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Lemtrada (*alemtuzumab*)

An overview of Lemtrada and why it is authorised in the EU

What is Lemtrada and what is it used for?

Lemtrada is a medicine that is used to treat adults with relapsing-remitting multiple sclerosis (MS), a disease in which inflammation damages the protective insulation around nerves as well as the nerves themselves. 'Relapsing-remitting' means that the patient has attacks (relapses) between periods with few or no symptoms (remissions).

Lemtrada is used for patients with:

- disease that is highly active, even though they have been treated with a disease-modifying therapy;
- rapidly worsening, severe disease, who have had 2 or more relapses in one year and whose brain scans show certain brain lesions.

Lemtrada contains the active substance alemtuzumab.

How is Lemtrada used?

Lemtrada can only be obtained with a prescription. Treatment should only be started and supervised by a neurologist experienced in treating MS. It should be given in a hospital with access to intensive care, as well as equipment and specialist staff for managing serious reactions and side effects that can occur with Lemtrada. Patients should receive certain medicines before or during treatment to reduce the side effects.

Lemtrada is given as an infusion (drip) into a vein over about 4 hours. It is initially given in two courses of treatment: a first course of 12 mg daily for 5 days, followed 12 months later by a second course of 12 mg daily for 3 days. Up to two additional courses, each of 12 mg daily for 3 days, can be given at 12-month intervals.

For more information about using Lemtrada, see the package leaflet or contact your doctor or pharmacist.

Official address Domenico Scarlattilaan 6 ● 1083 HS Amsterdam ● The Netherlands
Address for visits and deliveries Refer to www.ema.europa.eu/how-to-find-us
Send us a question Go to www.ema.europa.eu/contact **Telephone** +31 (0)88 781 6000 An agency of the European Union

How does Lemtrada work?

In MS, the immune system (the body's natural defences) malfunctions and attacks parts of the central nervous system (the brain, spinal cord and optic nerve [nerve that sends signals from the eye to the brain]), causing inflammation that damages the nerves and the insulation around them. The active substance in Lemtrada, alemtuzumab, is a type of protein called a monoclonal antibody that has been designed to attach to another protein called CD52. CD52 is found on lymphocytes, white blood cells that are part of the immune system. When alemtuzumab attaches to the lymphocytes, it causes them to die, and they are replaced by new lymphocytes. The way alemtuzumab acts in multiple sclerosis is not fully understood, but it is believed that its effect on lymphocytes reduces the immune system's damaging activity.

What benefits of Lemtrada have been shown in studies?

Lemtrada has been studied in two main studies involving 1,421 patients with relapsing-remitting multiple sclerosis. In both studies, Lemtrada was compared with another medicine for multiple sclerosis, interferon beta-1a. The first study involved previously untreated patients, while the second study involved patients whose disease had relapsed despite treatment. In both studies, the main measure of effectiveness was based on the number of relapses the patients had each year and the progression of disability after two years of treatment.

In the first study, the average number of relapses per year in patients given Lemtrada was less than half the number in patients given interferon beta-1a (0.18 versus 0.39), but there was no meaningful effect in terms of progression of disability. In the second study, the average number of relapses per year in patients given Lemtrada was half the number in patients given interferon beta-1a (0.26 versus 0.52), and around 13% of patients given Lemtrada had a sustained progression of disability compared with around 21% of patients given interferon beta-1a.

Patients involved in the two main studies were followed-up for at least four years in an extension study, during which they were given up to two additional doses of Lemtrada, at one-year intervals, if their disease progressed. Over half of patients included in the extension study did not have disease progression and did not need additional Lemtrada infusions. For those patients who needed one or two additional infusions with Lemtrada, the number of relapses was lower, and disability progression was slower, compared with the previous year.

What are the risks associated with Lemtrada?

The most important side effects with Lemtrada are autoimmune conditions (where the body's defence system attacks normal tissue), including thyroid gland disorders, immune thrombocytopenic purpura (a bleeding disorder caused by low blood platelet counts) and kidney damage, as well as low blood cell counts, reactions to the infusion and infections. The most common side effects with Lemtrada (which may affect more than 1 in 5 people) are rash, headache, fever and respiratory tract infections (throat and chest infections). For the full list of side effects of Lemtrada, see the package leaflet.

Lemtrada must not be used in patients with HIV and in patients with severe infections. It must not be used in patients with uncontrolled hypertension (high blood pressure), patients who have had arterial dissection (tears) of the cervicocephalic arteries (blood vessels in the head and neck), stroke, angina pectoris (pains to the chest, jaw and back, brought on by physical effort and due to problems with the blood flow to the heart) or myocardial infarction (heart attack). Lemtrada must not be used in patients with coagulopathy (problems with blood clotting) or in patients who are taking anti-platelet or anti-

coagulant therapy. The medicine must not be used in patients with autoimmune diseases besides MS. For the full list of restrictions, see the package leaflet.

Why is Lemtrada authorised in the EU?

The European Medicines Agency decided that Lemtrada's benefits are greater than its risks and it can be authorised for use in the EU. The Agency considered that studies have shown the benefit for patients with highly active disease and rapidly worsening severe disease. With regards to safety, Lemtrada has rare but serious side effects, including disorders of the heart, blood vessels and immune system and measures have been put in place to minimise this risk.[1]

What measures are being taken to ensure the safe and effective use of Lemtrada?

The company that markets Lemtrada will carry out studies on the safety of the medicine and to assess whether the medicine is used according to the latest recommendations.

The company will ensure that doctors expected to prescribe the medicine receive educational materials containing important safety information, and a checklist covering the necessary screening, medicines to reduce side effects, monitoring before, during and after infusion, and long-term monitoring of patients. Patients will receive a patient alert card and a guide explaining the risks with the medicine and symptoms of Lemtrada's serious side effects.

Recommendations and precautions to be followed by healthcare professionals and patients for the safe and effective use of Lemtrada have also been included in the summary of product characteristics and the package leaflet.

As for all medicines, data on the use of Lemtrada are continuously monitored. Side effects reported with Lemtrada are carefully evaluated and any necessary action taken to protect patients.

Other information about Lemtrada

Lemtrada received a marketing authorisation valid throughout the EU on 12 September 2013.

Further information on Lemtrada can be found on the Agency's website: ema.europa.eu/medicines/human/EPAR/lemtrada

This overview was last updated in 12-2019.

[1] See outcome of safety review carried out in 2019.