Package leaflet: Information for the patient
Erythrocin® IV Lactobionate 1 g Powder for Concentrate for Solution for Infusion
(Erythromycin Lactobionate)

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 pharmacist or nurse.
- If you get any side effects, talk to your doctor or pharmacist or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

The name of your medicine is Erythrocin IV Lactobionate 1 g Powder for Concentrate for Solution for Infusion (will be referred to Erythrocin IV Lactobionate throughout this leaflet).

What is in this leaflet

1. What Erythrocin IV Lactobionate is and what it is used for

Erythrocin IV Lactobionate belongs to a group of drugs called antibiotics, and is used in adults and children to treat infections which are caused by bacteria. Erythrocin IV Lactobionate may be used if you cannot swallow erythromycin tablets or are at particular risk of developing an infection.

2. What you need to know before you are given Erythrocin IV Lactobionate

Do not be given Erythrocin IV Lactobionate:

- If you are allergic to erythromycin or any of the other ingredients of this medicine (listed in section 6).
- If you are allergic to macrolide antibiotics such as clarithromycin or azithromycin.
- If you are currently taking a medicine called
  - ergotamine or dihydroergotamine (used to treat migraines) while taking erythromycin as this may cause serious side effects;
  - terfenadine or astemizole (widely taken for hayfever and allergies), cisapride (for stomach disorders) or pimozide (for psychiatric conditions) while receiving erythromycin, as combining these drugs can sometimes cause serious disturbances in heart rhythm. Consult your doctor for advice on alternative medicines you can take instead; domperidone (for nausea (feeling sick) and vomiting (being sick));

- lovastatin or simvastatin (used to lower cholesterol levels) as abnormal muscle breakdown leading to kidney problems (rhabdomyolysis) can occur.
- -lomitapide (used to lower increased blood fats such as cholesterol and triglycerides). Taking this medicine at the same time as erythromycin may lead to a rise in enzymes produced by liver cells (transaminases), which indicates that the liver is under stress and may lead to liver problems.

- You have abnormally low levels of potassium or magnesium in your blood (hypomagnesaemia or hypokalaemia).
- You or someone in your family has a history of heart rhythm disorders (ventricular cardiac arrhythmia or torsades de pointes) or an abnormality of the electrocardiogram (electrical recording of the heart) called "long QT syndrome".

Warnings and precautions

Talk to your doctor or pharmacist or nurse before you are given Erythrocin IV Lactobionate:

- if you have any liver problems or have been told that any drugs you are taking can cause liver problems;
- You are taking other medicines which are known to cause serious disturbances in heart rhythm;
- if you have previously experienced diarrhoea following the use of antibiotics;
- if you are pregnant and have been told that you have a sexually transmitted disease called syphilis. In this case erythromycin may not be effective for preventing the transfer of this infection to your baby. Consult you doctor before receiving erythromycin. Alternatively if you were treated for early stages of syphilis during your pregnancy, and your child is under one year and is prescribed erythromycin, consult your doctor before giving erythromycin to your child;
- if you are treating a young child with antibiotics and they are irritable or vomit when fed, you should contact your physician immediately;
- if you suffer from a condition called myasthenia gravis, which causes muscle weakness, consult your doctor before receiving erythromycin;
- if you are using erythromycin for a long period of time;
- if you suffer from a genetic problem that interferes with the metabolism of mitochondria (Leber's hereditary optic neuropathy or autosomal dominant optic atrophy);
- if you have heart problems such as an abnormal ECG heart tracing (prolonged QT interval) or a slow heart beat (bradycardia);
- if you are receiving drugs to treat heart problems;
- if you have uncorrected hypokalaemia or hypomagnesaemia (low blood levels of potassium or magnesium, which can cause muscle weakness, twitching or abnormal heart rhythm);
- if you are elderly;

- if you are about to undergo laboratory tests for signs of phaeochromocytoma (a rare tumour of the adrenal glands) as erythromycin may interfere with the test results.

Other medicines and Erythrocin IV Lactobionate

Tell your doctor if you are taking, have recently taken or might take any other medicines.

This is especially important if you are taking medicines from the following families:

- astemizole, terfenadine or mizolastine (used to treat allergies such as hayfever);
- domperidone (used to treat nausea (feeling sick) and vomiting (being sick));
- pimozide (used to treat mental problems);
- ergotamine or dihydroergotamine (used to relieve migraine);
- cisapride (used to treat stomach disorders);
- statins (used to help lower cholesterol levels, e.g. lovastatin and simvastatin);
- beta-lactam antibiotics (used to treat bacterial infections, e.g. penicillin and cephalosporin);
- protease inhibitors (used to treat viral infections, e.g. saquinavir);
- oral contraceptives.

This is also important if you are taking medicines called:

- colchicine (used to treat gout and arthritis);
- cimetidine and omeprazole (used to treat acid reflux and other related conditions);
- clindamycin, lincomycin, chloramphenicol, streptomycin, tetracyclines, colistin, rifabutin, or rifampicin (used to treat different types of bacterial infection);
- fluconazole, ketoconazole and itraconazole (used to treat fungal infections);
- digoxin, quinidine or disopyramide (used to treat heart problems);
- cilostazol (used to treat peripheral circulation problems);
- hexobarbitone, phenobarbital or midazolam (used as sedatives);
- zopiclone or triazolam/alprazolam (used to help you sleep or relieve states of anxiety);
- Anticoagulants e.g. warfarin, acenocoumarol and rivaroxaban (used to thin the blood);
- valproate, carbamazepine or phenytoin (used to control epilepsy);
- theophylline (used to treat asthma and other breathing problems);
- ciclosporin or tacrolimus (used following organ transplants);
- bromocriptine (used to treat Parkinson's disease);
- alfentanil (used to provide pain relief);
- methylprednisolone (used to help suppress the body's immune system – this is useful in treating a wide range of conditions);
- St John's Wort (a herbal medicine used to treat depression);
- verapamil (used to treat high blood pressure and chest pain);
- vinblastine (used to treat certain types of cancer);
- sildenafil (used to treat erectile dysfunction);

- Corticosteroids, given by mouth, by injection or inhaled (used to help suppress the body's immune system - this is useful in treating a wide range of conditions);
- hydroxychloroquine or chloroquine (used to treat conditions including rheumatoid arthritis, or to treat or prevent malaria). Taking these medicines at the same time as erythromycin may increase the chance of getting abnormal heart rhythms and other serious side effects that affect your heart.

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 or pharmacist for advice before taking this medicine.

Erythromycin should be used by women during pregnancy or while breast-feeding only if clearly needed.
The active ingredient of Erythrocin IV Lactobionate may cross the placenta in pregnant women and is excreted in breast milk. Information from studies regarding the risk of birth defects is inconsistent, but some studies have reported heart defects following Erythrocin IV Lactobionate use in early pregnancy.

Driving and using machines
Dizziness and blurred vision have been reported with erythromycin use. Do not drive or use machines unless you are sure you are not affected.

3. How Erythrocin IV Lactobionate will be given to you

For patients with severe infections or those who are at particular risk of developing infections, the recommended dose of Erythrocin IV Lactobionate for adults, children and young babies is 50 mg per kg of body weight per day.

For patients with mild to moderate infections who cannot swallow tablets, the recommended dose is 25 mg per kg of body weight per day.

Your doctor will calculate the correct dose for you.

You should not receive Erythrocin IV Lactobionate as an injection directly into your vein via a syringe.

Your doctor will decide on the length of time that you need to receive the injection before changing to erythromycin tablets.

If you receive more Erythrocin IV Lactobionate than you should
If you think you have been given too much Erythrocin IV Lactobionate or if someone else takes it by mistake, tell your doctor immediately. An overdose could cause temporary hearing loss, nausea, vomiting and diarrhoea.

If you stop receiving Erythrocin IV Lactobionate

Speak to your doctor before you stop receiving treatment with Erythrocin IV Lactobionate. Do not stop receiving Erythrocin IV Lactobionate just because you feel better. If you stop treatment too early your problem could come back.

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 any of the following, contact your doctor immediately:

- difficulty breathing;
- fainting;
- swelling of the face, lips or throat;
- skin rashes;
- severe skin reactions including large fluid-filled blisters, sores and ulcers;
- ulcers in the mouth and throat, as these may be signs of an allergic reaction;
- diarrhoea which may be severe or prolonged and may contain blood or mucus;
- stomach pains; these may be a symptom of an inflamed pancreas (pancreatitis);
- liver failure and various liver or gall-bladder problems, which can cause yellowing of the skin and/or whites of the eyes (jaundice) or pale stools with dark urine;
- abnormal heart rhythms (including palpitations, a faster heart beat, a life-threatening irregular heart beat called torsades de pointes or abnormal ECG heart tracing) or heart stopping (cardiac arrest);
- abnormal muscle breakdown which can lead to kidney problems (rhabdomyolysis);
- inflammation of the kidneys (a condition known as tubulointerstitial nephritis);
- serious skin rashes that may involve blistering and can cover large areas of the torso, face, genitals and limbs (conditions known as Stevens Johnson syndrome, toxic epidermal necrolysis and erythema multiforme);
- Contact a doctor immediately if you experience a serious skin reaction: a red, scaly rash with bumps under the skin and blisters (exanthematous pustulosis). The frequency of this side effect is not known (cannot be estimated from the available data).

Other side effects of Erythrocin IV Lactobionate are included below with the following frequency:

Rare: may affect up to 1 in 1,000 people

- Swelling or inflammation of the large intestine (colon) due to an overgrowth of Clostridioides difficile (C difficile) bacteria (Pseudomembranous colitis).

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

- pain and discomfort at the site of the injection;
- feeling sick or being sick;

- loss of appetite (anorexia);
- irritability and vomiting in a feeding infant;
- increase in a particular type of white blood cells (eosinophilia);
- ringing in the ears (tinnitus);
- reversible loss of hearing (usually associated with high doses or in patients with kidney problems);
- disturbance in vision (double vision, blurred vision);
- chest pains;
- fever;
- confusion;
- fits (seizures);
- dizziness;
- vertigo (problems with balance that can result in feelings of dizziness, a spinning sensation or sickness – particularly on standing);
- hallucinations (seeing or hearing things that aren't there);
- feeling generally unwell (malaise);
- low blood pressure;
- itching or hives.

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 HPRA Pharmacovigilance Website: www.hpra.ie.

By reporting side effects you can help provide more information on the safety of this medicine.

5. How to store Erythrocin IV Lactobionate

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 label and carton. The expiry date refers to the last day of that month.
Once the vial of Erythrocin IV Lactobionate has been reconstituted it should be used immediately.
Do not store above 30°C.
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 Erythrocin IV Lactobionate contains

-The active ingredient is erythromycin as erythromycin lactobionate. Each vial contains erythromycin lactobionate equivalent to 1 g of erythromycin.

What Erythrocin IV Lactobionate looks like and the contents of the pack
Erythrocin IV Lactobionate is a white to off-white powder. Erythrocin IV Lactobionate is supplied in clear glass vials.

Marketing Authorisation Holder and Manufacturer

Marketing Authorisation Holder
Amdipharm Limited
Temple Chambers
3 Burlington Road
Dublin 4, Ireland

Manufacturer:
Delpharm Saint Remy,
Rue de l'Isle,
Saint Remy Sur Avre,
28380, France

This leaflet was last revised in. February 2023.

Erythrocin is a registered trademark of Amdipharm Mercury International Limited.

TECHNICAL LEAFLET ON ERYTHROCIN® IV LACTOBIONATE 1 g POWDER FOR CONCENTRATE FOR SOLUTION FOR INFUSION (Erythromycin lactobionate)

Intravenous therapy effective in serious bacterial infections

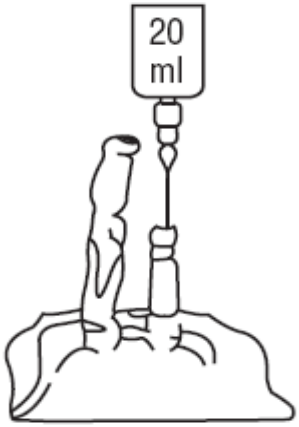
Presentation
Erythrocin I.V. Lactobionate 1 g Powder for Concentrate for Solution for Infusion is a sterile presentation of erythromycin. It is not suitable for intramuscular use or for I.V. Bolus. It is available in vials of 1 g of erythromycin.
Preparation of suitable solutions is detailed in the section on administration.

Uses
For the treatment of infections due to organisms susceptible to erythromycin in patients who cannot take oral medicine or in whom immediate high levels of erythromycin are important.
IT IS NOT FOR I.M. OR I.V. BOLUS USE. FOR I.V. INFUSION USE ONLY.

Microbiological Indications

Erythromycin has been shown to be active in vitro against the following organisms: *Staphylococci, Streptococci, Haemophilus influenzae,* L-forms, *Mycoplasma pneumoniae, Legionella pneumophila, Branhamella catarrhalis, Bordetella pertussis, Corynebacterium diphtheriae* (as an adjunct to antitoxin), *Neisseria, Treponema pallidum, Chlamydia trachomatis, Clostridia, Ureaplasma urealytica, Camplyobacter.*

The product must be reconstituted (step 1) and then further diluted (step 2) prior to administration.
Preparation of 1 g dose for intermittent infusion:

STEP 1	**STEP 2**
	
Add 20 ml Water for Injections Ph. Eur. to the 1 g vial. No other solvent apart from Water for Injections Ph.Eur should be used to prepare this initial solution.	Add 20 ml of Step 1 solution to 200-250 ml of 0.9% Sodium Chloride Intravenous Infusion BP. The resulting diluted solution contains 5 mg/ml – 4 mg/ml of erythromycin.

When administering the product by intermittent infusion do not use solution strengths greater than 5 mg/ml and do not use rapid infusion rates – failure to observe these precautions may result in pain along the vein.

For continuous infusion of 1 gram dose:
Add 20 ml of Step 1 solution to 500 ml - 1,000 ml of 0.9% Sodium Chloride Intravenous Infusion B.P. The resulting diluted solution contains 2 mg/ml - 1 mg/ml of erythromycin.

Alternative Step 2 diluents:
Compound Sodium Lactate Intravenous Infusion B.P. (Hartmann's Solution).
Solutions containing glucose may also be used but sodium bicarbonate must first be added as a buffer to ensure neutrality.
5 ml of sterile 8.4% w/v sodium bicarbonate solution will neutralise one litre of:
5% Glucose Intravenous Infusion BP or 0.18% Sodium Chloride and 4% Glucose Intravenous Infusion BP.
The stability of solutions of Erythromycin Lactobionate is adversely affected

below pH 5.5.

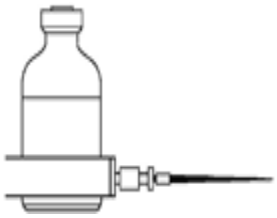
For continuous infusion of 1 gram dose:
Add 20 ml of Step 1 solution to 500 ml - 1,000 ml of 0.9% Sodium Chloride Intravenous Infusion B.P. The resulting diluted solution contains 2 mg/ml - 1 mg/ml of erythromycin.

Once reconstituted, use immediately and discard any remainder of the contents.
As rapid infusion is more likely to be associated with arrhythmias or hypotension, it is recommended that erythromycin IV is given over a minimum of 60 minutes. A longer period of infusion should be used in patients with risk factors or previous evidence of arrhythmias.

Dosage
Adults: 2-4 g daily in divided doses.
Children: 25 mg/kg/day. In cases of severe infection, this may be increased to 50 mg/kg/day.

Prescribing Information

Erythrocin I.V. Lactobionate: 1 g erythromycin per vial.
Indications: prophylaxis and therapy of diseases caused by organisms sensitive to erythromycin.
Dose: Adults and children: mild to moderate infections 25 mg/kg/day; this may be given in divided doses.
In cases of severe indications the dose may be increased up to 50 mg/kg/day. For adults this is equivalent to: 2 g per day for mild to moderate infections, 4 g per day for severe infections.



Contraindications: sensitivity to erythromycin. Concurrent astemizole or terfenadine. Concurrent ergotamine or dihydroergotamine. Erythromycin should not be given to patients with a history of QT prolongation (congenital or documented acquired QT prolongation) or ventricular cardiac arrhythmia, including torsades de pointes. Erythromycin should not be given to patients with electrolyte disturbances (hypokalaemia, hypomagnesaemia due to the risk of prolongation of QT interval). Concurrent HMG-CoA reductase inhibitors (statins) that are extensively metabolized by CYP3A4 (lovastatin or simvastatin). Concurrent administration of domperidone. Administration via I.M. or I.V. Bolus.

Side Effects: The following have been reported: diarrhoea, nausea, vomiting, abdominal pain, reversible hearing loss associated with doses usually greater than 4 g per day, mild allergic reactions, rarely anaphylaxis. There are rare reports of damage to the blood, kidneys, liver or central nervous system. Incidences of Cardiac arrest, ventricular fibrillation, visual impairment and rhabdomyolysis have also been reported.

Precautions: Impaired liver function. Infrequently, hepatic dysfunction including increased liver enzymes and/or cholestatic hepatitis, with or without jaundice. Pseudomembranous colitis has been reported. Clostridium difficile-associated diarrhoea (CDAD) has been reported with use of nearly all antibacterial agents including erythromycin. Aggravation of myasthenia gravis. Overgrowth of non-susceptible bacteria or fungi. There have been reports of infantile hypertrophic pyloric stenosis (IHPS) occurring in infants following erythromycin therapy. Epidemiological studies including data from meta-analyses suggest a 2-3-fold increase in the risk of IHPS following exposure to erythromycin in infancy. This risk is highest following exposure to erythromycin during the first 14 days of life. Available data suggests a risk of 2.6% (95% CI: 1.5 -4.2%) following exposure to erythromycin during this time period. The risk of IHPS in the general population is 0.1-0.2%. There is a risk of developing visual impairments after exposure to erythromycin. Erythromycin has been reported to increase concentrations of HMG-CoA reductase inhibitors (statins). Erythromycin interferes with the fluorometric determination of urinary catecholamines.Prolongation of the QT interval, reflecting effects on cardiac repolarisation imparting a risk of developing cardiac arrhythmia and torsades de pointes, have been seen in patients treated with macrolides including erythromycin. Erythromycin should be used with caution in the following: Patients with coronary artery disease, severe cardiac insufficiency, conduction disturbances or clinically relevant bradycardia. Patients concomitantly taking other medicinal products associated with QT prolongation. Epidemiological studies investigating the risk of adverse cardiovascular outcomes with macrolides have shown variable results. Some observational studies have identified a rare short term risk of arrhythmia, myocardial infarction and cardiovascular mortality associated with macrolides including erythromycin. Consideration of these findings should be balanced with treatment benefits when prescribing erythromycin. Potentiation of drugs metabolised by the cytochrome P450 system.

Product Authorisation Number: PA 1142/8/1

Further Information: Contains no sodium.

Legal Category POM

Marketed by:
Amdipharm Limited,
Temple Chambers,
3 Burlington Road,
Dublin 4, Ireland.