

Supportive care

Ketorolac injection

Supportive care: specialist medicines

This leaflet provides information on a medicine called ketorolac which is used to treat pain that is difficult to control. It is offered as a guide to you and your family. The possible benefits of treatment vary; your doctor, nurse, or pharmacist will be happy to answer any questions you have about your treatment.

We may be recommending this medicine to be used for a condition it was not originally designed for; so you may find that there are some differences between the hospital and the manufacturer's information. This additional information will inform you of the reason(s) why you are taking this medicine and to highlight any other information. This should be read in conjunction with the manufacturer's patient information leaflet.

What is ketorolac?

Ketorolac belongs to a group of medicines called non-steroidal anti-inflammatory drugs, (NSAIDs) and is used to treat moderate to severe pain. Ketorolac is related to other commonly prescribed NSAIDs such as ibuprofen and aspirin, and has the advantage of being available as an injection.

There is evidence that ketorolac is safe and effective for the treatment of symptoms *other* than those specified by the medicine's manufacturer and there is now plenty of experience to confirm such use. In palliative/supportive care, ketorolac is sometimes prescribed for the relief of the painful sensations caused by nerve pressure. Doctors call this '*neuropathic pain*'. Ketorolac may also be helpful for the treatment of bone pain.

How does ketorolac work?

Non-steroidal anti-inflammatory drugs (NSAIDs) work as painkillers, and also reduce inflammation in joints, muscles and ligaments. These medicines may do this by decreasing the production of naturally occurring chemicals in your body, called prostaglandins which cause inflammation.

When is ketorolac prescribed?

Ketorolac is usually prescribed when other painkillers have not worked. It may be prescribed by itself, or in combination with other painkillers. Ketorolac is thought to have an '*opioid sparing*' effect, meaning it may allow a reduction in the dosage of opioids you are currently prescribed. The injection is a useful treatment option in patients who are unable to swallow tablets, or where there are concerns over oral absorption. Ketorolac is always prescribed by a doctor or nurse who specialises in treating pain and other symptoms of advanced cancer.

How is ketorolac given?

Ketorolac may be given as an injection if you have difficulty swallowing or when a continuous dose of ketorolac is required to manage your pain.



Ketorolac is a short-acting drug and it is possible to give in multiple daily doses by injection under the skin. Ketorolac can be painful when it is injected under the skin; however, this is less likely to be a problem when it is administered in a portable battery operated pump (syringe driver) as an infusion given over 24 hours.

Ketorolac may be given alone in a syringe pump, or in combination with other medicines. A district nurse will attend your home daily to administer your medication, and this will be arranged for you before you leave the hospital.

Often the injection is given for a short-period of time until your symptoms are under control. There may be the option to switch to an alternative NSAID which is available in tablet or liquid form, if it is felt you will receive benefit. If you do not tolerate treatment, or do not feel the ketorolac is helpful in treating your pain, your specialist should review and discuss stopping the treatment with you.

What dose of ketorolac is usually prescribed?

Ketorolac is usually started off by prescribing a low dose and then increasing it gradually. This is because like any medicine, ketorolac has a number of side effects. Starting off with a low dose and slowly increasing it allows your body to get used to these effects. It also allows your doctor to see how well your symptoms are responding to ketorolac. How much ketorolac you will need depends upon how well it is working for you and if you are having any side-effects.

How well or quickly does ketorolac work?

For some people ketorolac can work very quickly (within a few hours). For other people it may take a few days of taking reasonable doses before their pain improves. Some patients do not find ketorolac to be helpful. It is not possible to tell who will respond to ketorolac.

Who cannot take ketorolac?

Normally you should not take ketorolac if you:

- are allergic to ketorolac or any of the ingredients in this medicine
- have had a hypersensitivity reaction to aspirin, ibuprofen, or any other NSAID
- have asthma or a history of asthma
- have nasal polyps, allergic swellings (of the skin, around the mouth, eyes, nose or the genitals) or constriction of the airways making breathing difficult
- have or previously had peptic ulcers, (ulcer in your stomach or bowel) bleeding in your stomach or perforation
- have problems with bleeding or blood clotting
- have bleeding from a damaged blood vessel in the brain
- have severe heart failure
- have severe liver failure
- are dehydrated or have lost a lot of blood
- are taking other NSAIDs, such as aspirin or ibuprofen, or COX-2 inhibitors, such as celecoxib and etoricoxib
- are taking lithium or methotrexate.

If any of these apply to you, speak to your doctor or specialist nurse immediately.

What are the possible risks/side-effects?

The most common side effects of ketorolac are headache, indigestion, nausea (feeling sick) and stomach pain. You may also experience dizziness, drowsiness, fluid retention, bloating, vomiting, and diarrhoea. Often these side effects are dose-related, so you will often be started on a low dose, which may then be increased if tolerated.

NSAIDs may cause indigestion (heartburn) and can increase the risk of stomach ulcers and bleeding, which may be life-threatening. In order to reduce the risk of this, you will also be prescribed a gastroprotective medication which reduces stomach acid. This medication is also known as a proton-pump inhibitor, (PPI) and commonly prescribed examples include omeprazole and lansoprazole. If you are already taking a PPI, or a similar medication, it is possible that the doctor or specialist nurse may increase your dose. **If you develop severe or persistent stomach pain, or vomit blood, you must seek medical attention immediately.**

Ketorolac can cause skin reactions, including irritation at the site of injection. To reduce the risk of this, we will always dilute the injection with sodium chloride 0.9%. You should report any redness or swelling of the skin at the site of injection to your doctor or nurse.

Please read the manufacturer's patient information leaflet for a full list of side effects. If you are concerned about any side effects, please talk to the doctor who prescribed ketorolac.

Can I take other medicines if I'm prescribed ketorolac?

Ketorolac may interact with other medicines. Before you are discharged from hospital, or the outpatient clinic, your medicines will be reviewed by your specialist doctor or nurse, and pharmacy team.

Ketorolac has the potential to cause stomach ulcers and bleeding, especially when taken with other medicines such as aspirin and warfarin (medication to prevent clots).

Ketorolac can also interact with medication taken for hypertension (high blood pressure; e.g. ACE inhibitors) or medication that controls heart rate e.g. digoxin.

Patients taking lithium or methotrexate should not take ketorolac because it can increase the amount of lithium or methotrexate in the body and increase side effects and toxic effects of lithium or methotrexate.

Further information is available in the manufacturer's patient information leaflet which is supplied with the medication. Before you take or buy any new medicines, always tell your doctor or pharmacist that you are prescribed ketorolac.

Do I need to have any tests or special monitoring when taking ketorolac?

When you start taking ketorolac you will have your blood pressure checked, and your kidney and liver function will be monitored. These tests may be repeated for the duration of your treatment if it is appropriate to do so.

The skin around the injection site will be closely monitored for signs of irritation.

If your GP takes over responsibility for prescribing, they will discuss any further monitoring requirements with you.

What is the length of treatment?

The length of treatment will depend on why you were started on ketorolac and how well it works. You will be reviewed periodically to assess whether your ketorolac can be reduced or discontinued. It may be necessary for your doctor or specialist nurse to change the dose during treatment. You can take ketorolac for as long as it helps your pain if you are not having any side effects.

How do I get further prescriptions for ketorolac?

Ketorolac is a specialist medicine in palliative care and is not readily available from your community pharmacy; who require advance notice to order. You will also require a prescription for a supply of sodium chloride 0.9% injection, which is used to dilute the ketorolac, so it is less painful to inject.

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If your GP or community team is willing to prescribe ketorolac, **please don't leave it too late to request a prescription**. You should request a prescription at **least a week in advance** to give your GP and community pharmacist time to arrange.

If you are attending The Christie supportive care or pain clinic for follow-up, ketorolac injection may be dispensed by The Christie Pharmacy. You should be given sufficient supply to last you until your next review.

If you run out of ketorolac injection and are unable to get a further supply, you must contact the supportive care team for advice.

What is the plan for follow-up?

Follow-up will vary from patient to patient. The supportive care or pain team will manage the initiation of your ketorolac, and ongoing prescribing once an effective dose is established. We will share the plan for the prescribing and follow up of ketorolac with the appropriate practitioners (e.g. GPs, community Macmillan nurses). You may be reviewed in the supportive care or pain clinic on a regular basis to ensure ketorolac is still the right treatment for you.

If you are unable to attend The Christie (e.g. due to very advanced disease), we will liaise with the local palliative care team or GP to take over ketorolac prescribing. You will be given a supply of ketorolac injection at discharge. The amount you are given will depend on when you are next due to be reviewed by the supportive care team, or your local community team, if they agree to prescribe.

Can I drive while taking ketorolac?

Ketorolac injection may make you feel dizzy, tired or drowsy; you may also get headaches, visual disturbances, vertigo or have difficulty sleeping. If you experience any of these you should not drive or operate machinery.

Can I drink alcohol while taking ketorolac?

Ketorolac can make you feel sleepy, especially when you first start treatment. You can drink alcohol in moderation whilst taking ketorolac, but it is important to remember to stay well hydrated, as ketorolac may damage the kidneys, and the risk is increased if you are dehydrated. Regular alcohol intake can also irritate the lining of the stomach, and increase the risk of gastrointestinal (GI) side-effects.

How should ketorolac injection be stored?

Ketorolac injection should be stored in the original dispensing container, in a cool dry place out of reach of children and pets. Any unused medication can be returned to pharmacy for safe disposal.

Who should I contact if I need urgent advice about ketorolac?

Monday to Friday, 9:00am- 5:00pm contact the supportive care team on **0161 446 3559** or **0161 446 8493**.

During the evening or at weekends and bank holidays, if you have any queries, contact The Christie Hotline on **0161 446 3658**.

Useful contacts:

- Secretary: supportive care team - **0161 446 3559**
- Secretary: pain team - **0161 446 8493**
- Supportive care pharmacist - **0161 446 3443**
- The Christie pharmacy - **0161 446 3432** or **3433**

Notes:

If you need information in a different format, such as easy read, large print, BSL, braille, email, SMS text or other communication support, please tell your ward or clinic nurse.

The Christie is committed to producing high quality, evidence based information for patients. Our patient information adheres to the principles and quality statements of the Information Standard. If you would like to have details about the sources used please contact **the-christie.patient.information@nhs.net**

For information and advice visit the cancer information centres at Withington, Oldham or Salford. Opening times can vary, please check before making a special journey.



Contact The Christie Hotline for
urgent support and specialist advice
The Christie Hotline: 0161 446 3658
Open 24 hours a day, 7 days a week