

Clinical haematology

Pain management for adults with sickle cell disease

Information for patients, relatives and carers

Introduction

This leaflet provides information on how to best manage your pain. If you have any questions about pain management in sickle cell disease (SCD), please seek advice from speak to your doctor, nurse, or psychologist.

What type of pain do I have?

Pain is a key symptom in sickle cell disease. It is the most common reason people with sickle cell disease come to hospital. There are several types of pain which can arise for different reasons. This is important because it determines how best to manage your pain.

Acute pain is pain that is short-term. It lasts for a short time and then resolves. The most common example of this type of pain in SCD is the pain of a 'vaso-occlusive crisis' (VOC). The pain of a VOC is caused by sickled cells blocking blood flow in the bones. Less blood flow means less oxygen is being delivered to the affected part of the body. Less oxygen means your body begins to produce lactic acid and other chemicals that stimulate pain nerves, called 'nociceptors', causing pain. The pain produced by a VOC usually starts with mild pain for a day or so before suddenly becoming very intense. On average, most VOCs will resolve within a week or so, but the length of time can vary from one crisis to another and may be affected by other illnesses or conditions that cause sickling.

Chronic pain is pain that persists – it is long-term pain. Any pain that lasts longer than three months is considered long-term, and so is called chronic pain. This is because if pain is going to get better, it will usually do so within three months.

Many different things can cause chronic or persistent pain. Sometimes it's from an injury that doesn't heal completely. Sometimes it's pain that flares due to a long-term condition. Sometimes it's caused by changes or damage to the nerves that detect pain. In SCD, chronic pain most often results from damage to the body caused by repeated sickling. VOCs can damage blood vessels, permanently restricting blood flow. The blood flow around major joints, such as hips, shoulders and knees is poor to begin with (this is why athletes so often have joint problems), so with even less blood supply because of VOCs, people with SCD can develop joint damage at a younger age than most. This condition, called 'avascular necrosis' (damage due to impaired blood supply), may lead to persistent pain and disability.

Sometimes people with SCD develop persistent nerve pain. This kind of pain is called 'neuropathic' pain meaning that it results from changes or damage to the nerves that detect

pain, and even changes in the way the brain processes pain signals. The causes of neuropathic pain can be complex and are not completely understood.

When people experience very intense pain without pain relief, this can cause nerves to become more sensitive to painful stimuli. Taking certain pain medications can cause changes to nerves so that they produce more pain than normal, called 'hyperalgesia', and sometimes the signals get scrambled so that things that would not usually cause pain are experienced as painful. This is called 'allodynia'. If you have neuropathic pain, it means the pain is not coming from an injury or damage to part of the body, but instead comes from a problem with your body's pain detection system – it's too sensitive or is mistaking a different nerve signal for a pain signal.

How to manage a painful episode due to a VOC

You probably already have some strategies for managing pain from a VOC. Exactly what to do will depend on what is causing sickling, but here are some general suggestions that are safe and will most likely help:

- drink plenty of fluids, up to three litres daily to prevent dehydration
- keep warm always, but avoid being too hot
- avoid exposure to the cold
- take oral pain medication for at least 12 to 24 hours when the pain is mild to moderate.

If pain is not settling or is severe, seek medical attention as soon as possible at your centre of care. Any delay can lead to further complications and an increase in pain which in turn could result in a longer stay in hospital.

What medications can be used for pain?

The World Health Organization has developed a guideline, called the Pain Ladder, which has been adopted all over the world, and provides the best approach we know of for managing all types of pain, including sickle pain. The basic principle is that you start with weaker painkillers and escalate to stronger ones if needed.

If your pain is **mild**, begin with a non-opioid pain reliever such as:

- paracetamol up to four times a day
- ibuprofen or naproxen up to three times a day (do not take both together)

It may also be helpful to take an 'adjuvant' medication. An adjuvant is a drug that is not normally considered a painkiller but that can help relieve some types of pain. These include some antidepressants, or anti-epileptic drugs which are effective for neuropathic pain.

If mild pain persists, or if it increases to **moderate** pain, consider a weak opioid:

- codeine phosphate

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- dihydrocodeine
 - tramadol

Continue to use a non-opioid and/or adjuvant with all opioid painkillers. If moderate pain persists, or increases to **severe** pain, consider a strong opioid:

- morphine
- oxycodone
- fentanyl

Each of these has various formulations, that is, tablet, liquid, or injection. Some of these are available to you as an outpatient. However, strong, injectable opioids are only given in hospital where you can be monitored and cared for safely.

See your prescription for dosing and instructions on how to take the medication. For further information speak to your doctor and pharmacist.

Opioids are usually effective for short-term pain. If they have minor impact initially then the dose can be increased after medical review.

Entonox®, a 50-50 mixture of nitrous oxide and oxygen, is a gas used to provide rapid-onset pain relief, in cases of traumatic injury or childbirth. Prolonged use of Entonox® in SCD can reduce the production of red blood cells and cause damage to the nerves and spinal cord, so it is avoided when possible. If used, it is limited to less than 60 minutes until safer pain relief can be given.

How injectable opioids are given and for how long

When you are in hospital with a painful VOC, you will be given injectable opioids subcutaneously (under the skin).

This is given either as an injection by a nurse up to every two hours if necessary, or we will give you a pump, called a patient-controlled analgesia (PCA) device. With the PCA, you control the amount of opioid you receive by pressing a button as frequently as every 20 minutes that gives you a dose, called a bolus. In addition, there is usually a continuous flow of the same opioid, called a background. The combination of bolus and background ensures that you get more painkiller when you need it by pressing the button, and always have a steady flow, for example, while you are sleeping, because the background is always flowing.

In this hospital we do not generally use intravenous (IV) injection painkillers. A significant number of people with SCD have few or in some cases no accessible veins. Repeated puncture damages your veins, reducing the number of usable veins you have over time. This is why, like us, many specialist centres limit injectable painkillers to the subcutaneous route. By preserving the veins, we help ensure you will have an accessible vein in future should you need it in an emergency.

In most instances, you should limit the use of injectable opioids to between five and seven days. Most VOCs will have run their course or be improving by this stage. Using injectable opioids for

longer than this carries an increasing risk of harmful effects. After reducing your level of injectable opioids, you can then switch to oral painkillers if needed. You may need to continue taking oral opioids at home for a short time after your discharge from hospital, but you should aim to reduce these as soon as you can and remove them from your daily routine.

Side effects of common painkillers (please read the medication information supplied with the packaging)

Paracetamol: Side effects are rare, but can include skin rash, flushing, bruising, low blood pressure and high heart rate. Overdose can cause liver or kidney damage.

NSAIDs (for example, ibuprofen and naproxen): Common side effects include nausea, vomiting, constipation or diarrhoea, indigestion, or abdominal pain. Less common side effects include headache or dizziness, bloating, raised blood pressure, inflammation of the stomach, stomach ulcer, allergic reactions, worsening of asthma symptoms, kidney failure, black stools (poo) and blood in your vomit – this can indicate bleeding in your stomach. Avoid NSAIDs if you have kidney disease or asthma.

Opioids: At least 80 per cent of patients receiving opioids will experience some adverse side effects. Short-term side effects include drowsiness, tiredness, constipation, nausea, and vomiting, itching, dry mouth, confusion, paranoia, hallucinations, shallow breathing, low blood pressure or dizziness, sweating, bruising, twitches, shakes, and problems sleeping.

There is growing awareness about the risks with long-term use of opioids. These include:

- increased pain
- headaches
- constipation
- sleep-disordered breathing
- brain damage due to shallow breathing or hypoxia (lack of oxygen)
- overdose
- mood changes
- muscle weakness
- weight change
- hormonal changes – these may lead to reduced fertility, low sex drive, irregular periods, male erectile dysfunction
- risk of fracture
- increased risk of infection

In view of their harmful effects, we recommend the long-term use of opioids is avoided, if possible, or limited to three to six months.

For more information, consult *Opioids Aware: A resource for patients and healthcare professionals to support prescribing of opioid medicines for pain* (<https://www.rcoa.ac.uk/node/21133>) or discuss with your consultant, CNS or psychologist.

Pregabalin/gabapentin: Dizziness, blurred vision, drowsiness, constipation, mood changes, convulsions, liver or kidney disease, increased appetite, confusion, or irritability.

All medications have a risk of allergic reactions: skin rash, tongue/facial swelling, and shortness of breath, itching and anaphylactic shock (severe allergic reaction).

Problems with long-term opioid use

Recent research has shown that long-term use of opioids can be dangerous and increases the risk of sudden death.

Tolerance: If you have been taking opioids over a long time your body will get used to them and they will become less effective over time. Increasingly higher doses will be needed to achieve the same pain-relieving effect.

Withdrawal: Once your body is used to opioids, you will notice unpleasant symptoms when you stop taking them. This is called withdrawal. These include feeling tense or nervous, feeling sick, increased pain and low mood. To minimise withdrawal symptoms, it is important to reduce your use gradually. The psychologist, pain team, medical team and clinical nurse specialist can help you to develop a plan to wean yourself from opioids.

Dependence: This means that you need opioids (you depend on them) to feel well, or at least not feel sick or in pain. Sometimes people make a distinction between physical dependence, that is, taking opioids to avoid physical symptoms, and psychological dependence, that involves a person's perception that they need opioids to function. Anyone taking opioids for a lengthy period can be expected to develop some degree of dependence, be it physical, psychological, or both.

Addiction: This is not common in SCD (no more so than for any other patient group), but it does happen. Addiction involves experiencing intense cravings for a substance. The person is not able to control their use of opioids, seeking an amount that is harmful to satisfy the craving.

General advice while taking opioids

Driving: We advise you to not drive while taking opioids. If you choose to drive while taking opioids, you must be able to demonstrate that you are not impaired **and** provide evidence of your prescription. It is illegal to drive while impaired for any reason, even if you have a prescription.

You should inform the Driving and Vehicle Licensing Authority (DVLA) that you take opioid medication. This is a legal requirement under UK law; Drug driving offence and screening devices (2013). If you are stopped by the police, you will be screened and assessed for any impairment to your ability to drive safely.

For more information, check <https://www.gov.uk/government/publications/drug-driving-offence-and-drug-screening-devices-faq/drug-driving-offence-and-drug-screening-devices-background-information> and www.dvla-driving-licence/co.uk

Work and activity: If you take opioids on a regular basis at a steady dose you should be able to work and do other activities. Please ask your workplace's occupational health department to check if you are allowed to work while taking opioids.

Alcohol: You should always avoid drinking alcohol because it causes dehydration that can result in a VOC. Alcohol can interact with opioids or other medication you are taking to put you at serious risk of overdose or another adverse event.

Illegal drugs: Do not use illegal substances, especially if you are already taking opioids.

Pregnancy: Always tell the doctor prescribing your opioids if you are pregnant or think you may be pregnant. Opioids and other pain medications can have side effects that harm the developing fetus. Medications to avoid during pregnancy include, but are not limited to tramadol, ibuprofen, naproxen, or pregabalin and gabapentin. You can seek further advice from your doctor, clinical nurse specialist, obstetrician, or midwife.

Storage: Store in a safe, dry, and lockable place out of the reach of children. Keep medication in its original package with clear labelling and keep the original instructions.

Unused medications: All medication should be returned to a pharmacy for safe disposal. Do not flush them down the toilet or throw them away. Never give your medications to another person for them to use.

Travel:

- When travelling to another country, get a letter, discharge summary, or repeat prescription summary from your prescribing doctor confirming your medications.
- Some countries do not allow people to import, carry or use opioids, even if you have a prescription. Before travelling abroad, check the country's laws about opioids. Also visit the Home Office website for further information: www.homeoffice.gov.uk/drugs/licensing
- Before you travel, check hand luggage restrictions regarding volume of liquids allowed through security. If you exceed the limit for liquids including medications, they will be taken from you.
- All oral medications can be carried in hand luggage but only in their original packaging.

Who you can contact for more information

Contact your consultant haematologist, CNS, sickle cell psychologist or GP.

For repeat prescriptions your consultant will advise your GP to continue your medications, or you will be managed in the outpatient clinic if appropriate.

Comprehensive pain management programme

The Trust now provides a service called the comprehensive pain management programme for people with SCD. This service is multi-faceted, involving both one-on-one and group workshops, with input from specialties such as physiotherapy, psychology, and pain medicine. If this interests you, please contact Imperial.Sicklecellpmp@nhs.net for more information. A summary of some of the issues addressed in the programme is provided below.

Managing pain without medication

Traditionally the most common method for managing pain is by using medications. While these are often effective, at least in the short-term, there are several reasons why you may want to find an alternative. You may:

- have developed an allergy to certain medications or do not like the side effects
- have other conditions (such as liver or kidney damage) that stop you from using them
- be pregnant
- find that your medications do not work well anymore or want to avoid a situation where they stop working. If you have previously experienced dependence or addiction to painkillers or another substance, you may not want to risk having those problems again.

If you have pain that persists, such as nerve pain or pain caused by avascular necrosis, then you've probably found that no amount of painkiller takes your pain away completely.

You may have found that getting relief using a painkiller comes with a price you would rather not pay, for example, you can't do your job while taking strong opioids or can't be there for your kids when they need you.

Preventing a VOC

There are things you can do to prevent pain or help manage it when it arises.

The most important thing is to do all you can to prevent a VOC because this is what causes acute pain and can lead eventually to chronic pain.

This includes drinking plenty of fluids, keeping warm, and taking measures to prevent infection through regular penicillin and keeping up to date with vaccinations.

Taking medication such as hydroxycarbamide to prevent sickling, or if you receive regular red cell exchanges, ensuring you do not miss your appointments are all important.

Come to your outpatient clinic appointments so we can monitor and detect problems before they cause more pain.

If you think you are developing a VOC, there is some evidence and anecdotal report that muscle massage can help. We do not really know why but massage may help to get blood flowing or the stimulation could disrupt pain signals (there is a known neural basis for this – it's why rubbing your shin helps after you smash it into a coffee table).

If you're lucky enough to have someone to provide you with a massage when you need it, that's great. Otherwise, you will need to self-massage. There are handheld devices that can help you with hard-to-reach areas. Be creative – placing a tennis ball next to a wall, then pushing against it with your back while rolling the ball around is often recommended for people with back pain.

Relaxation

There is good evidence that practicing regular relaxation can reduce your pain. By relaxation, we mean specific exercises that cause you to become deeply relaxed, such as progressive muscle relaxation. Aside from just feeling good, deep relaxation promotes blood flow by causing

blood vessels to dilate (become wider) and lower your stress level – the stress response causes you to release chemicals that make the blood vessels sticky. If you would like more information, contact the psychologist. Alternatively, there are relaxation apps you can download for free for your smartphone that, with a pair of headphones, allow you to practice daily relaxation anywhere at any time.

Emotional wellbeing

It may sound strange, but managing how you feel emotionally can help with your pain. Emotions do not cause pain in sickle cell disease, but we know that having a long-term illness and all the stuff that comes with that can leave you feeling down. When that illness causes unexpected, severe pain at any moment, it's understandable that you find yourself worrying about it. The problem is that chronic negative moods like sadness, anger, or worry amplify your pain at the level of the brain (pain signals go to the same part of the brain).

It's like giving someone a megaphone – the sound gets louder. If you'd like to know more about this, contact the psychologist.

Stay active

Staying active with mild to moderate regular exercise is very important for your health generally and may be helpful in preventing pain in sickle cell disease. If you have developed a chronic condition like avascular necrosis, you may need to strengthen your muscles in a particular part of your body. When your muscles are stronger, they help support your weight in everyday activities, putting less strain on your joints and other bones. Regular exercise promotes the release of endorphins – your body's natural painkillers – and so can decrease your pain. A physiotherapist can help with giving you exercises that are safe for you to perform.

Transcutaneous electrical nerve stimulation (TENS) device

TENS is a device that passes a small electrical current through you by attaching two electrodes to a muscle. Some people find that TENS can help with their pain, perhaps by disrupting pain signals. TENS may also stimulate endorphins, and this means that you do not need to use the TENS at the area where you have pain. You can just apply it to a large muscle, like your quadriceps (front part of the thigh). The bigger the muscle the better.

Lastly, despite all the methods listed above, your pain will probably not be resolved completely. If this is disappointing, take comfort in knowing that you are in good company. Our best estimates are that in the modern world, with the best pain treatment available, 30% of the population report being in pain at any given time. As we get older, most of us develop some form of chronic pain. And that's not even counting emotional pain and sorrow. While it's true that people with sickle cell disease have more than their fair share of pain, no one has a pain-free life. To feel pain is to be human.

If your pain is not going away no matter what you do, then it is futile to keep trying and expect that it will. Our efforts to avoid pain that will not go away most often make pain worse (as with long-term opioid use), cause new problems and are, in fact, what prevents us from living our lives.

So, if you cannot reduce your pain, at least reduce your suffering.

By that we mean reduce the extra pain that comes from trying to avoid the unavoidable. Doing this means making changes; changes in how you respond and relate to your pain. It means accepting reality to better live your life. If you think you might be interested in making this sort of change, please contact the psychologist.

How do I make a comment about my visit?

We aim to provide the best possible service and staff will be happy to answer any of the questions you may have. If you have any suggestions or comments about your visit, please either speak to a member of staff or contact the patient advice and liaison service (PALS) on 020 3313 0088 (Charing Cross, Hammersmith and Queen Charlotte's & Chelsea hospitals), or 020 3312 7777 (St Mary's and Western Eye hospitals). You can also email PALS at imperial.pals@nhs.net The PALS team will listen to your concerns, suggestions or queries and is often able to help solve problems on your behalf.

Alternatively, you may wish to complain by contacting our complaints department:

Complaints department, fourth floor, Salton House, St Mary's Hospital, Praed Street
London W2 1NY

Email: ICHC-tr.Complaints@nhs.net

Telephone: 020 3312 1337 / 1349

Alternative formats

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Wi-fi

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