



Great Ormond Street Hospital for Children NHS Foundation Trust: Information for Families

# Non-medical treatment of headache and migraine in children and young people

As well as medications, there are other non-medical treatment options for headache and migraine. This information sheet from Great Ormond Street Hospital (GOSH) explains the treatments that might be helpful either instead of or in addition to medications.

## What are the options for treating headache and migraine?

There are a number of medications that can be used to treat headache and migraine. They mainly fall into two groups: medications to relieve a headache or migraine when it occurs (acute treatment) and medications to prevent a headache or migraine occurring (preventive treatment).

When your child attends the headache clinic at GOSH, the team will usually suggest a number of medications – if one particular type does not work, they may suggest an alternative.

However, for some people, medications alone are not successful. The team will review whether your child is suitable for non-medical treatments. Some of these treatments are only available under a clinical trial basis as they might not be approved yet for use in children. Further information on each option follows.

## Acupuncture

Acupuncture is an ancient form of medicine using insertion of very fine needles into specific areas of the body. The belief behind acupuncture is that the life force (known as qi) travels through the body in channels called meridians. Pain and disease is thought to arise from blockages in the meridians causing interruption to the flow of qi. Acupuncture unblocks the meridians, allowing qi to flow therefore reducing pain.

The National Institute for Health and Clinical Excellence (NICE) has recommended acupuncture for treating chronic headaches and migraines in children over 12 years of age. The Headache Clinic at GOSH is able to make a referral to the Acupuncture team at University College Hospital.

## What are the risks and benefits?

Acupuncture is regarded as safe when carried out by a qualified practitioner. As the needles are so fine, there should be little pain, bleeding or bruising but these can occur rarely. Some people feel dizzy, sick or tired after an acupuncture session but this soon passes. Acupuncture is not suitable for everyone – people with a blood clotting disorder or taking anticoagulant (anti-clotting) medicine should not have acupuncture. It is also unsuitable for people with a needle phobia.

## Transcranial magnetic stimulation

The theory behind transcranial magnetic stimulation is that a pulse of magnetic energy disrupts brain activity therefore reducing the pain caused by headache and migraine. The pulse is delivered using an oblong machine held with both hands over the back of the head. The strength of the pulse can be varied (within safe parameters) to get the best effect for each individual. Transcranial magnetic stimulation can be used on a regular basis to prevent headache or migraine or during the initial stages as acute treatment.

### What are the risks and benefits?

Transcranial magnetic stimulation is not suitable for anyone with metal in their head or neck. It can cause a tingling feeling where the pulse is delivered, along with light headedness and muscle contraction. Some people have also reported that the pulse is painful and affects their hearing on a short term basis. NICE have recommended transcranial magnetic stimulation as an approved treatment for headache and migraine in adults.

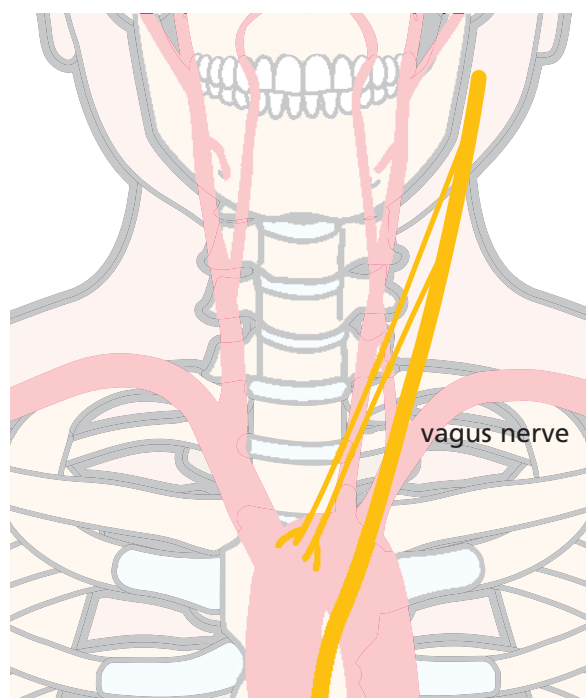
## Transcutaneous vagus nerve stimulation

The vagus nerve is a major communications link between the body and the brain. It sends sensory (feeling) and motor (movement) information from the body to the brain and from the brain to the body. There is one nerve on each side of the body.

Vagus nerve stimulation uses a hand-held device to deliver a small electrical current to the vagus nerve as it crosses the neck, disrupting the messages being sent back and forth to the brain. This is thought to reduce the pain associated with headache and migraine. Vagus nerve stimulation can be used on a regular basis to prevent headache or migraine or during the initial stages as acute treatment.

### What are the risks and benefits?

Vagus nerve stimulation has been reported to cause headache and dizziness after using, alongside neck stiffness and pain in the mouth, throat and shoulder. However, research studies have also shown that it can reduce the number of headaches and migraines, giving some people complete pain relief. It has also been reported to reduce the need to use other headache and migraine treatments. NICE have recommended vagus nerve stimulation as an approved treatment for headache and migraine in adults.



## Implanted supraorbital and occipital nerve stimulation

The supraorbital nerve runs up the side of the head to the forehead over the eyes and occipital nerve runs up the neck and over both side of the back of the head. It is thought that stimulating these nerves can disrupt the pain messages travelling back and forth between the brain and body.

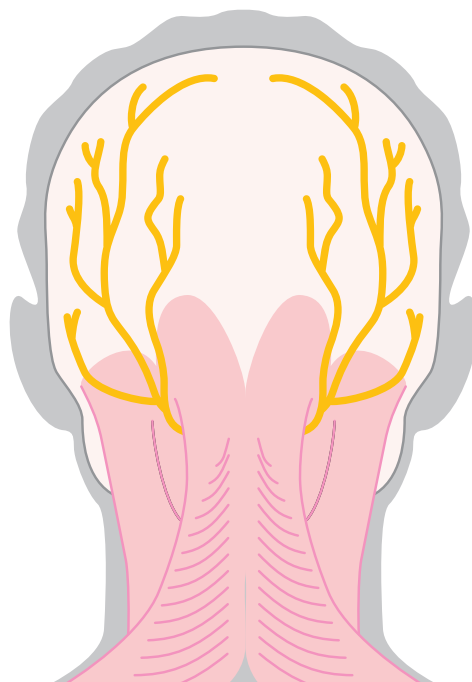
A number of wires connected to electrodes are implanted under skin over the top of the nerves. The wires are then tunnelled under the skin to the chest area and connected to the pulse generator box. It can then be programmed through the skin to deliver regular pulses of electricity to the nerve to prevent headache or migraine. It can also be stimulated to produce a one-off pulse when a headache or migraine is starting.

### What are the risks and benefits?

The main risks of supraorbital and occipital nerve stimulation are associated with the implantation operation – as with any other operation, there is a risk of bleeding and infection. Once the wires are in place, there is a chance that they could move out of position. The skin over the wires or pulse generator can also become thinner or infected so that the equipment needs to be removed or replaced.

Research has shown that supraorbital and occipital nerve stimulation is relatively safe with a small number of people suffering side effects. Many people report a reduction in the number of headache days and a reduction in pain.

**Please note: Some treatments are currently not offered at GOSH.**



## Botulinum toxin injections

Botulinum toxin is produced naturally by the bacterium *Clostridium botulinum*. When purified, it can be used in tiny, controlled doses to relax excessive muscle contraction. Botulinum toxin injections into the muscles of the head and back of the neck can block signals from the nerves to the muscles, so the muscle relaxes. This is thought to reduce the pain associated with headache and migraine.

Injections are done in 31 sites and usually take effect within a few days, with peak relaxation four to six weeks later, although this can vary. These effects last for approximately three months. However the functional benefits may last for longer, in some cases, up to one year after the injection.

### What are the risks and benefits?

The side effects of botulinum toxin are similar regardless of where the injections are given. Some people have reported soreness where the injection occurred. As well as the intended muscles, some surrounding muscles may become temporarily weaker. Some children complain of mild flu-like symptoms in the days after injections, which may be treated with paracetamol if necessary.

NICE has recommend botulinum toxin injections as prevention and treatment of headache and migraine in adults, particularly in people who cannot tolerate first-line medications. Research has shown the injections reduce the severity and frequency of headache and migraine.

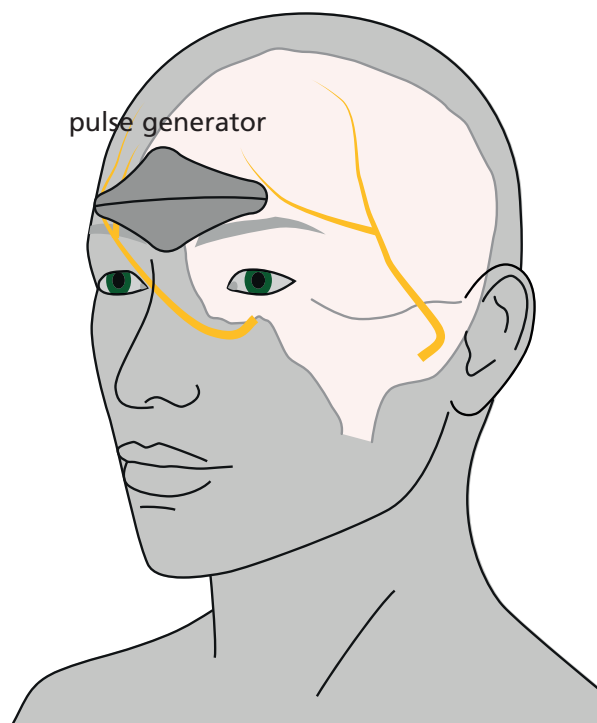
## Transcutaneous supraorbital nerve stimulation

In a similar way to implanted nerve stimulation, transcutaneous nerve stimulation also disrupts the pain messages travelling between the brain and body. The main difference is that an electrode is stuck to the skin rather than being implanted under it. A pulse generator is attached to the electrode and produces regular pulses of electricity to the nerve to prevent headache or migraine.

### What are the risks and benefits?

The main risk with transcutaneous nerve stimulation is a dislike of having the pulse generator on the forehead. Allergic-type reactions can also occur to the sticky electrode pad. A number of people have reported feeling sleepy after stimulation.

Results from the manufacturer of the device shows that two-fifths of patients were satisfied with using it and three-quarters could reduce their headache and migraine medication.



## Occipital nerve block

An occipital nerve block is an injection of steroid (methylprednisolone) and local anaesthetic (lidocaine) around the occipital nerve. The occipital nerve runs from the back of the neck, up and over the top of the head. The injection is carried out as a day case, that is, your child will have the injection and then be able to go home later that day.

### What are the risks and benefits?

It is uncommon for children to have any problems following the injection as it is regarded as a fairly minor procedure. However, no procedure is risk-free, and there is a very small chance that the injection site could become infected as the skin is broken. There may be an allergic reaction to the medicines used in the injection, which would result in redness and itching. This is not serious but we will need to know if an allergic reaction occurs for future treatments. After the injection, some children feel dizzy, faint or have a stiff neck. These feelings can be helped by keeping moving. There is a small chance of a small patch of baldness – about the size of a one pence coin – at the site of the injection.

Occipital nerve blocks are particularly successful for children with one-sided headaches or headaches where the scalp is tender.

## Next steps

If you think that any of the above treatments would benefit your child, please discuss them when you next have an appointment at the Headache Clinic at GOSH. The team will carefully evaluate your child's treatment to date and make a recommendation for which, if any, non-medical treatment might be helpful.