READ THIS FOR SAFE AND EFFECTIVE USE OF YOUR MEDICINE
PATIENT MEDICATION INFORMATION

LEMTRADA®
(alemtuzumab)

Read this carefully before you start taking **LEMTRADA** and each time you get a refill. This leaflet is a summary and will not tell you everything about this drug. Talk to your healthcare professional about your medical condition and treatment and ask if there is any new information about **LEMTRADA**.

Keep this leaflet, Patient Guide and the Patient Alert Card. You should read them before starting LEMTRADA, and before each LEMTRADA treatment course

- It is important that you keep the Card with you during treatment and for 48 months after the last dose of LEMTRADA, since side effects may occur even after you have stopped treatment.
- Show your Card and this package leaflet to any doctor involved in your treatment.

Serious Warnings and Precautions

Autoimmune conditions

Serious and fatal autoimmune conditions including immune thrombocytopenic purpura (low platelets) and kidney disease have occurred in patients receiving LEMTRADA (see **Automimmune Side Effects**, below).

Infections

Serious viral, bacterial, protozoan, and fungal infections including deaths have been reported in non-MS patients receiving alemtuzumab therapy (MabCampath®) at higher and more frequent doses than used in MS. Progressive multifocal leukoencephalopathy (PML) can occur as the result of a rare and serious brain infection. PML is a viral infection which causes serious illness or death. PML occurs in patients with leukemia with or without MabCampath treatment, and in patients treated with other MS treatments. Your doctor should monitor you for signs or symptoms of this and any infection. (see **Infections**, below)

What is LEMTRADA used for?

LEMTRADA is used to treat relapsing forms of multiple sclerosis (MS) in adults. LEMTRADA is recommended for MS patients who have not responded well to one or more of the other therapies (such as interferon beta) for multiple sclerosis.

Multiple sclerosis is a disease of the central nervous system (brain and spinal cord). In MS your immune system mistakenly attacks the protective layer (myelin) around the nerve fibres of your central nervous system, causing inflammation. When the inflammation causes you to have symptoms this is often called a “relapse” or “attack”. In Relapsing Remitting MS (RRMS) patients experience relapses followed by periods of recovery.

The symptoms you experience depend on which part of your central nervous system is affected. The damage done to your nerves during this inflammation may be reversible, but as your disease progresses the damage may build up and become permanent.

How does LEMTRADA work?
LEMTRADA is a monoclonal antibody. Monoclonal antibodies are proteins which bind to a unique site (called an antigen) on cells. LEMTRADA binds to an antigen, called CD52, which is present at high levels on certain cells of your immune system. LEMTRADA works on your immune system so that it may not attack your nervous system as much.

What are the ingredients in LEMTRADA?
Medicinal ingredients: alemtuzumab
Non-medicinal ingredients: dibasic sodium phosphate,disodium edetate dehydrate, potassium chloride, potassium dihydrogen phosphate, polysorbate 80, sodium chloride, water for injection.

LEMTRADA comes in the following dosage forms:
LEMTRADA is provided as a concentrate solution that must be diluted prior to intravenous infusion. It is supplied in single-use vials containing 12 mg of alemtuzumab in 1.2 mL of sterile, preservative-free solution.

Do not use LEMTRADA if you:
- An allergy to alemtuzumab or any of the other ingredients of LEMTRADA (see above for a list of important non-medicinal ingredients).
- Human Immunodeficiency Virus (HIV).
- Tuberculosis.
- Severe active infections.
- An active cancer.
- Have or had a type of rare infection of the brain called progressive multifocal leukoencephalopathy (PML).
- Or if you are using medications that weaken your immune system.

To help avoid side effects and ensure proper use, talk to your healthcare professional before you take LEMTRADA. Talk about any health conditions or problems you may have, including if you:
- Are taking a medicine called MabCampath®.
- Have bleeding problems.
- Have thyroid problems.
- Have kidney problems.
- Have a recent history of infection, including tuberculosis.
- Have been vaccinated within 6 weeks before receiving a treatment course of LEMTRADA. After your treatment course with LEMTRADA, consult your doctor if you wish to be vaccinated. Your doctor will determine if it is safe for you to do so.
- Are pregnant or could become pregnant.
- Are breast-feeding or plan to breast-feed.

- Have or had cancer.

Other warnings you should know about:

Pregnancy
If you think you may be pregnant or are planning to have a baby, ask your doctor for advice before taking this medicine. LEMTRADA is not recommended in pregnant women. Woman who could become pregnant should use effective contraceptive methods during treatment with LEMTRADA and for 4 months after each course of treatment.

If you become pregnant after treatment with LEMTRADA and experience thyroid problems during pregnancy, extra caution is needed. Thyroid problems could be harmful to the baby (see **Autoimmune Side Effects**, below).

Breastfeeding
It is unknown if LEMTRADA can be transferred to a baby through breast milk, but there could be a risk. You should not breast-feed during each course of treatment with LEMTRADA or for 4 months after each treatment course.

LEMTRADA can cause serious side effects including:

Autoimmune side effects
Your body's immune system contains substances called antibodies that help fight infections. Autoimmune side effects are illnesses that occur when the body makes antibodies against itself. LEMTRADA may cause your body to develop antibodies that target certain organs, such as your thyroid. These antibodies may lead to development of autoimmune side effects such as immune thrombocytopenic purpura (ITP, or low platelets), thyroid disorders, or, in rare cases, kidney diseases. No one can predict who will develop an autoimmune side effect. Getting blood tests and knowing the symptoms can help with early diagnosis.

- ***Immune thrombocytopenic purpura (ITP, or low platelets)***: LEMTRADA may cause a condition known as ITP, which results in a decrease in the number of platelets in the blood. Platelets are necessary for normal blood clotting. ITP can cause severe bleeding that, if untreated, may lead to serious health complications and possibly death. If detected early, ITP is usually treatable. Your doctor will order a blood test before starting LEMTRADA and on a monthly basis after your initial treatment course, and continuing for 4 years after your last LEMTRADA infusion. This blood test will help your doctor watch for changes in your platelet count in order to catch this side effect early. Importantly, ITP may also be detected by certain symptoms that you need to know (see "**Serious Side Effects and What to Do About Them"**, below). Call your doctor immediately if you have any of these signs or symptoms. If you cannot reach your doctor seek immediate medical attention.

- ***Thyroid disorders:*** The thyroid is a gland found in the front of the neck. This gland produces hormones that are important throughout your body. LEMTRADA may cause development of thyroid disorders, including an overactive or underactive thyroid gland. Thyroid disorders are generally treatable, though they may require lifelong treatment. Bulging of the eyes may occur

with an overactive thyroid. Your doctor will order a blood test before starting LEMTRADA and every 3 months after your initial treatment course, and continuing for 4 years after your last LEMTRADA infusion. This blood test will help your healthcare provider detect thyroid disease early. See "**Serious Side Effects and What to Do About Them"**, below for signs and symptoms of thyroid disorders you should be aware of and what to do should they occur. Call your doctor if you have any of these signs or symptoms.

Talk to your doctor if you are considering becoming pregnant or if you become pregnant after receiving LEMTRADA, as untreated thyroid disease may cause harm to you or your developing baby.

- ***Kidney diseases***: LEMTRADA may cause a condition known as anti-glomerular basement membrane disease. Anti-glomerular basement membrane disease is an autoimmune side effect that can result in severe damage to the kidneys. It can also damage the lungs, although this was not seen in clinical trials with LEMTRADA. If untreated, anti-glomerular basement membrane disease can cause kidney failure requiring chronic dialysis or transplant and may lead to death. Your healthcare provider will order a blood test and urine test before starting LEMTRADA and on a monthly basis after your initial treatment course, and continuing for 4 years after your last LEMTRADA infusion. Both of these tests will help your doctor watch for signs of kidney disease to help catch this side effect early. See "**Serious Side Effects and What to Do About Them"**, below for signs and symptoms of anti-glomerular basement membrane disease you should be aware of and what to do should they occur. If untreated it can cause kidney failure requiring dialysis or transplantation, and may lead to death. Call your doctor immediately if you have any of these signs or symptoms. If you cannot reach your doctor seek immediate medical attention.

- ***Other autoimmune conditions***
  Very rarely, patients have experienced autoimmune conditions with **the red blood cells or white blood cells**. This can be diagnosed from the blood checks that you will be having after LEMTRADA treatment. If you develop one of these conditions your doctor will take appropriate measures to treat it.

Serious infections
LEMTRADA is a medicine that lowers the number of some white blood cells in your blood for a period of time after treatment. These white blood cells generally return to normal levels over time. People with decreased white blood cells may have an increased risk for developing serious infections.

Serious infections may occur if you take LEMTRADA. See "**Serious Side Effects and What to Do About Them"**, below for signs and symptoms of serious infections you should be aware of and what to do should they occur.

You may need to go to the hospital for treatment if you develop a serious infection. It is important to tell the emergency personnel that you have received LEMTRADA.
If you have signs or symptoms of an active infection, it is important that you tell your healthcare

provider.

Infusion reactions
Most patients treated with LEMTRADA will experience side-effects at the time of the infusion or within 24 hours after the infusion. These reactions are described in "**Side Effects and What to Do About Them**" below.

Most infusion reactions are mild but some serious reactions are possible such as fever, hives, irregular heartbeat, nausea, chest discomfort or low blood pressure. Occasionally allergic reactions are possible.

To reduce these effects, your doctor will give you medication (corticosteroids) before the first 3 infusions of a treatment course. Other treatments to limit these reactions can also be given before the infusion or when you experience symptoms. In addition, you will be observed during the infusion and for at least 2 hours after the infusion has been completed in the clinic. You should know the symptoms of infusion reactions and keep checking for them for at least the first 24 hours after each LEMTRADA infusion. In case of serious reactions, it is possible that the infusion may be slowed down or even stopped.

Tell your healthcare professional about all the medicines you take, including any drugs, vitamins, minerals, natural supplements or alternative medicines.

The following may interact with LEMTRADA:

Interactions between LEMTRADA and other drugs have not been studied. Tell your doctor if you are taking, have recently taken, or might take any other medications, including vaccinations or medications taken without a prescription, such as vitamins and herbal medicines.

Besides LEMTRADA, there are other treatments (including those for MS, or to treat other conditions) which could affect your immune system and so could affect your ability to fight infections. If you have used another MS treatment in the past, your doctor may ask you to stop the other medicine in advance of starting treatment with LEMTRADA.

The safety of immunization with any vaccine, particularly live viral vaccines, following therapy with LEMTRADA has not been studied. It is unknown if LEMTRADA affects your ability to raise a response to a vaccine. If you have not completed the standard required vaccinations, your doctor will consider whether you should have them before your LEMTRADA treatment. In particular, your doctor will consider vaccinating you against chicken-pox. Any vaccination will need to be given to you at least 6 weeks prior to starting a LEMTRADA treatment course.

You must not receive live viral vaccines if you have recently received LEMTRADA.

How to take LEMTRADA:
LEMTRADA can only be prescribed by a doctor who is trained in treating neurological conditions. LEMTRADA will be prepared and given to you by a healthcare professional.

Usual dose:
LEMTRADA will be given to you as an infusion into a vein. Each infusion will take approximately 4 hours. For the first treatment course you will receive one infusion per day for 5 days (course 1). One year later you will receive one infusion per day for 3 days (course 2). Each infusion delivers 12 mg of LEMTRADA. There is no LEMTRADA treatment between the two courses.

Your doctor will order blood and urine tests, and an EKG before starting LEMTRADA. Blood and urine tests will continue for 4 years after your last LEMTRADA infusion. It is important to get this testing done according to the recommended schedule, in order for your healthcare provider to watch for signs of autoimmune side effects so that treatment can occur quickly, if needed.

Overdose:

If you think you have taken too much LEMTRADA, contact your healthcare professional, hospital emergency department or regional Poison Control Centre immediately, even if there are no symptoms.

Missed Dose:
If you miss a dose, consult with your doctor. More than one dose should not be given on the same day.

What are possible side effects from using LEMTRADA?

These are not all the possible side effects you may feel when taking LEMTRADA. If you experience any side effects not listed here, contact your healthcare professional. Please also see Warnings and Precautions.

Like all medicines, LEMTRADA can cause side effects.

Very common side effects (reported in at least 1 of every 10 patients in clinical trials) which often occur during or shortly after a single infusion or treatment course include:
- Headache, dizziness
- Rash, hives, itching
- Fever
- Nausea, vomiting
- Difficulty sleeping

Other very common side effects (reported in at least 1 of every 10 patients in clinical trials) experienced after a LEMTRADA treatment course include:

- Back pain, joint pain, pain in arms or legs
- Upper respiratory tract infection/cough, cold
- Urinary tract infection
- Chills
- Sore throat or mouth pain
- Feeling tired
- Bruising
- Tingling sensation
- Diarrhea

Other common side effects (reported between 5 and 10 of every 100 patients in clinical trials) include:

- Decrease of white blood cells (lymphocytes)
- Fast or irregular heartbeat (palpitations), chest discomfort
- Indigestion (heartburn), stomach pain, constipation
- Flu, flu-like illness
- Muscular pain, muscular weakness, muscle spasms, neck pain
- Swelling of the arms and/or legs
- Weakness
- Oral herpes
- Altered taste, numbness, blurred vision
- Depression, anxiety
- Cough, difficulty breathing or shortness of breath
- Bronchitis
- Body rash, redness of the skin
- Reddening of the face and neck
- Under-active thyroid gland
- Nose bleeds

LEMTRADA may cause serious side effects, including autoimmune side effects and serious infections.

Serious side effects and what to do about them			
Symptom / effect		**Talk with your doctor immediately. If you cannot reach your doctor seek immediate medical attention.**	
		Only if severe	**In all cases**
Very Common **(occurring in at least 1 of every 10 patients)**	**Thyroid disorders: Symptoms including:** • Excessive sweating • Unexplained weight loss • Eye swelling • Nervousness • Fast heartbeat • Unexplained weight gain, • Feeling cold • Worsening tiredness • Constipation		√
Common (occurring between 1 and 10 of every 100 patients)	**Immune thrombocytopenic purpura (ITP): Symptoms , including:** • Easy bruising • Bleeding from a cut that is hard to stop • Heavier menstrual periods than normal • Bleeding from your gums or nose • Small, scattered spots on your skin that are red, pink, or purple		√
Uncommon (occurring between 1 and 10 of every 1000 patients)	**Kidney disease: Symptoms including:** • Blood in urine (red or tea-colored urine) • Swelling in your legs or feet • Coughing up blood		√

Serious side effects and what to do about them			
Symptom / effect		**Talk with your doctor immediately. If you cannot reach your doctor seek immediate medical attention.**	
		Only if severe	**In all cases**
Common (occurring between 1 and 10 of every 100 patients)	**Serious infections:** **Symptoms including:** • Fever • Chills • Swollen glands		√
Unknown* (Symptoms experienced during Post-Marketing)	**Pneumonitis (swelling of lung tissue)** **Symptoms including:** • shortness of breath • cough • wheezing • chest pain or tightness • coughing or spitting up blood		√

*Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequencies.

If you have a troublesome symptom or side effect that is not listed here or becomes bad enough to interfere with your daily activities, talk to your healthcare professional.

Reporting Side Effects
You can help improve the safe use of health products for Canadians by reporting serious and unexpected side effects to Health Canada. Your report may help to identify new side effects and change the product safety information.
3 ways to report:

- Online at MedEffect;
- By calling 1-866-234-2345 (toll-free);
- By completing a Consumer Side Effect Reporting Form and sending it by:
  - Fax to 1-866-678-6789 (toll-free), or
  - Mail to: Canada Vigilance Program
    Health Canada, Postal Locator 0701E
    Ottawa, ON
    K1A 0K9

    Postage paid labels and the Consumer Side Effect Reporting Form are available at MedEffect.

NOTE: Contact your health professional if you need information about how to manage your side effects. The Canada Vigilance Program does not provide medical advice.

Storage:
LEMTRADA must be refrigerated (2º to 8ºC) and protected from light. Do not freeze or shake. Do not use after the expiration date on the vial and outer carton.

LEMTRADA contains no preservatives. LEMTRADA should be used within 8 hours after dilution. During that time, the diluted solution may be stored at room temperature (15º to 25ºC) or in a refrigerator (2º to 8ºC), and must be protected from light.

Keep out of reach and sight of children.

If you want more information about LEMTRADA:

- Talk to your healthcare professional
- Find the full product monograph that is prepared for healthcare professionals and includes this Patient Medication Information by visiting the Health Canada website; the manufacturer's website at http://www.sanofigenzyme.ca, or by contacting the sponsor, Sanofi Genzyme, a division of sanofi-aventis Canada Inc. at:1-855-671-2663

This leaflet was prepared by Sanofi Genzyme, a division of sanofi-aventis Canada Inc.

Last Revised July 26, 2017