nerves.

Nociceptive pain tends to be sharp or aching. It also tends to be eased well by traditional painkillers such as paracetamol, anti-inflammatory painkillers, codeine and morphine.

Nociplastic pain

This is a newly recognised type of nerve pain. It is pain that arises without tissue or nerve damage. It may occur alone or alongside other types of pain. The exact cause is not fully understood but it is thought to arise due to altered processing of pain signals by the brain and central nervous system.

Nociplastic pain tends to be more intense and widespread than nociceptive pain, affecting larger areas of the body. It typically arises in chronic pain conditions, such as fibromyalgia, irritable bowel syndrome and tension headache. It may be associated with other symptoms such as tiredness, poor sleep and memory disturbance. It is sometimes difficult to treat with painkillers but exercise and physical and psychological treatments may be useful in some cases.

Neuropathic pain

This type of pain is caused by a problem with one or more nerves themselves. The function of the nerve is affected in a way that it sends pain messages to the brain.

Neuropathic pain is less likely than nociceptive pain to be helped by traditional painkillers. However, other types of medicines often work well to ease the pain (see below).

The rest of this leaflet is just about neuropathic pain.

What does neuropathic pain feel like?

Neuropathic pain is often described as a burning pain, stabbing, shooting, aching, or like an electric shock.

What causes neuropathic pain?

Various conditions can affect nerves and may cause neuropathic pain as one of the features of the condition. These include the following:

- [Trigeminal neuralgia](#).
- Pain following shingles ([postherpetic neuralgia](#)).
- [Diabetic neuropathy](#) - a nerve disorder that develops in some people with diabetes.

- Phantom limb pain following surgical removal (amputation) of a limb.
- [Multiple sclerosis](#).
- Pain following chemotherapy.
- [HIV infection](#).
- Alcoholism.
- Cancer.
- Some types of facial pain.
- Various other uncommon nerve disorders.
- [Covid-19 infection](#) and also [long COVID](#)

Note: nociceptive, nociplastic and neuropathic pain can occur at the same time, sometimes caused by the same condition. For example, both nociceptive pain and neuropathic pain can arise from certain cancers.

How common is neuropathic pain?

It is estimated that about 7 in every 100 people in the UK have persistent (chronic) neuropathic pain. It is much more common in older people who are more likely to develop the conditions listed above.

More about the nature of neuropathic pain

Related to the pain there may also be:

- **Allodynia.** This means that the pain comes on, or becomes worse, with touch or stimulus that would not normally cause pain. For example, a slight touch on the face may trigger pain in cases of trigeminal neuralgia, or the pressure of the bedclothes may trigger pain in people who have diabetic neuropathy.
- **Hyperalgesia.** This means that severe pain arises from a stimulus or touch that would normally cause only slight discomfort. For example, a mild prod on the painful area may cause intense pain.

- **Paraesthesia.** This means that unpleasant or painful feelings occur even when there is nothing touching the body, and there is no stimulus. This is spontaneous pain. For example, painful [pins and needles](#), or electric shock-like sensations.

In addition to the pain itself, the impact that the pain has on a person's life may be just as important. For example, the pain may lead to disturbed sleep, [anxiety](#) and [depression](#).

What is the treatment for neuropathic pain?

Treatments include:

- Treating the underlying cause – if possible.
- Medicines.
- Physical treatments.
- Psychological treatments.

Treating the underlying cause

If this is possible, it may help to ease the pain. For example, in people who have diabetic neuropathy then good control of the diabetes may help to ease the condition. In cases of cancer, treatment may ease the pain.

Note: the severity of the pain often does not correspond with the seriousness of the underlying condition. For example, pain following [shingles](#) (postherpetic neuralgia) can cause a severe pain, even though there is no rash or sign of infection remaining.

Medicines used to treat neuropathic pain

Commonly used traditional painkillers

[Traditional painkillers](#) such as [paracetamol](#) or [anti-inflammatory painkillers](#) such as [ibuprofen](#) that can be bought from pharmacies may already have been tried. However, these are unlikely to ease neuropathic pain very much in most cases.

Tricyclic antidepressant medicines

An [antidepressant medicine in the tricyclic group](#) is a common treatment for neuropathic pain. It is not used here to treat depression. Tricyclic antidepressants ease neuropathic pain separate to their action on depression. It is thought that they work by interfering with the way nerve impulses are transmitted. There are several tricyclic antidepressants but [amitriptyline](#) is the one most commonly used for neuralgic pain.

A tricyclic antidepressant may ease the pain within a few days but it may take 2-3 weeks. It can take several weeks before maximum benefit is seen. Some people give up on their treatment too early. It is best to persevere for at least 4-6 weeks to see how well the medication is working.

Tricyclic antidepressants sometimes cause drowsiness as a side-effect. This often eases with time, after a few days. To try to avoid drowsiness, a low dose is usually started at first and is then built up gradually if needed. Also, the full daily dose is often taken at night, usually 2-3 before going to sleep, because of the drowsiness side-effect. A dry mouth is another common side-effect. Frequent sips of water may help with a dry mouth. See the leaflet that comes with the medicine packet for a full list of possible side-effects. If side effects of drowsiness or blurred vision specifically are limiting use of [amitriptyline](#), a related drug called [nortriptyline](#) may be suggested as an alternative.

Other antidepressant medicines

An antidepressant called [duloxetine](#) has also been shown in research trials to be good at easing neuropathic pain. In particular, duloxetine has been found to be a good treatment for diabetic neuropathy and is now often used first-line for this condition.

Duloxetine is not classed as a tricyclic antidepressant but as a serotonin and norepinephrine reuptake inhibitor (SNRI). It may be tried for other types of neuropathic pain if a tricyclic antidepressant has not worked so well, or has caused problematic side-effects. The range of possible side-effects caused by duloxetine is different to those caused by tricyclic antidepressants.

Anti-epileptic medicines (anticonvulsants)

An anti-epileptic medicine, such as [gabapentin](#) or [pregabalin](#), is an alternative to an antidepressant. These medicines were previously used to treat epilepsy but now they are more commonly used to ease nerve pain.

An anti-epileptic medicine can stop nerve impulses causing pain separate to its action on preventing epileptic fits (seizures). As with antidepressants, a low dose is usually started at first and built up gradually, if needed. It may take several weeks for maximum effect as the dose is gradually increased.

Opiate painkillers

Opiate painkillers, such as [codeine](#), [morphine](#) and related medicines, are the stronger traditional painkillers. As a general rule, they are not used first-line for neuropathic pain. This is partly because there is a risk of problems of drug dependence, impaired mental functioning and other side-effects with the long-term use of opiates.

[Tramadol](#) is a painkiller that is similar to opiates but has a distinct method of action that is different to other opiate painkillers. Tramadol can be used for short-term treatment of neuropathic pain. Tramadol should not be used for prolonged treatment. It can also have side effects of nausea (feeling sick), constipation and dizziness or feeling 'spaced out'.

Combinations of medicines

Sometimes both an antidepressant and an anti-epileptic medicine are taken together if either alone does not work very well. Sometimes tramadol is combined with an antidepressant or an anti-epileptic medicine. As they work in different ways, they may complement each other and have an additive effect on easing pain better than either alone.

Capsaicin cream

This is sometimes used to ease pain if the above medicines do not help, or cannot be used because of problems or side-effects. Capsaicin is thought to work by blocking nerves from sending pain messages. Capsaicin cream is applied 3-4 times a day. It can take up to 10 days for a good pain-relieving effect to occur.

Capsaicin can cause an intense burning feeling when it is applied. In particular, this occurs if it is used less than 3-4 times a day, or if it is applied just after taking a hot bath or shower. However, this side-effect tends to ease off with regular use. Capsaicin cream should not be applied to broken or inflamed skin. Hands should always be washed immediately after applying capsaicin cream.

Other medicines

Some other medicines can be used on the advice of a specialist in a pain clinic. These (for example, ketamine injections) may be an option if the above medicines do not help. Ketamine is normally used as an anaesthetic but at low doses it can have a pain-relieving effect.

Another example is lidocaine gel. This is applied to skin, with a special patch. It is sometimes used for pain following shingles (postherpetic neuralgia). But note, it needs to be put on to non-irritated or healed skin.

Note: specific treatments can be used for some types of neuropathic pain, for example [carbamazepine](#) usually works best for [trigeminal neuralgia](#).

Side-effects and titrating the dosage of medicines

For most of the medicines listed above it is common practice to start at a low dose at first. This may be sufficient to ease the pain but often the dose needs to be increased if the effect is not satisfactory. This is usually done gradually and is called titrating the dose.

Any increase in dose may be started after a certain number of days or weeks – depending on the medicine. A clinician will advise as to how and when to increase the dose if required and will also discuss the maximum dose that can be taken for each particular medicine.

The aim is to find the lowest dose required to ease the pain. This is because the lower the dose, the less likely that side-effects will be troublesome. Possible side-effects vary for the different medicines used. A full list of possible side-effects can be found with information in the medicine packet.

Some people don't develop any side-effects; some people are only mildly troubled by side-effects that are OK to live with. However, some people are troubled quite badly by side-effects. Any troublesome side-effects should be reported to a doctor. A switch to a different medicine may be an option if this occurs.

Physical treatments

Depending on the site and cause of the pain, a specialist in a pain clinic may advise one or more physical treatments. These include: physiotherapy, acupuncture, nerve blocks with injected local anaesthetics, percutaneous electrical nerve stimulation (PENS) and [transcutaneous electrical nerve stimulation \(TENS\)](#) machines.

Psychological treatments

Pain can be made worse by stress, anxiety and depression. Also, the feeling (perception) of pain can vary depending on how we react to our pain and circumstances. Where relevant, treatment for [anxiety](#) or [depression](#) may help. Also, treatments such as stress management, counselling, [cognitive behavioural therapy](#), and pain management programmes sometimes have a role in helping people with persistent (chronic) neuropathic pain.

Further reading

- [Neuropathic pain – pharmacological management: The pharmacological management of neuropathic pain in adults in non-specialist settings](#); NICE Clinical Guideline (November 2013, latest update September 2020)
- [Williams ACC, Fisher E, Hearn L, et al](#); Psychological therapies for the management of chronic pain (excluding headache) in adults. Cochrane Database Syst Rev. 2020 Aug 12;8:CD007407. doi: 10.1002/14651858.CD007407.pub4.
- [Neuropathic pain - drug treatment](#); NICE CKS, August 2022 (UK access only)
- [Smith BH, Lee J, Price C, et al](#); Neuropathic pain: a pathway for care developed by the British Pain Society. Br J Anaesth. 2013 Jul;111(1):73–9. doi: 10.1093/bja/aet206.
- [Williams LD, Zis P](#); COVID-19-Related Neuropathic Pain: A Systematic Review and Meta-Analysis. J Clin Med. 2023 Feb 20;12(4):1672. doi: 10.3390/jcm12041672.
- [Fitzmaurice BC, Rayen ATA](#); Treatments for neuropathic pain: up-to-date evidence and recommendations. BJA Educ. 2018 Sep;18(9):277–283. doi: 10.1016/j.bjae.2018.06.002. Epub 2018 Jul 30.

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