

**Ifosfamide Injection 1 g and 2 g
Ifosfamide**

Read all of this leaflet carefully before you are given this medicine because it contains important information for you.

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor or nurse.
- If you get any side effects, talk to your doctor or nurse. This includes any possible side effects not listed in this leaflet.

Throughout this leaflet, Ifosfamide Injection 1 g and 2 g will be called Ifosfamide.

Important things to know about Ifosfamide

Your doctor has prescribed Ifosfamide because you have cancer that can be treated.

Ifosfamide is a medicine that kills cancer cells but, as a result, also attacks normal cells. It can therefore have a number of side effects. Your doctor will not give you Ifosfamide unless he or she thinks that your cancer is more of a risk to you than any possible side effects. Your doctor will check you regularly and treat any side effects where possible.

Ifosfamide:

- will reduce your blood cell count, which may make you feel tired and be more likely to get infections.
- can affect your kidneys and bladder. You may be given another medicine called Mesna to help prevent any damage. If you notice blood in your urine, tell your doctor immediately.
- can cause mental problems, such as confusion, feeling unusually sleepy and more seriously, fits and loss of consciousness.
- like most anti-cancer or chemotherapy medicines, you may lose your hair (anything from thinning to total loss), although it should start to grow back once your treatment has finished. It may also make you feel sick or be sick. Your doctor can give you advice or medicines to help.
- Men or women should not have a child during treatment with Ifosfamide or for at least 6 months after treatment. You should use an effective contraceptive. Ask your doctor for advice.

Now read the rest of this leaflet. It includes other important information on the use of Ifosfamide that might be especially important for you.

What is in this leaflet:

1. What Ifosfamide is and what it is used for
2. What you need to know before you are given Ifosfamide
3. How you will be given Ifosfamide
4. Possible side effects
5. How Ifosfamide is stored
6. Contents of the pack and other information

1 What Ifosfamide is and what it is used for

Ifosfamide is a cytotoxic drug or anti-cancer drug. It works by killing cancer cells, this is sometimes called ‘chemotherapy’.

It is used to treat lots of different cancers. Ifosfamide is often used together with other anti-cancer drugs or radiotherapy.

2 What you need to know before you are given Ifosfamide

You will not be given Ifosfamide if:

- you have ever had an allergic reaction to Ifosfamide. An allergic reaction can include shortness of breath, wheezing, rash, itching or swelling of the face and lips
- you have a condition which decreases your ability to urinate (Urinary outflow obstruction)
- your bone marrow is not working properly (especially if you have previously had chemotherapy or radiotherapy). You will have blood tests to check how well your bone marrow is working
- you have a urinary tract infection, which can be recognised as pain when passing urine (cystitis)
- your liver and kidneys are not working properly. You will have blood tests to check this
- you currently have any infections
- you have ever had kidney or bladder problems as a result of previous chemotherapy or radiotherapy.

Tell your doctor if:

- you are already having, or have recently had, radiotherapy or chemotherapy
- you have liver or kidney problems
- you have been treated with cisplatin
- you have poor general health or are frail
- you are elderly.

If any of the above apply to you your doctor may need to do extra tests on your blood or urine and may decide to change your treatment.

Take special care with Ifosfamide:

- Ifosfamide can have effects on your blood and immune system.
- Blood cells are made in your bone marrow. Three different types of blood cell are made:
 - red blood cells, which carry oxygen around your body
 - white blood cells, which fight infection, and
 - platelets, which help your blood to clot.
- After taking Ifosfamide, your blood count of the three types of cells will drop. This is an unavoidable side effect of Ifosfamide. Your blood count will reach its lowest level about 5 to 10 days after you start taking Ifosfamide and will stay low until a few days after you finish the course. Most people recover to a normal blood count within 21 to 28 days. If you have had a lot of chemotherapy in the past, it may take a little longer to return to normal.
- You may be more likely to get infections when your blood count drops. Try to avoid close contact with people who have coughs, colds and other infections.
- Your doctor will check that the number of red blood cells, white blood cells and platelets is high enough before and during your treatment with Ifosfamide.
- Ifosfamide can affect wound healing. Keep any cuts clean and dry, and check they are healing normally.
- It is important to keep your gums healthy, as mouth ulcers and infections can occur. Ask your doctor about this if you are unsure.
- Ifosfamide can damage the lining of your bladder, causing bleeding into your urine. Your doctor knows this can happen and, if necessary, he or she will give you a medicine called Mesna which will protect your bladder.
- Mesna can either be given to you as a short injection, or mixed into the drip solution with your Ifosfamide, or as tablets.
- More information on Mesna can be found in the Patient Information Leaflet for Mesna Injection and Mesna tablets.
- Most people having Ifosfamide with Mesna do not develop any problems with their bladder, but your doctor may want to test your urine for the presence of blood using a ‘dipstick’ or microscope.
- If you notice that you have blood in the urine, you must tell your doctor straight away.
- Ifosfamide can damage your kidneys so that they do not work properly.
- This is more likely to happen if you only have one kidney or if your kidneys are already damaged.
- This is often temporary and they return to normal once Ifosfamide therapy is stopped. Occasionally the damage is permanent and more severe.
- Your doctor will check your test results for signs of kidney damage.
- Cancer medicines and radiation therapy can increase the risk of you developing other cancers; this can be a number of years after your treatment has stopped.
- Ifosfamide can cause damage to your heart or affect the rhythm of it beating. This increases with higher doses of Ifosfamide, if you are being treated with radiation or other chemotherapy medicines or if you are elderly. Your doctor will monitor your heart closely during treatment.
- Ifosfamide can cause inflammation or scarring in your lungs. This can occur more than six months after your treatment. If you start having difficulty breathing tell your doctor straight away.
- Ifosfamide can have life threatening effects on your liver. If you have sudden weight gain, liver pain and jaundice tell your doctor straight away.
- Hair thinning or baldness can occur. Your hair should grow back normally though it may be different in texture or colour.

- Ifosfamide can make you feel sick or be sick. This can last for about 24 hours after taking Ifosfamide. You may need to be given medicines to stop feeling or being sick. Ask your doctor about this.

Using other medicines and treatments

Tell your doctor or nurse if you are taking or have recently taken any other medicines, including medicines you have bought yourself.

In particular, tell them about the following medicines or treatments as they may not work well with Ifosfamide:

The following medicines can increase the toxicity of Ifosfamide:

medicines that can increase the toxic effects on your blood cells and immunity:

- ACE inhibitors (used to treat high blood pressure)
- Carboplatin (used to treat cancer)
- Cisplatin (used to treat cancer)
- Natalizumab (used to treat multiple sclerosis)

medicines that can increase the toxic effects on your heart:

- anthracyclines such as bleomycin, doxorubicin, epirubicin, mitomycin (used to treat cancer)
- radiation in the area of your heart

medicines that can increase the toxic effects on your lungs:

- Amiodarone (used to treat irregular heart beat)
- G-CSF, GM-CSF hormones (used to increase white blood cell numbers after chemotherapy)

medicines that can increase the toxic effects on your kidneys:

- Acyclovir (used to treat viruses)
- Aminoglycosides (used to treat bacterial infections)
- Amphotericin B (used to treat fungal infections)
- Carboplatin (used to treat cancer)
- Cisplatin (used to treat cancer)

medicines that can increase the toxic effects on your bladder:

- Busulfan (used to treat cancer)
- Irradiation of the bladder

medicines that can cause additive effects on you central nervous system when combined with ifosfamide

- Antiemetics (used to control vomiting and nausea)
- Antihistamines (used to treat allergic reactions)
- Narcotics
- Sedatives

the following medicines can increase the toxicity of Ifosfamide:

- Carbamazepine, Phenytoin, Phenobarbital (used to treat epilepsy)
- Corticosteroids (used to treat inflammation)
- Rifampin (used to treat bacterial infections)
- St. John’s (a herbal remedy for mild depression)

the following medicines can reduce how effective Ifosfamide is:

- Ketoconazole, Fluconazole, Itraconazole (used to treat bacterial or protozoal infections)
- Sorafenib (used to treat cancer)
- Aprepitant (used to prevent being sick)

other medicines that can affect or be affected by Ifosfamide include:

- Docetaxel (used to treat cancer)
- Coumarins such as warfarin (used to thin the blood)
- Vaccines
- Tamoxifen: (used to treat breast cancer)
- Cisplatin: (used to treat cancer)
- Irinotecan: (used to treat cancer)

Using Ifosfamide with food and drink

Drinking alcohol can increase the nausea and vomiting caused by Ifosfamide.

Pregnancy, breast-feeding and contraception

Do not become pregnant while taking Ifosfamide. This is because it can cause miscarriage or damage your unborn baby. Tell your doctor if you are pregnant, think you might be pregnant or are trying to become pregnant.

- Men or women should not try to have a child during or for at least 6 to 12 months after treatment. You should use an effective contraceptive. Ask your doctor for advice.
- Ifosfamide can affect your ability to have children in the future. Talk to your doctor about freezing sperm samples or eggs before your treatment starts.

Do not breast-feed while being treated with Ifosfamide. Ask your doctor for advice.

Driving or operating machines

Some of the side effects of treatment with Ifosfamide might affect your ability to drive and use machines safely. Your doctor will decide if it is safe for you to do so.

What to do if you see a different doctor, or have to go to hospital

If you see any other doctor or have to go to hospital for any reason, tell them what medicines you are taking. Do not take any other medicines unless your doctor knows you are taking Ifosfamide.

3 How you will be given Ifosfamide

Ifosfamide will be given to you by a doctor or nurse.

- Ifosfamide will normally be added to a large bag of fluid and will be slowly injected (infused) directly in to your vein. The vein can be in your arm, the back of your hand or a large vein under your collar bone. Depending on your dose, the Injection usually takes several hours but may be given over several days.
- Ifosfamide is often given with other anti-cancer drugs or radiotherapy.

The usual dose

- Your doctor will decide how much of the medicine you need and when you should take it.
- The amount of Ifosfamide you will need to take depends on:
 - the type of illness you have
 - how big you are (a combination of your height and weight)
 - your general health
 - whether you are being given other anti-cancer drugs or having radiotherapy.

Ifosfamide is usually given as a series of courses of treatment. After a course there is a break (a period when no injections are given) before the next course.

If you are given too much Ifosfamide

It is unlikely that you will be given more Ifosfamide than you should, because it will be given to you by a trained and qualified person. They would stop the injection straightaway if too much was given.

4 Possible side effects

Like all medicines, Ifosfamide can cause side effects, although not everybody gets them. The following side effects may happen with this medicine.

Tell your doctor straight away, if you notice any of the following serious side effects:

- getting bruises without knocking yourself, being slow to stop bleeding or bleeding from your nose or gums. This may be a sign that the platelet levels in your blood are getting too low
- a lowering of your white blood cell count, your doctor will check this during your treatment. It will not cause any signs, but you will be more likely to get infections. If you think you have an infection (a high temperature, feeling cold and shivery, or hot and sweaty, or any signs of infection such as a cough, or stinging on passing water) you may need antibiotics to fight infections because your blood count is lower than usual
- very pale, lethargic and tired. This may be a sign of low red blood cells (anaemia). Usually, no treatment is required, your body will eventually replace the red blood cells. If you are very anaemic, you may need a blood transfusion
- blood in your urine, pain, or less being passed
- mental state changes. In some people Ifosfamide can affect the brain. Sometimes people on Ifosfamide do not realise that they have been affected but friends and relatives may notice a change in them.

Turn over leaflet for further information.

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If any of the following side effects are seen your doctor will stop your treatment with Ifosfamide

- mania
- paranoia
- delusion
- delirium
- amnesia
- motionless and unresponsive to stimuli (catatonia)
- panic attack
- inability to speak (mutism)
- repeating words (echolalia)
- being fixed on a task (perseveration).

Other possible side effects may be:

Immune system and Infections

- allergic reactions, signs of this would be shortness of breath, wheezing, rash, itching or swelling of the face and lips (hypersensitivity). Severe allergic reactions could lead to difficulty in breathing or shock, with a possible fatal outcome (anaphylactic shock, anaphylactic/anaphylactoid reaction)
- reduction in the effectiveness of your immune system (immunosuppression)
- increased risk and severity of bacterial, fungal, viral, protozoal or parasitic infections due to the effect of ifosfamide on your immune system
- reactivation of infections you have had before (latent infections)
- severe infection spreading through the blood which may lead to a dangerous drop in blood pressure with a possible fatal outcome (sepsis, shock)
- swelling of the skin around the face, inside of the mouth and throat (angioedema)
- a skin rash of red itchy swellings (urticaria).

Cancers

- secondary tumours in various parts of the body, often in the area of the bladder
- progression of underlying cancers.

Blood and Lymphatic System

- decrease in the activity of your bone marrow (myelosuppression)
This can cause a decrease in the number of cells in your blood:
 - white cells – which fight infection (leucopenia, agranulocytosis). This may be associated with fever (febrile bone marrow aplasia)
 - platelets – which help your blood clot (thrombocytopenia)
 - red cells – which carry oxygen around the body (anaemia, neonatal anaemia, haemolytic anaemia)
This may be associated with a decrease in their ability to carry oxygen (methaemoglobinaemia)
- formation of small blood clots in your blood vessels disrupting the normal blood flow around your body (disseminated intravascular coagulation)
- haemolytic uremic syndrome – a condition causing abnormal break down of the red blood cells, decreased numbers of platelets in the blood and kidney failure.

Endocrine System

- increase in the release of antidiuretic hormone from the pituitary gland (SIADH). This affects the kidneys causing the low levels of sodium in your blood (hyponatraemia) and water retention.

Metabolism and Nutrition

- loss or decrease of appetite
- changes to your metabolism caused by the breakdown of the dying cancer cells (Tumour lysis syndrome)
- increase of acidity of body fluids (metabolic acidosis)
- low blood levels of potassium which can cause abnormal heart rhythms, constipation, fatigue, muscle weakness or spasms, depression, psychosis, delirium, confusion, or hallucinations (hypokalaemia)
- low blood levels of calcium which can cause muscle cramps and twitching, irregular heartbeat, overactive reflexes, and burning or tingling sensations in the hands and feet (hypocalcaemia)
- low blood levels of phosphate which can cause bone pain, confusion and muscle weakness (hypophosphataemia)
- high blood sugar levels which can cause thirst, tiredness and irritability (hyperglycaemia)
- excessive thirst that is also accompanied by excessive fluid intake (polydipsia).

Digestive system

- feeling sick and being (nausea, vomiting)
- diarrhoea
- inflammation of the lining of your mouth, including ulcers (stomatitis)
- inflammation of your intestines or bowel (enterocolitis)
- severe tummy and back pain which may be from inflammation of the pancreas (pancreatitis)
- decrease bowel activity which may lead to bowel obstruction (ileus)
- bleeding in your stomach or intestines (gastrointestinal haemorrhage)
- ulceration of the lining of the digestive system (mucosal ulceration)
- constipation
- increased saliva production

Nervous System

- a disorder of the nerves which can cause weakness, tingling or numbness (peripheral neuropathy)
- having difficulties in controlling or coordinating the muscles you use when you speak, or weakness of those muscles (Dysarthria)
- a syndrome called Status epilepticus (convulsive and nonconvulsive) defined as one continuous, unremitting seizure lasting longer than 5 minutes, or recurrent seizures without regaining consciousness between seizures for greater than 5 minutes
- effects on the brain (encephalopathy), signs of this can be problems in thinking or concentrating, reduced alertness, changes in personality, tiredness, fits, muscle twitching, and shaking
- movement disorders and gait disturbances (movement disorder, extrapyramidal disorder, gait disorder)
- effects on the spinal cord (myelopathy), which can cause numbness, weakness and tingling in the hands, loss of motor skills
- pain from your nerves, which can also feel like an aching or burning sensation (neuralgia)
- flapping tremor of the hand (asterixis)
- tingling or numbness, often in the hands or feet (paresthesia)
- loss of sense of touch or sensation (hypoesthesia)
- inability to control bowel movements (faecal incontinence).

Eyes and Ears

- blurring, reduction or loss of sight
- inflammation of the eye (conjunctivitis)
- irritation of the eyes
- deafness or hearing impairment
- dizziness or feeling of spinning (vertigo)
- ringing in the ears (tinnitus)

Heart and Circulation

- damage to the heart muscle (cardiotoxicity)
- changes in your heart rhythm (arrhythmia)
- irregular heart beat (atrial fibrillation)
- early heart beat (premature atrial contractions)
- slower heart beat (bradycardia)
- heart attack (myocardial infarction)
- decrease in your hearts ability to pump enough blood around your body which may be life threatening (cardiac failure or cardiac arrest)
- bleeding in to the muscles of the heart (myocardial haemorrhage)
- chest pain from reduced blood supply to the heart (angina pectoris)
- disease of the heart muscle (cardiomyopathy, congestive cardiomyopathy)
- abnormal ECG heart tracing
- blood clot in the lungs which causes chest pain and breathlessness (pulmonary embolism)
- blood clot, usually in a leg, which causes pain swelling or redness (deep vein thrombosis)
- leaking of fluid from the circulation into surrounding tissues (capillary leak syndrome)
- inflammation of the blood vessels (vasculitis)
- low or high blood pressure (hypotension, hypertension)
- reddening of the skin (flushing).

Lungs

- life-threatening decrease of your lungs ability to transfer oxygen in to your blood (respiratory failure)
- conditions causing inflammation of the lungs which can cause breathlessness, cough and raised temperature or scarring of the lungs (pneumonitis, acute respiratory distress syndrome)
- scarring of the lungs which causes shortness of breath (interstitial lung disease, pulmonary fibrosis)
- fluid in or around the lungs (pulmonary oedema, pleural effusion)

- increased blood pressure in the lungs which can cause shortness of breath, fatigue, cough, angina, fainting, peripheral oedema (pulmonary hypertension)
- shortness of breath (dyspnoea)
- decrease levels of oxygen in your body (hypoxia)
- cough

Liver

- a build up of toxins in the body due to liver failure (hepatotoxicity)
- liver failure
- blockage of the small veins in your liver (veno-occlusive liver disease) which can cause weight gain, increased liver size, pain and jaundice
- reduction of blood supply or blockage of the portal vein of the liver (portal vein thrombosis)
- inflammation of the liver which can cause jaundice, weight loss and malaise (cytolytic hepatitis).

Skin and Subcutaneous Tissue

- hair loss (alopecia)
- inflammation of this skin which may cause rash, blisters, itching, sores, oozing and scarring (dermatitis)
- skin eruption or reaction consisting of small, round, raised bumps that have clear borders (popular rash)
- life threatening conditions which cause rash, ulcers, sore throat, fever, conjunctivitis, separation of skin layers (toxic epidermal necrolysis, Stevens-Johnson syndrome)
- swelling, numbness, red lumps and peeling of skin on the hands and feet (Palmar-plantar erythrodysesthesia syndrome)
- redness and blistering of the skin appearing months or years after treatment (Radiation recall dermatitis)
- swelling of the face
- rash
- itching (pruritus)
- itchy, red rash which can develop in to sores (erythema)
- changes in colour of your fingernails and skin
- separation of the nail bed which can cause nails to fall off
- excessive sweating (hyperhidrosis).

Musculoskeletal and Connective Tissue

- abnormal muscle breakdown which can lead to kidney problems (rhabdomyolysis)
- softening of the bones that could cause severe bone pain, pain caused by slight crack in the bone back pain, partial or complete fractures and muscle weaknesses (osteomalacia, rickets)
- growth retardation
- muscle pain (myalgia) or joint pain (arthralgia)
- muscle twitching.

Renal and Urinary

- inflammation of the bladder lining which causes pain, bleeding, blood in the urine, reduced urine flow (haemorrhagic cystitis)
- blood in the urine (haematuria)
- life threatening decrease in the abilities of your kidney to adequately remove toxins and waste products from the blood (renal dysfunction, renal failure)
- kidney malfunction causing increased of total urine amino acids into urine (aminoaciduria). Your doctor will do urine tests to test for these
- kidney malfunction causing urine to appear cloudy or murky colour (phosphaturia)
- kidney malfunction leads to excessive urine production and excessive thirst, resulting in deficits of water, calcium, potassium, magnesium, and other substances in the body (fanconi syndrome)
- inflammation of the kidneys (tubulointerstitial nephritis)
- changes to the structure of your kidneys which prevent them from working correctly (renal structural damage)
- glucose in the urine (nephrogenic diabetes insipidus)
- condition usually defined as excessive or abnormally large production or passage of urine (polyuria)
- repeated inability to control urination (enuresis)
- feeling of residual urine.

Pregnancy and Fertility

- infertility. Sperm production in men and egg production in women may be reduced or stop. In some cases this can be permanent
- loss of ovarian function before age 40 (ovarian failure, premature menopause)
- absence of menstrual periods (amenorrhea) or absence of ovulation (ovulation disorder)
- absence of measurable level of sperm in male semen (azoospermia) or less number of sperm in the ejaculate of the male (oligospermia).

Congenital, Familial and Genetic Disorders

- reduction in growth, deformity or death of a foetus while in the womb.

General Disorders and Administrative Site Conditions

- inflammation of a vein, usually in the legs (phlebitis)
- fatigue
- feeling of general discomfort or uneasiness (malaise)
- life threatening failure of multiple organs
- general physical deterioration
- appearance of skin changes and irritation at the site of injection or infusion
- swelling
- pain
- fever
- chills.

Reporting of side effects

If you get any side effects, talk to your doctor or nurse. This includes any possible side effects not listed in this leaflet. You can also report side effects directly (see details below). By reporting side effects you can help provide more information on the safety of this medicine.

UK

Yellow Card Scheme
www.mhra.gov.uk/yellowcard

5 How Ifosfamide is stored

Because Ifosfamide is usually given in hospital it will be stored safely and correctly by the hospital staff. If you do need the storage conditions they are given below.

- Keep this medicine out of the sight and reach of children.
- Do not use Ifosfamide after the expiry date which is stated on the label after EXP. The expiry date refers to the last day of that month.
- Do not store above 25°C. Store in the original container.

6 Contents of the pack and other information

What Ifosfamide contains

The active substance is Ifosfamide and each vial contains 1 g or 2 g.

There are no other ingredients.

What Ifosfamide looks like and contents of the pack

Ifosfamide is a dry white powder supplied in clear glass vials. Each carton contains 1 vial.

The contents of each vial has to be mixed with sterile water (called 'water for injections') before use.

Nature and contents of container

Vials are packed with or without a protective plastic overwrap. Protective plastic overwrap does not come into contact with the medicinal product and provides additional transport protection, which increases the safety for the medical and pharmaceutical personnel.

Marketing Authorisation Holder and Manufacturer

The Marketing Authorisation holder is:

Baxter Healthcare Ltd
Caxton Way
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IP24 3SE
United Kingdom
Send all enquiries to this address.
Ifosfamide is manufactured by:
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**For information about Ifosfamide or to request this leaflet in formats such as audio or large print please contact the Marketing Authorisation Holder:
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