Package Leaflet: Information for the user

Furosemide 10 mg/ml solution for Injection/Infusion

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, pharmacist or nurse.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

What is in this leaflet

1. What Furosemide is and what it is used for

Furosemide 10 mg/ml solution for injection/infusion contains the active substance furosemide. Furosemide belongs to a group of medicines called diuretics. This medicine works by helping to produce more urine. This helps to relieve symptoms caused when your body contains too much fluid. It is given if sufficient urine output is not achieved by oral administration of furosemide or if oral administration is not possible.

Furosemide is used:
- to treat fluid retention in the tissue (oedema) and/or accumulation of fluid in the abdomen (ascites) due to heart or liver disease;
- to treat fluid accumulation in the tissue (oedema) due to kidney disease;
- in the case of fluid accumulation in the lungs (pulmonary oedema) (e.g. in acute heart failure);
- in case of extremely high blood pressure (hypertensive crisis) in addition to other therapeutic measures.

2. What you need to know before you are given Furosemide

You should not be given Furosemide if:
- you are allergic to furosemide or any of the other ingredients of this medicine (listed in section 6);
- you are allergic to sulphonamide antibiotics;
- you are severely dehydrated (you have lost lots of body fluid for example by suffering from severe diarrhoea or being sick);
- you have kidney failure and are not producing urine, despite treatment with furosemide;
- you have kidney failure as a consequence of poisoning with kidney or liver toxic substances;
- you have very low levels of potassium or sodium in your blood;
- you have kidney failure associated with coma caused by liver failure;
- the patient is in a coma caused by liver failure;
- you are breast-feeding

If you are not sure if any of the above applies to you, talk to your doctor or nurse before this medicine is given to you.

Warnings and precautions
Talk to your doctor or nurse before you are given Furosemide if:
- you have a low blood pressure;
- you have diabetes (regular check of blood sugar is necessary);
- you have gout (painful or inflamed joints) due to high levels of uric acid (by-product of metabolism) in your blood (regular check of blood uric acid is necessary);
- you have urinary obstruction (e.g. enlarged prostate gland, swelling of a kidney due to a build-up of urine, narrowing of the ureter);
- you have abnormally low protein levels in blood;
- you have liver disease;
- you have rapidly progressing kidney dysfunction associated with severe liver disease (e.g. liver cirrhosis);
- you are at risk of unwanted severe blood pressure drop (e.g. if you have circulatory disorders of the cerebral vessels or the coronary arteries);
- you are dehydrated (you have lost body fluids by suffering from severe diarrhoea or being sick);
- you have the inflammatory disease called 'systemic lupus erythematosus (SLE)';
- you have hearing problems;
- you are elderly, especially with dementia (causes problems with your memory, talk and understand, recognizing people, things and the place where you live) and are also taking risperidone (to treat mental disorders);
- you are using other medicines which can cause low blood pressure, or you have other medical conditions associated with the risk of low blood pressure.

If you are not sure if any of the above applies to you, talk to your doctor or nurse before this medicine is given to you.

Patients receiving treatment with furosemide may experience low blood pressure with dizziness, fainting or loss of consciousness. This particularly applies to the elderly, patients concomitantly taking other medicines that can cause low blood pressure and patients with other disorders associated with a risk of low blood pressure.

Especially during long-term treatment, your doctor may regularly check your blood levels of potassium, sodium, calcium, magnesium, bicarbonate, chloride, creatinine, urea, uric acid and blood sugar.

The weight loss caused by loss of body fluid should not exceed 1 kg of body weight per day.

The use of furosemide can lead to positive results in doping controls. In addition, abuse of furosemide as a doping agent can endanger health.

Children
If given to premature babies furosemide can cause kidney stones or calcification. In premature babies the channel between the lung artery and the aorta which is open in the unborn baby might stay open.

Other medicines and Furosemide
Tell your doctor or nurse, if you are using, have recently used or might use any other medicines. This is important because some medicines should not be taken together with Furosemide, or dose adjustment of furosemide or other concomitantly taken medicine may be required.

The following medicines can affect the way Furosemide works:
- anti-inflammatory medicines including NSAIDs (e.g. diclofenac, ibuprofen, indomethacin, celecoxib) and high doses acetylsalicylic acid (aspirin);
- probenecid (used to treat gout);
- methotrexate (to treat some cancers or severe arthritis);

- phenytoin (used to treat epilepsy);
- sucralfate (to treat stomach ulcers).

You should not receive furosemide within two hours of taking sucralfate as the effect of furosemide may be decreased.

Furosemide can affect the way the following medicines work:
- medicines used for heart problems (e.g. digoxin);
- medicines to treat heart rhythm disorders (e.g. amiodarone, sotalol, dofetilide, ibutilide);
- terfenadine (to treat allergies);
- lithium (to treat mood disorders);
- medicines for high blood pressure called 'ACE inhibitors' (e.g. lisinopril) or 'angiotensin II receptor antagonists' (e.g. losartan);
- other water tablets (e.g.bendroflumethiazide or hydrochlorothiazide);
- theophylline (to treat asthma);
- injections given during operations
- for relaxing muscles (e.g. tubocurarine, succinylcholine);
- medicines for diabetes (e.g. metformin and insulin);
- medicines to raise blood pressure (e.g. adrenaline, noradrenaline);
- risperidone (to treat mental disorders);
- levothyroxine (to treat an underactive thyroid gland).

The following medicines increases side effects when used with Furosemide:
- glucocorticoids (to treat inflammation or allergy e.g. prednisolone, dexamethasone);
- carbenoxolone (to treat stomach ulcers);
- antibiotics to treat infections (aminoglycosides, cephalosporins, polymyxins) as concomitant use with furosemide may worse side effects on kidneys or may cause hearing disorders (sometimes irreversible);
- cisplatin (used to treat cancer);
- medicines that suppress the body's immune system (e.g. ciclosporin used to prevent rejection of transplants);
- medicines used as injections before X-ray examinations (radiocontrast agent);
- chloral hydrate (to treat sleeping problems). Giving furosemide injection at the same time as chloral hydrate is not recommended since side effects such as heat, sweating, restlessness, nausea, increased blood pressure and increased heart rate may occur within 24 hours after taking chloral hydrate;
- phenobarbital, carbamazepine (used for epilepsy);
- aminoglutethimide (used to treat a condition called 'Cushing's syndrome');
- medicines used for constipation (laxatives).

Furosemide with food
Large amounts of liquorice in combination with furosemide can lead to increased potassium losses.

Pregnancy and breast-feeding
If you are pregnant or breast-feeding, think you may be pregnant or are planning to have a baby, ask your doctor for advice before this medicine is given to you. Furosemide should only be used during pregnancy if there are clear medical reasons for using it. This medicine may stimulate foetal urine production. Furosemide passes into breast milk. It suppresses the production and secretion of breast milk. You should not breast-feed while treated with furosemide.

Driving and using machines
This medicine may alter the ability to react to such an extent that the ability to drive, use machines or perform hazardous tasks may be impaired. This particularly applies at the start of treatment, when increasing the dose or switching medicines and in association with alcohol.

Furosemide contains sodium
This medicine contains less than 1 mmol (23 mg) sodium per ampoule, that is to say essentially 'sodium-free'.

3. How Furosemide is given

Your doctor will decide how much medicine you need, when it is to be given to you and the duration of treatment.

Furosemide Injection/Infusion is normally given by adoctor or nurse:
- as a slow injection into a vein or
- exceptionally into a muscle.

In some cases, instead of injections, your doctor may recommend this medicine is given by continuous infusion into a vein (a drip).
You will be switched to oral administration as soon as treatment permits.

If you are given more Furosemide than you should
If you think you have been given too much of this medicine, tell your doctor straight away. The signs of acute or chronic overdose depend on the extent of salt and fluid loss. Symptoms of overdose are dry mouth, increased thirst, irregular heartbeat, mood changes, muscle cramps or pain, feeling or being sick, unusual tiredness or weakness, a weak pulse or loss of appetite.

If you have any further questions on the use of this medicine, ask your doctor or nurse.

4. Possible side effects

Like all medicines, this medicine can cause side effects, although not everybody gets them.

If you notice the following, contact the doctor or nurse **immediately**:
- Severe allergic reaction which can cause skin rash, swelling of the face, lips, tongue or throat, breathing difficulties and loss of consciousness (anaphylactic or anaphylactoid reaction) (may affect up to 1 in 1,000 patients)
- Severe skin reactions (may affect also mucosa) e.g. blistering or peeling of the skin (Stevens-Johnson syndrome, toxic epidermal necrolysis, acute generalized exanthematous pustulosis (AGEP), drug rash which manifest as small, itchy, reddish-purple lesions on the skin, genitals, or in the mouth) (the frequency cannot be estimated from the available data)
- Damage to your muscles called 'rhabdomyolysis'. You may suffer from muscle pain that does not go away, muscle cramps, muscle weakness, urine with the colour of cola and/or feel sick (the frequency cannot be estimated from the available data)
- Severe reduction of certain type of white blood cells called 'agranulocytosis'. Signs may include fever with chills, mucosal changes and sore throat (may affect up to 1 in 10 000 patients)

Other side effects

Very common (may affect more than 1 in 10 patients)
- Loss of bodily fluids and related disorders due to mineral loss (sodium, potassium, magnesium, calcium), low blood volume (especially in elderly)
- Increased levels of certain blood lipids (triglycerides)
- Low blood pressure including circulatory disturbances when changing from lying to upright position (with infusion into a vein)

- Increased blood creatinine (indicates how your kidneys are working).

Common (may affect up to 1 in 10 patients)
- Blood thickening (in case of excessive urine excretion)
- Low sodium and chloride level in blood (especially if your sodium chloride intake is limited). Low sodium level in blood can manifest as apathy, calf cramps, loss of appetite, weakness, drowsiness, vomiting and confusion
- Low potassium level in blood (especially if your potassium intake is limited or you lost potassium through vomiting or diarrhoea).
- Low potassium level in blood can manifest as muscle weakness, abnormal sensations in limbs (tingling, numbness or painful burning sensation), inability to move a body part (paresis), vomiting, constipation, excessive gas accumulation in the gastrointestinal tract, excessive urinary excretion, abnormally increased thirst, slow or irregular heart rhythm. Severe potassium losses can lead to intestinal paralysis (paralytic ileus) or impaired consciousness and even coma
- Blood cholesterol increased
- Blood uric acid increased
- Gout flare
- Brain function disorders as a result of severe liver impairment (hepatic encephalopathy)
- Urine volume increased.

Uncommon (may affect up to 1 in 100 patients)
- Low blood platelet count (thrombocytopenia)
- Increased blood sugar. This can lead to a worsening of the metabolic status in patients with existing diabetes (manifest diabetes). An unrecognized diabetes (latent diabetes) may become manifest
- Hearing disorders, mostly reversible, especially in patients with kidney impairment or decreased protein level in blood (e.g. in cases of nephrotic syndrome) and/or if the medicine is injected too fast into the vein
- Deafness (sometimes irreversible)
- Feeling sick
- Itching, hives, rash, skin and mucous membrane reactions with redness, blistering or flaking (e.g. bullous dermatitis, erythema multiforme, pemphigoid, exfoliative dermatitis, purpura), increased sensitivity of skin to sunlight.

Rare (may affect up to 1 in 1,000 patients)
- Increased number of a certain type of white blood cells (eosinophilia)
- Reduced number of white blood cells (leukopenia)
- Tingling, numbness or painful burning sensation in the limbs
- Ringing in the ears (tinnitus)
- Inflammation of the blood vessels (vasculitis)
- Vomiting, diarrhoea
- Kidney damage (interstitial nephritis)
- Fever

Very rare (may affect up to 1 in 10,000 patients)
- Anaemia due to abnormal breakdown of red blood cells (haemolytic anaemia)
- Condition in which the bone marrow stops to produce enough new blood cells (aplastic anaemia)
- Severe reduction of certain type of white blood cells (agranulocytosis). Signs may include fever with chills, mucosal changes and sore throat
- Acute inflammation of the pancreas
- Liver disorder called 'intrahepatic cholestasis' and increased levels of liver enzymes in the blood which may cause jaundice (yellow skin, dark urine, tiredness)

Not known (the frequency cannot be estimated from the available data)

- Systemic lupus erythematosus (SLE) may get worse or be activated
- Low calcium level in blood, low magnesium level in blood, decreased blood pH (metabolic acidosis), pseudo-Bartter syndrome (renal impairment related to misuse and/or long-term use of furosemide).
- Low magnesium level in blood (can cause tetany or heart rhythm disorders in rare cases)
- Dizziness, fainting and loss of consciousness, headache
- Occlusion of a blood vessel by blood clots (thrombosis, especially in elderly patients)
- Excessive urinary excretion, especially in elderly patients and children, circulatory problems (up to circulatory collapse) may occur, mainly manifested as headache, dizziness, blurred vision, dry mouth and thirst, low blood pressure and circulatory disorders when changing from lying to upright position
- Severe skin reactions (may affect also mucosa) e.g. blistering or peeling of the skin (Stevens-Johnson syndrome, toxic epidermal necrolysis, acute generalized exanthematous pustulosis (AGEP), drug eruption with eosinophilia and systemic symptoms and lichenoid reactions, which manifest as small, itchy, reddish-purple lesions on the skin, genitals, or in the mouth)
- Muscle problems (rhabdomyolysis) often in association with severe potassium deficiency
- Urine sodium increased, urine chloride increased, blood urea increased, symptoms of urinary obstruction (e.g. in patients with enlarged prostate gland, swelling of a kidney due to a build-up of urine, narrowing of the ureter) and even urinary retention; deposition of calcium in the kidney and/or kidney stones in preterm infants, kidney failure
- Increased risk of patent ductus arteriosus when preterm infants are treated with furosemide in the first weeks of life
- Pain after injection into a muscle

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 via the Yellow Card Scheme, Website: www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store. By reporting side effects you can help provide more information on the safety of this medicine.

5. How to store Furosemide

This medicine does not require any special temperature storage conditions.
Keep the ampoules in the outer carton in order to protect from light.
Keep this medicine out of the sight and reach of children.
Do not use this medicine after the expiry date which is stated on the ampoule label and carton after EXP. The expiry date refers to the last day of that month.
Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

6. Contents of the pack and other information

What Furosemide contains
The active substance is furosemide.
Each 1 ml of solution contains 10 mg furosemide.
Each 2 ml ampoule contains 20 mg furosemide.

The other ingredients are sodium hydroxide (for pH adjustment), sodium chloride and water for injections.

What Furosemide looks like and contents of the pack
Each 2 ml ampoule contains a clear, colourless or almost colourless solution.

Pack size: 5 ampoules.

Marketing authorisation holder
S.A.L.F. S.p.A. Laboratorio Farmacologico
via Marconi, 2
24069 Cenate Sotto (BG)
Italy

Manufacturer
S.A.L.F. S.p.A. Laboratorio Farmacologico
via G. Mazzini, 9
24069 Cenate Sotto (BG)
Italy

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The following information is intended for healthcare professionals only:

Incompatibilities
Furosemide should not be mixed with strong acid solutions, such as solutions containing ascorbic acid, noradrenaline and adrenaline, due to the risk of precipitation. This medicinal product should not be mixed with other medicinal products except those mentioned in section 6.6.

Instructions for use, disposal and other handling
For single use only.
Use immediately after opening the ampoule.
Discard any remaining contents after use.
The ampoules should be visually inspected prior to use. They should not be used if there are any visible signs of deterioration (e.g. particles or discoloration).

Furosemide may be mixed with neutral, weak alkaline or acid solution, such as 0.9% sodium chloride, Ringer's lactate solution and glucose 5%.

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

Care must be taken to ensure that the pH of in-use solution is in the weakly alkaline to neutral range (pH not lower than 7). Acid solutions must not be used, as the active substance may precipitate (see “Incompatibilities” above).

Shelf life after dilution
Chemical and physical in-use stability has been demonstrated for 8 hours at 25°C when diluted with 0.9% Sodium chloride, 5% Glucose and Ringer Lactate.

From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and would normally not be longer than 24 hours at 2 to 8°C, unless dilution has taken place in controlled and validated aseptic conditions.