Esmolol belongs to a group of medicines called “beta-blockers”. It works by controlling the speed and force of your heartbeat. Esmolol also helps in reducing your blood pressure.

It is used for the treatment of

- Problems with heartbeats, when your heart works too fast.
- Problems with heart rate, and high blood pressure during or immediately after surgery.

Warning and precautions

Do not take esmolol:

- If you are allergic (hypersensitive) to esmolol, others "beta-blockers" or any of the other ingredients. Signs of an allergic reaction include shortness of breath and wheezing, hives, itching or swelling of your face and lips.
- If you have a very slow heart rate (less than 50 beats per minute).
- If you have rapid or alternately accelerated and slowed heart rate.
- If you have a condition called "heavy heart block". Heart block is a problem with implementation of electrical impulses that control your heart rate.
- If you have a problem with the blood supply to your heart.
- If you have symptoms of severe heart failure.
- If you are receiving or have recently received the medicine verapamil. You may not get esmolol within 48 hours after discontinuation of using verapamil.
• If you have pheochromocytoma (tumor of the adrenal gland) which is not treated. Pheochromocytoma is tumor of the adrenal gland and can cause a sudden increase in blood pressure, severe headache, sweating and rapid heart rate.
• If you have low blood pressure.
• If you have high blood pressure in the lungs (pulmonary hypertension).
• If you have asthma symptoms that can rapidly deteriorate.
• If you have increased levels of acid in the body (metabolic acidosis).

Do not take esmolol if any of the above applies to you. If you are not sure do you have any of these conditions, ask your doctor or pharmacist before taking esmolol. Your doctor will be especially careful when applying the medicine esmolol:

• If you are taking medication to treat heart rhythm disorders such as supraventricular arrhythmia and:
  • Have other problems with heart or
  • You are taking other medicines for heart

The medicine esmolol in such cases can lead to severe reactions that may be fatal, including:

• Loss of consciousness.
• Shock (when your heart does not pump enough blood).
• Heart attack (cardiac arrest).
• If there is a reduction in blood pressure (hypotension). Symptoms of low blood pressure may be dizziness or fainting, especially when standing up. A low pressure is usually repaired within 30 minutes after discontinuation of the medicine esmolol.
• If you have a slow heart rate before treatment.
• If your heart rate is less than 50 to 55 beats per minute. In this case, the physician can give you a lower dose or interrupt treatment with esmolol.
• If you have heart failure.
• If you have a problem with the implementation of the electrical impulses that control the heart rate of your heart (heart block).
• If you have pheochromocytoma (tumor of the adrenal gland) which is treated with medicines that are called alpha receptor blockers.
• If you are taking medications to treat high blood pressure (hypertension), which is a consequence of reduced body temperature (hypothermia).
• If you have a narrowing of the airways or wheezing or asthma.
• If you have diabetes or low blood sugar. Esmolol may increase the effect of your medication for diabetes.
• If occurs skin problems. They may be caused by pouring the solution around the injection sites. If this happens, your doctor will choose another vein for the injection.
• If you have a special type of angina (chest pain), entitled "Prinzmetal's angina".
• If you have low blood volume (low pressure). Then easily may develop circulatory collapse.
• If you have circulation problems, such as pallor of fingers (Raynaud's disease), or pain, fatigue and occasional burning pain in the legs.
• If you have kidney problems. If you have kidney disease or require dialysis may be associated with elevated levels of potassium in the blood which may result in serious heart problems.
• If you have any allergies or risk of an anaphylactic reaction (severe allergic reaction). Esmolol can make allergies more serious and more difficult to treat.
• If you or someone in your family has, in the history of disease, psoriasis (a skin disease characterized by skin lesions).
• If you have a disease called hyperthyroidism (increased thyroid gland).
It is usually not necessary to change the dose if you have liver problems. Check with your doctor, nurse or pharmacist if any of the above apply to you. Perhaps you need to carefully control and you may change medicine.

**Use with other medicines (Interactions)**

Tell your doctor or pharmacist if you are taking or have recently taken any other medicines, including those obtained without a prescription, including herbal remedies and natural products. Your doctor will check you affect any medication you are taking the course of action medicine esmolol. Especially tell your doctor or pharmacist if you are taking any of the following:

- Medicines that lower blood pressure and slowing down heart rate.
- Medicines used for the treatment of cardiac arrhythmias, or chest pain (angina), such as verapamil and diltiazem. Do not take the medicine esmolol within 48 hours of stop taking verapamil.
- Nifedipine, a medicine used to treat chest pain (angina), high blood pressure, and Raynaud's disease
- Medicines used for the treatment of cardiac arrhythmias (such as quinidine, disopyramide, amiodarone), and heart failure (such as digoxin, digitoxin, digitalis).
- Medicines for treating diabetes including insulin and medicines that are taken orally.
- Medicines known as ganglion blocking agents (such as, trimethaphan).
- Medicines used to relieve pain, such as non-steroidal anti-inflammatory medicines (NSAIDs): aspirin, naproxen, ibuprofen, ketoprofen.
- Floctafenine, medication to relieve pain.
- Amisulpride, a medicine for the treatment of mental illness.
- "Tricyclic" anti-depressants (such as imipramine and amitriptyline), or any other medications for mental illness.
- Barbiturates (such as phenobarbital, a medicine used for treating epilepsy) or phenothiazines (such as chlorpromazine, a medicine for the treatment of mental illness).
- Clozapine, a medicine for the treatment of mental illness.
- Epinephrine, a medicine for the treatment of allergic reactions.
- Medicines to treat asthma.
- Medicines to treat colds or stuffy nose, called "decongestant of nasal mucosa" such as pseudoephedrine, phenylephrine
- Reserpine, the medicine used to treat high blood pressure.
- Clonidine, a medicine used for the treatment of high blood pressure and migraine.
- Moxonidine, a medicine used for the treatment of high blood pressure.
- Ergotamine derivatives, medicines that are mainly used for the treatment of Parkinson's disease.
- **Warfarin (a blood thinner).**
- Morphine, which is a powerful painkiller.
- Suxamethonium chloride (also known as succinylcholine), which is used to relax the muscle, usually during the surgical procedure. Your doctor will be especially careful when applying the medicine esmolol during the surgery, when you are going to be under anesthesia and other medications.

Talk to your doctor or pharmacist before you start using esmolol. The application of such medicines as esmolol over a long period can cause weakening the strength of your heart rate. Since esmolol is uses for a limited time, it is unlikely that you will happen this. The course of treatment will be carefully monitored, and the treatment of medicine esmolol will be reduced or canceled if the power of your heart rate is reduced.
Pregnancy and breast-feeding

Contact your doctor or pharmacist for advice before taking any medicine. Do not take esmolol if you are pregnant or if you think you might be pregnant. Tell your doctor if you are breast-feeding. It is possible that the medicine esmolol is excreted in human milk, and can not be taken if you are breastfeeding.

Dosage and administration

The usual dose

Your doctor will decide how much of the medicine is needed and how long you will be getting the esmolol. Esmolol is not usually used longer than 24 hours.

How to use the esmolol

Esmolol is ready for use. You will get esmolol as slow injection (infusion) through a needle into a vein in the arm. Esmolol should not be mixed with sodium bicarbonate or other medicines. You will get esmolol into two phases:

First stage

You will get a large dose of the medicine for one minute. This will rapidly increase the level of the medicine in the blood.

Second stage

You will get a lower dose over four minutes. First and second stage can be repeated and adjusted according to your heart response. When it comes to improving that will cancel the first phase (large dose), a second phase (low dose) will be reduced if it is needed. After reaching steady state, the doctor may give you another medicine for the heart, while the dose of esmolol is gradually reduced. If you speed up the heart rate and blood pressure increase during surgery or immediately after recovery from surgery, you will receive a higher dose of the esmolol for a short period.

Elderly

Your doctor will start treating with a lower dose.

Children

Children under the age of 18 years should not take esmolol.

If you stop taking esmolol

Abrupt discontinuation of study medicine Brevibloc may lead to recurrence of the acceleration of the heart rate (tachycardia), and an increase in pressure (hypertension). In order to avoid this, your doctor will gradually break esmolol delivery. If you have coronary artery disease (which may
be associated with angina, or heart attack in the history of the disease), your doctor will be especially careful with discontinuation of the medicine esmolol.

If you think that is forgotten dose of esmolol

Since esmolol will provide trained medical staff, it is unlikely that you will missed dose. However, if you think you have missed a dose, tell your doctor, medical nurse or pharmacist as soon as possible.

Overdose

Since esmolol will provide trained medical staff, it is unlikely that you will receive too much of the medicine. However, if this happens, your doctor will stop the esmolol delivery and, if necessary, give you additional medication. If you have any further questions on the use of this medicine, ask your doctor or pharmacist.

Side effects

There are reported the following side effects:

**Very common (affects more than 1 in 10 people)**

- Drop in blood pressure. It can quickly be corrected by reducing the dose or discontinuation of esmolol treatment. The course of treatment will often be measured blood pressure.
- Excessive sweating.

**Common (affects less than 1 in 10 people)**

- Loss of appetite.
- Anxiety or depression.
- Dizziness.
- Feeling sleepy.
- Headache.
- Tingling or “pins and needles”.
- Difficulty concentrating.
- Distraction or disturbance.
- Nausea and vomiting.
- Malaise.
- General fatigue.
- Irritation or hardening of the skin at the site of injection of esmolol.

**Uncommon (affects less than 1 in 100 people)**

- Abnormal thoughts.
- Sudden loss of consciousness.
- Feeling of faintness or dizziness.
- Convulsions (seizures or convulsions).
- Problems with speech.
- Vision problems.
- Slowed heart rate.
- Problems with the implementation of the electrical impulses that control your heart rate.
- Increased pressure in the pulmonary arteries.
- Inability of the heart to pump enough blood (*heart failure*).
- Heart rhythm disorder known as palpitations.
- Arrhythmia.
- Chest pain due to poor blood flow in the blood vessels of the heart muscle (*angina pectoris*).
- Poor circulation in the hands or feet.
- Pallor or flush.
- Fluid in the lungs.
- Shortening of breath or tightness in the chest leading to shortness of breath.
- Wheezing.
- Stuffy nose.
- Abnormal auscultatory findings on lung.
- Changes in sense of taste.
- Disturbed digestion.
- Constipation.
- Dry mouth.
- Abdominal pain.
- Changes in skin color.
- Redness.
- Pain in the muscles or tendons, including those around the shoulder blades and ribs.
- Problems with urinating (*urinary retention*).
- Feeling cold or high temperature (*fever*).
- Pain and swelling (*edema*) in the vein which is injected esmolol.
- Burning sensation or bruising at the injection site.

### Very rare (affects less than 1 in 10 000 people)

- Seriously slowing the heart rhythm (*sinus arrest*).
- State without the electrical activity of the heart (*asystole*).
- Sensitivity of blood vessels accompanied by the appearance of hot red skin (*thrombophlebitis*).
- Withering away of the skin caused by pouring the solution around the injection site.

### Unknown (unknown number of people affected)

- Increased levels of potassium in the blood.
- Increased levels of acid in the body (*metabolic acidosis*).
- Increased velocity of cardiac contraction (*accelerated idioventricular rhythm*).
- Spasm of the coronary arteries.
- Normal renal blood flow (*cardiac arrest*, ie.*heart failure*).
- Psoriasis.
- Swelling of face, lips, tongue or throat (*angioedema*).
- Hives (*urticaria*).
- Phlebitis or blistering at the site of infusion.