

LEMTRADA▼
alemtuzumab^{12mg}_{iv}

Patient Guide to **LEMTRADA**▼ **(alemtuzumab)** Important safety information you should know when starting therapy with alemtuzumab

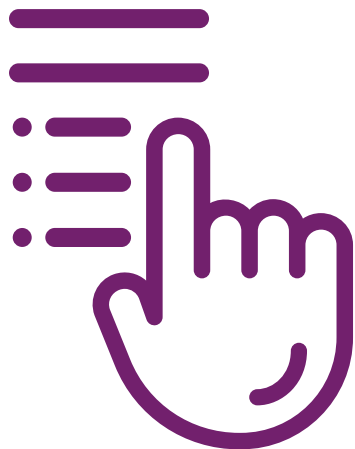
**This Guide is to be carefully reviewed with your
doctor when you're first prescribed alemtuzumab
and on a regular basis at follow-up visits**

▼ This medicine is subject to additional monitoring. This will allow quick identification of new safety information. You can help by reporting any side effects you may get.

If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in the Patient Information Leaflet. You can also report side effects directly to HPRA Pharmacovigilance, website www.hpra.ie

By reporting side effects you can help provide more information on the safety of this medicine. Side effects should also be reported to Sanofi: Tel: 01 403 5600 e-mail to: IEPharmacovigilance@sanofi.com

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How to reach your doctors

If you have any enquiries or wish to request extra copies of any of these materials please contact medical information:

Telephone: 01 403 5600

Email: LEmedinfo@sanofi.com

Additionally, electronic versions of these materials are available to download on the following website:

<https://www.hpra.ie/homepage/medicines/safety-information/educational-material>

Executive summary

A guide to your alemtuzumab infusions for treating relapsing remitting multiple sclerosis (MS).

This is an abbreviated guide. This guide is not intended to replace the Patient Information Leaflet or discussions you have with your doctor or other healthcare professionals who are treating you with alemtuzumab.



Alemtuzumab is a prescription medicine used to treat adults with relapsing remitting multiple sclerosis (MS). Alemtuzumab can only be used in patients with highly active disease, despite treatment with at least one disease modifying therapy, or in patients with rapidly evolving severe MS.

Receiving alemtuzumab can put you at risk of experiencing serious side effects that may occur within 1–3 days of infusion, or later, or delayed autoimmune side effects which can occur months to years after infusion.

Early identification of these side effects is vital, because a delay in diagnosis and treatment can increase the risk of complications. This is why it's so important to remain vigilant and immediately report any signs or symptoms of these conditions to your doctor.

It is also important to inform your relatives or caregivers about your treatment, since they may notice symptoms that you are not aware of.

See the following tables for a summary of signs and symptoms to look out for.

Serious infections

Side effect	Signs and symptoms to watch for
Serious infections	<ul style="list-style-type: none">• Fever, chills, fatigue, shortness of breath, cough, wheezing, chest pain or tightness, coughing up blood, swollen glands.
Brain infection (Progressive Multifocal Leukoencephalopathy [PML])	<ul style="list-style-type: none">• Progressive weakness or clumsiness of limbs, disturbance of vision, speech difficulties or changes in thinking, memory, and orientation leading to confusion and personality changes.

Serious side effects occurring shortly after alemtuzumab infusion

Possible side effects:
<ul style="list-style-type: none">• Heart attack• Bleeding in the lung• Stroke• Tears in blood vessels supplying the brain• Thrombocytopenia (low platelets in blood)
Signs and symptoms to look out for (on their own, or a combination):
<ul style="list-style-type: none">• Shortness of breath, chest pain or discomfort• Sudden severe headache• Pain or discomfort in arms, jaws, neck, back or stomach• Feeling dizzy or lightheaded• Nausea• Sweating• Coughing blood• Sudden onset of drooping parts of the face, weakness on one side, difficulty with speech• Easy bruising or bleeding

Delayed autoimmune side effects

Side effect	Signs and symptoms to watch for
Thyroid disorders	<ul style="list-style-type: none"> • Hyperthyroidism (overactive thyroid gland): Excessive sweating, unexplained weight loss, eye swelling, nervousness, fast heartbeat • Hypothyroidism (underactive thyroid gland): Feeling cold, unexplained weight gain, worsening tiredness, newly occurring constipation
Immune thrombocytopenia purpura (ITP) (bleeding disorder)	<ul style="list-style-type: none"> • Small scattered spots on your skin that are red, pink or purple, easy bruising, bleeding from a cut that is harder to stop than usual, heavier, longer or more frequent menstrual periods than normal, bleeding between your menstrual periods, bleeding from your gums or nose that is new or takes longer than usual to stop, coughing up blood
Kidney problems, including nephropathies such as anti-Glomerular Basement Membrane disease (anti-GBM)	<ul style="list-style-type: none"> • Blood in urine, swelling in legs and/or feet, coughing up blood
Autoimmune hepatitis (liver inflammation)	<ul style="list-style-type: none"> • Unexplained nausea, vomiting, abdominal pain and/or swelling, fatigue, loss of appetite, yellowing of skin and/or eyes and/or dark coloured urine, bleeding or bruising more easily than normal
Haemophagocytic lymphohistiocytosis (HLH) (excessive activation of white blood cells associated with inflammation)	<ul style="list-style-type: none"> • Unexplained high fever, swollen lymph nodes, yellow skin, skin rash
Acquired haemophilia A (bleeding disorder)	<ul style="list-style-type: none"> • Spontaneous bruising, nose bleeds, painful or swollen joints, other types of bleeding, bleeding from a cut that may take longer than usual to stop
Thrombotic Thrombocytopenic purpura (TTP) (blood clotting disorder)	<ul style="list-style-type: none"> • Skin or mouth bruising that may appear as red pinpoint dots, with or without unexplained extreme tiredness, fever, confusion, speech changes, yellowing of the skin or eyes (jaundice), low amount of urine, dark coloured urine
Adult onset still's disease (AOSD)	<ul style="list-style-type: none"> • Fever >39°C or 102.2°F lasting more than 1 week, pain, stiffness with or without swelling in multiple joints and/or a skin rash
Autoimmune encephalitis (AIE)	<ul style="list-style-type: none"> • Behavioural and/or psychiatric changes, short term memory loss or seizures, other symptoms which may resemble an MS relapse

To minimise the risk of side effects associated with alemtuzumab, it is advised that you make changes to your diet and complete the recommended vaccination programme in the weeks prior to starting your alemtuzumab treatment. Your doctor will also give you corticosteroids right before the first 3 infusions of each course to reduce your risk of infusion-associated reactions.

You will need to be monitored for side effects for at least 4 years (48 months) after your last alemtuzumab infusion. See the table below for a summary of monitoring tests that are required when you're prescribed with alemtuzumab.

Monitoring requirements

Monitoring test	When?	For how long?
Observation	<ul style="list-style-type: none"> • Immediately after each infusion 	<ul style="list-style-type: none"> • For at least 2 hours. If you start to display signs and/or symptoms of serious side effects, you will be monitored until they are resolved
Electrocardiogram (ECG) and vital signs, including heart rate and blood pressure (BP)	<ul style="list-style-type: none"> • Baseline tests right before infusion • Frequent monitoring of heart rate, BP and overall clinical status at least once every hour during your infusion 	<ul style="list-style-type: none"> • Once before each infusion and at least once every hour for the total duration of infusions
Blood and urine tests	<ul style="list-style-type: none"> • Before treatment starts and once every month after finishing each treatment course 	<ul style="list-style-type: none"> • For at least 48 months after your last alemtuzumab infusion
Platelet count	<ul style="list-style-type: none"> • Immediately after infusion on Day 3 and Day 5 of the first course, and on Day 3 of any subsequent courses 	

Welcome

Your doctor has given you this Patient Guide and a Patient Alert Card to inform you about your current treatment with alemtuzumab.

This guide has been created to support you in identifying the symptoms of the side effects that have been reported with the use of alemtuzumab, as well as outlining the importance of being compliant with testing, vigilant for symptoms and to seek immediate medical attention should they occur.

Side effects may occur shortly after alemtuzumab infusion (within 1–3 days of infusion) or later, and include infections and other serious reactions. Delayed side effects include autoimmune disorders that can develop with a delay of months to years after treatment with alemtuzumab; these are conditions in which your immune system mistakenly attacks your body.

There's also a section in this guide that will help you to understand some of the medical terms used in this document, and a section to keep a note of the contact details of all the doctors you may be seeing for your healthcare. This includes the doctor treating your multiple sclerosis (MS) as well as any other doctor you see on a regular basis.

This Patient Guide is to be carefully reviewed with your doctor when you're first prescribed alemtuzumab and on a regular basis at follow-up visits.

This guide is not intended to replace any discussions you have with your doctor or the Patient Information Leaflet for alemtuzumab which you should still read in full. Make sure you tell your doctor and/or go to hospital if you notice any of the signs or symptoms of side effects described in this guide.

Patient Alert Card

The purpose of your Patient Alert Card is to inform healthcare professionals about your alemtuzumab treatment. **You must carry your Patient Alert Card with you at all times and show it to any member of the medical team involved in your care (including for non-MS conditions) and in the event of a medical emergency.**



Introduction to LEMTRADA



What is alemtuzumab and how does it work?

Alemtuzumab is a prescription medicine used to treat adults with relapsing remitting multiple sclerosis (MS). Alemtuzumab can only be used if your MS is highly active despite being treated with at least one other medicine for MS or if your MS is rapidly evolving. In clinical studies, patients treated with alemtuzumab had fewer relapses and were less likely to experience disability progression and more likely to experience disability improvement compared to patients treated with a beta-interferon injected multiple times per week.

Alemtuzumab adjusts your immune system to limit its attacks on your nervous system. After treatment with alemtuzumab, you may be at risk of developing side effects. It's important that you understand what these risks are and how to monitor for them.

Overview of LEMTRADA treatment



How is alemtuzumab given?

Alemtuzumab is given to you by infusion using a needle through which it will be delivered into your blood stream. Alemtuzumab is given in at least 2 courses of treatment. You will receive the first course for a few hours per day for 5 days in a row. Then, one year later, you will receive the next course for 3 days in a row. Studies have shown that the 2 courses work for most patients for at least 6 years. However, you may need an additional treatment in the years after your initial 2 courses.

You will need to be regularly monitored for side effects for at least 48 months after your last infusion of alemtuzumab (see 'Will I need to have any tests done after treatment with alemtuzumab?')

Do I need to do anything before I can be treated with alemtuzumab?

To make sure alemtuzumab is the right therapy for you, your doctor needs some information. Therefore, you need to inform your doctor about:

- All medicines that you're taking
- If you're suffering from any infection
- If you've been diagnosed with cancer
- If you've been diagnosed with abnormalities of the cervix (the neck of the womb)
- If you're pregnant or plan to become pregnant very soon
- If you're suffering from uncontrolled high blood pressure or other concomitant disorders
- If you've suffered in the past from heart attack or chest pain, tears in blood vessels supplying the brain, stroke, bleeding disorder, or other autoimmune conditions (besides MS)

Your doctor will also carry out checks and offer treatment and advice before starting your infusion course that may help to reduce your risk of infusion-associated reactions and infections after your alemtuzumab treatment. These include:

- Vaccination check
 - If you've not yet done so, you may be advised to complete your local vaccination programme at least 6 weeks before starting treatment
 - You may also be advised to receive additional vaccinations before you start treatment
- Tuberculosis screening
 - If you live in an area where tuberculosis is often seen, your doctor will arrange a screening
- Dietary recommendation
 - To reduce your risk of infections after treatment, your doctor will recommend that you avoid uncooked or undercooked meats, soft cheeses and unpasteurised dairy products two weeks prior to, during and for at least 1 month after your alemtuzumab infusion
- Pre-treatment
 - To reduce your risk of infusion-associated reactions, your doctor will give you corticosteroid treatment before the first 3 infusions of each of your alemtuzumab treatment courses
 - Other treatments to limit these reactions can also be given before infusions
- Vital signs check
 - Your doctor will check your vital signs, including blood pressure and heart rate, before you start your treatment
- Blood and urine tests
 - Will be performed before you start your alemtuzumab treatment

Information about dietary recommendations can be found at:
<https://www.nhs.uk/conditions/listeriosis/>

Will I need to have any tests done after treatment with alemtuzumab?

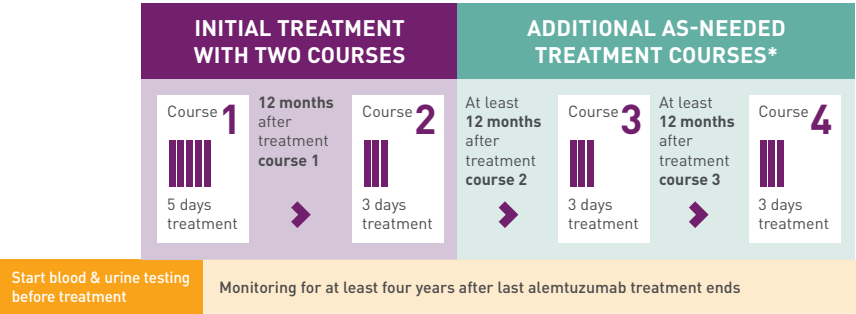
Treatment with alemtuzumab may increase the risk of autoimmune conditions (conditions in which your immune system mistakenly attacks your body). These are delayed side effects which can occur many years after your treatment (described in Section 3 of this guide). You will therefore need to commit to monthly monitoring, undertaking blood and urine tests for at least 48 months after your last alemtuzumab infusion. Your doctor will check the results of these tests to see if you have developed any side effect(s).

It’s very important that you continue to have these checks for at least 48 months after your last course of treatment with alemtuzumab, even if you are feeling well (this means that you have no symptoms of side effects) and your MS symptoms are under control. Side effects can even occur years after your last course of treatment with alemtuzumab, when your monthly checks are no longer required. In some cases, side effects can be life-threatening, so it’s very important that you continue to be checked and keep an eye out for symptoms. By doing so, any problems will most likely be detected early and treatment can start right away.

You and your doctor will work together to make sure that these tests are done, and plan them around your day-to-day life. If you’re a woman, it’s also important to avoid urine testing during your menstrual periods as this may give a false result.

To help you better understand the timescale of possible treatment side effects and the length of required follow-up, see Figure 1 opposite.

Figure 1 – Duration of the effects of treatment and the length of required follow-up



***Note:** A study following patients for 6 years after the first infusion (course 1) has shown that a majority of patients do not need further treatment after the 2 initial treatment courses.

The following table shows you which tests are done, when, and for how long.

Table 1 – Summary of monitoring tests

Monitoring test	When?	For how long?
Observation	<ul style="list-style-type: none"> Immediately after each infusion 	<ul style="list-style-type: none"> For at least 2 hours. If you start to display signs and/or symptoms of serious side effects, you will be monitored until they are resolved
Electrocardiogram (ECG) and vital signs, including heart rate and blood pressure (BP)	<ul style="list-style-type: none"> Baseline tests right before infusion Frequent monitoring of heart rate, BP and overall clinical status at least once every hour during your infusion 	<ul style="list-style-type: none"> Once before each infusion and at least once every hour for the total duration of infusions
Blood and urine tests	<ul style="list-style-type: none"> Before treatment starts and once every month after finishing each treatment course 	<ul style="list-style-type: none"> Monthly, for at least 48 months after your last alemtuzumab infusion
Platelet count	<ul style="list-style-type: none"> Immediately after infusion on Day 3 and Day 5 of the first course, and on Day 3 of any subsequent courses 	

There are tools available to help you plan and remember your monitoring schedule. Refer to ‘Planning your monitoring schedule’.

Side effects



As mentioned earlier in this guide, treatment with alemtuzumab can put you at risk of contracting serious infections, experiencing side effects that mainly occur during or **shortly after the infusion (within 1–3 days)**, or later, or developing delayed side effects that can occur with a delay of months to years after treatment with alemtuzumab.

Potentially serious infusion-associated side effects that usually occur during or **shortly after the** infusion include:

- Heart attack
- Stroke
- Tears in blood vessels supplying the brain
- Bleeding in the lung
- Thrombocytopenia (low platelets in blood)

Delayed side effects that may occur with a delay of months to years after infusion:

- Thyroid disorders
- Immune thrombocytopenic purpura (ITP) (bleeding disorder)
- Kidney problems, including nephropathies such as anti-Glomerular Basement Membrane disease (anti-GBM disease)
- Autoimmune hepatitis (liver inflammation)
- Haemophagocytosis lymphohistiocytosis (HLH) (excessive activation of white blood cells associated with inflammation)
- Acquired haemophilia A (bleeding disorder)
- Thrombotic thrombocytopenic purpura (TTP) (blood clotting disorder)
- Adult onset still's disease (AOSD)
- Autoimmune encephalitis (AIE)

Early identification of these conditions is vital, as delays in diagnosis and treatment increases the risk of complications. This is why it's so important to recognise and immediately report any signs or symptoms of these conditions to your doctor or go to the hospital.

In the following sections, you will learn more about each of these side effects, including the signs and symptoms that you may experience with them and what to do if they happen.

Serious infections

Receiving treatment with alemtuzumab can put you at risk of getting a serious infection. If you develop symptoms of a serious infection such as persistent fever, chills, fatigue or not feeling well, you may have to go to hospital for treatment.

You should also report symptoms like shortness of breath, cough, wheezing, chest pain or tightness and coughing up blood to your doctor, as these may be caused by pneumonitis.

When attending hospital with any symptoms of infection, it's important that you tell doctors that you have received treatment with alemtuzumab.

Make sure you tell your doctor if you are suffering from a serious infection before you start your alemtuzumab treatment. Your doctor should delay the treatment until the infection has been resolved.

Rare brain infection (Progressive multifocal leukoencephalopathy) (PML)

There have been cases of a rare brain infection called PML (progressive multifocal leukoencephalopathy) in patients who have been given alemtuzumab. PML has been reported in patients with other risk factors, specifically prior treatment with MS products associated with PML.

PML symptoms may be similar to a relapse of MS. You should contact your doctor immediately if you develop any symptoms like progressive weakness or clumsiness of limbs, disturbance of vision, speech difficulties or changes in thinking, memory, and orientation leading to confusion and personality changes.

It is important to inform your relatives or caregivers about your treatment, since they may notice symptoms that you are not aware of.

Serious side effects occurring shortly after alemtuzumab infusion

When prescribed alemtuzumab, you can be at risk of developing serious side effects that occur during or shortly after infusion. In the majority of

cases, onset of these reactions is within 1–3 days of alemtuzumab infusion, but some may occur weeks later. Tell your doctor right away if you develop any of the following symptoms: trouble breathing, chest pain, facial drooping, sudden severe headache, weakness on one side of the body, difficulty with speech, neck pain or coughing up blood.

Delayed autoimmune side effects

Treatment with alemtuzumab may increase the risk of autoimmune conditions. These are conditions in which your immune system mistakenly attacks your body and these can occur many years after treatment. Therefore, regular blood and urine tests are needed until at least 48 months after your last infusion. Testing is needed even if you're feeling well and your MS symptoms are under control. In addition, these conditions may occur beyond 48 months, therefore, you must continue to look for signs and symptoms, even after you no longer need to have monthly blood and urine tests.

1. Thyroid disorders

The thyroid is a gland in the lower part of the neck that produces hormones which are involved in several processes throughout your body. In some people, the immune system mistakenly attacks the cells of the thyroid gland (autoimmune thyroid condition). This affects its ability to make and control the level of hormones that are important for metabolism.

Alemtuzumab can cause thyroid disorders, including:

- Overactive thyroid gland (also called hyperthyroidism):
When the thyroid produces too much hormone
- Underactive thyroid gland (also called hypothyroidism):
When the thyroid does not produce enough hormone

Your thyroid function will be checked before you start your treatment with alemtuzumab, and every 3 months after your initial treatment course for at least 48 months after your last infusion. This blood test will help your doctor to detect any thyroid disorders early.

What are the signs and symptoms of an overactive thyroid?

Symptoms may include:

- Excessive sweating
- Unexplained weight loss
- Eye swelling
- Nervousness
- Fast heartbeat

What are the signs and symptoms of an underactive thyroid?

Symptoms may include:

- Unexplained weight gain
- Feeling cold
- Worsening tiredness
- Newly occurring constipation

What should I do if I develop a thyroid disorder?

Tell your doctor if you experience any of the symptoms above.

Depending on the type of thyroid disorder you are experiencing, your doctor will decide which treatment is best for you. It's very important that you follow your doctor's recommendations to be sure that you benefit most from your treatment.

If you develop a thyroid disorder after receiving alemtuzumab, it's very important that you're properly treated for it, especially if you're female and become pregnant. Having an untreated thyroid disorder could harm your baby before it's born or after birth. Thyroid function tests must always be taken in case of pregnancy.

2. Immune thrombocytopenic purpura (ITP)

ITP is a condition which results in a low number of platelets in the blood. ITP is common and may affect up to 1 in 10 people. Platelets are necessary for normal blood clotting. As a result, ITP can cause severe bleeding. It's treatable if detected promptly, but if left untreated it can lead to serious health problems and may be fatal.

A blood test will help your doctor monitor for changes in your platelet count, and catch ITP early should it arise. Therefore, your doctor will run a blood test before starting your alemtuzumab treatment, and on a monthly basis which continues for at least 48 months following your last treatment course.

It's important to note that ITP can start quickly and may occur in between the blood tests. It's therefore essential that you remain vigilant for signs and symptoms.

What are the signs and symptoms of ITP?

- Small scattered spots on your skin that are red, pink or purple
- Easy bruising
- Bleeding from a cut that is harder to stop than usual
- Heavier, longer or more frequent menstrual periods than normal
- Bleeding between your menstrual periods
- Bleeding from your gums or nose that is new or takes longer than usual to stop
- Coughing up blood

Take a look at Figure 2 which shows examples of bruises and rashes caused by ITP.

What if I develop ITP?

It's best to identify and treat ITP as early as possible. That is why it's so important that you continue to have your monthly blood test, which could detect a problem before you notice any symptoms. It's also important that you, your family members and/or caregivers are watching out for the signs and symptoms described in this guide. Delaying treatment of ITP increases the chance of more serious problems.

If you notice any of the signs or symptoms described above, contact your doctor right away to report the symptoms. If you cannot reach your doctor, seek immediate medical attention and show them your alemtuzumab Patient Alert Card.

If detected early, ITP is usually treatable. If you develop ITP, you and your doctor will decide which treatment is best for you

Figure 2 - Examples of bruises and rashes caused by ITP

Example of arms with easy or excessive bruising.

Where on the body? Bruises may occur anywhere on your body, not just on your arms.



Example of a leg with scattered spots under the skin that are red, pink or purple. They might look like pin pricks (petechia) or they can be a little bigger (purpura).

Where on the body? These spots can occur anywhere on your body, not just on your legs.

Example of spots due to bleeding under the tongue.

Where on the body? This may occur anywhere in your mouth - under the tongue, on the roof of your mouth, on your inner cheeks, on your tongue or on your gums.



Note: These pictures are only a guide in order to show examples of bruises or petechiae. The patient may have less severe type of bruise or petechiae than these pictures and still have ITP.

3. Kidney problems, including nephropathies such as anti-GBM disease

Alemtuzumab can sometimes cause kidney problems, including a condition known as anti-Glomerular Basement Membrane or anti-GBM disease. Anti-GBM disease is an autoimmune condition that can result in severe damage to the kidneys. If left untreated, anti-GBM disease can cause kidney failure that requires chronic dialysis or transplantation, and may eventually lead to death.

Blood and urine tests will help your doctor to monitor for signs of kidney disease and catch any problems early should they arise. Your doctor will run blood and urine tests before starting alemtuzumab, and on a monthly basis that will continue for at least 48 months after your last initial treatment. If you're a woman, it is also important to avoid urine testing during your menstrual period as this may give a false result.

You should be aware of the signs and symptoms of anti-GBM disease and report them to your doctor if you spot any of them.

What are the signs and symptoms of kidney problems, such as anti-GBM disease?

- Blood in the urine: your urine may be red or tea-coloured
- Swelling: in your legs or feet

In some cases, anti-GBM disease can also cause damage to your lungs, which may result in coughing up blood.

What if I develop kidney problems?

Kidney problems are usually treatable. However, it's best to begin treatment as early as possible. It's important that you are familiar with the signs and symptoms of kidney problems and anti-GBM disease, and attend your regular blood and urine tests. Kidney problems will almost always need treatment.

If you notice any of the signs or symptoms described above, contact your doctor immediately to report them. If you cannot reach your doctor, make sure that you seek immediate medical attention.

4. Autoimmune hepatitis

Some people have developed liver inflammation, also known as autoimmune hepatitis, after receiving alemtuzumab. If you experience unexplained nausea, vomiting, abdominal pain and/or swelling, fatigue, loss of appetite, yellow skin and eyes and/or dark urine, or bleeding or bruising more easily than normal, report this to your doctor.

5. Haemophagocytic lymphohistiocytosis (HLH)

HLH is a life-threatening condition that occurs when specific immune cells become overactive, causing too much inflammation. Ordinarily, these cells should destroy infected, damaged cells of the body. But in HLH, they start to damage your own tissues and organs, including the liver and bone marrow where blood is made. HLH can be challenging to diagnose because the initial symptoms may mimic other problems such as common infections. If you experience unexplained high fever, swollen glands, yellow skin, or skin rash you must call your doctor right away to report the symptoms.

6. Acquired haemophilia A

When treated with alemtuzumab it's possible that you may develop a disorder called acquired haemophilia A. This is a bleeding disorder caused by antibodies that work against a protein needed for normal clotting of the blood, and can cause you to develop complications associated with abnormal, uncontrolled bleeding into the muscles, skin and soft tissue and during surgery or following trauma. This condition must be diagnosed and treated immediately. If you experience spontaneous bruising, nose bleeds, painful or swollen joints, other types of bleeding, or bleeding from a cut that may take longer than usual to stop, you must call your doctor right away to report the symptoms.

7. Thrombotic Thrombocytopenic Purpura (TTP)

TTP is a rare disease that may affect up to 1 in 1000 people. TTP causes blood clots to form inside blood vessels and can occur with alemtuzumab. This condition requires immediate medical treatment and can result in death.

Seek urgent medical attention if you have any of the following symptoms: skin or mouth bruising that may appear as red pinpoint dots, with or without unexplained extreme tiredness, fever, confusion, speech changes, yellowing of the skin or eyes (jaundice), low amount of urine, dark coloured urine.

8. Adult onset still disease (AOSD)

AOSD is a rare condition that has the potential to cause multi-organ inflammation with several symptoms such as fever $>39^{\circ}\text{C}$ or 102.2°F lasting more than 1 week, pain, stiffness with or without swelling in multiple joints and/or a skin rash. If you experience a combination of these symptoms, contact your healthcare provider immediately.

9. Autoimmune encephalitis (AIE)

This autoimmune condition (an immune mediated brain disorder) can occur after receiving alemtuzumab. This condition may include symptoms such as behavioural and/or psychiatric changes, short term memory loss or seizures as well as other symptoms which may resemble an MS relapse. If you experience one or more of these symptoms, contact your healthcare providers.

IMPORTANT!

Since all of these delayed side effects can occur long after you received a course of treatment with alemtuzumab, it's very important that you continue to have your monthly tests (even if you are feeling well).

You must also continue to watch out for signs and symptoms for at least 48 months after your last course of treatment with alemtuzumab:

- Early detection and diagnosis may give you the best opportunity for recovery
- Carry your Patient Alert Card with you and show it to any healthcare providers who are providing you treatment (including for non-MS conditions) and in the event of a medical emergency

Other helpful information



Vaccinations

Before receiving each course of your treatment with alemtuzumab, your doctor will check that you are up to date with your vaccinations. If you need a vaccination, you will have to wait for 6 weeks after vaccination to start your alemtuzumab treatment. Tell your doctor if you have had a vaccination within the last 6 weeks.

Fertility

You may have alemtuzumab in your body during your treatment course and for 4 months after, and it's not known if alemtuzumab will have an effect on fertility during this period. Talk to your doctor if you are or are thinking about trying to become pregnant.

Pregnancy and contraception

It's not known if alemtuzumab could harm an unborn child. You have to use effective contraception during treatment with alemtuzumab and for 4 months after each course of treatment to ensure there's no alemtuzumab left in your body before you conceive a child. Make sure you tell your doctor if you are planning to become pregnant.

If you're already pregnant or plan to become pregnant soon, you should ask your doctor for advice before starting treatment with alemtuzumab.

Tell your doctor right away if you become pregnant during your treatment course or within 4 months of receiving a alemtuzumab infusion.

If you become pregnant after treatment with alemtuzumab and experience a thyroid disorder during pregnancy, extra caution is needed as thyroid disorders can be harmful to an unborn baby.

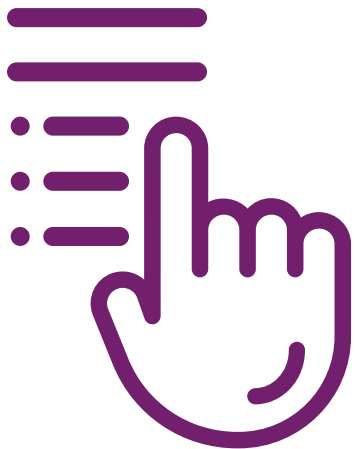
Breastfeeding

It's unknown if alemtuzumab can be transferred to a baby through breast milk, but it is a possibility. It's therefore recommended that you do not breastfeed during any course of treatment and for 4 months after each alemtuzumab treatment course. However, there may be benefits of breast milk (which can help to protect a baby from infections), so you should talk to your doctor if you are planning to breastfeed. They will advise you on what is right for you and your baby.

What other information should I tell my doctor?

Be sure to tell your doctor or healthcare team about any new health problems you have developed and any new medicines you have taken since your last appointment. Those medicines may include prescription and non-prescription medicines, vitamins, and herbal supplements. It's important for your doctor to know this to manage your treatment.

Planning your monitoring schedule



The autoimmune conditions described in this guide may occur long after you received a course of treatment with alemtuzumab. It's very important that you continue to have your monthly tests for at least 48 months after your last treatment course, even if you're feeling well.

Helpful terms to know



Acquired haemophilia A: A bleeding disorder that occurs in people with no personal or family history of haemorrhages. In acquired haemophilia A, the body produces antibodies that attack clotting factors, specialised proteins required for the blood to clot normally. Affected individuals develop complications associated with abnormal, uncontrolled bleeding into the muscles, skin and soft tissue and during surgery or following trauma.

Autoimmune encephalitis (AIE): Autoimmune condition which may include symptoms such as behavioural and/or psychiatric changes, short term memory loss or seizures as well as other symptoms which may resemble an MS relapse.

Anti-Glomerular Basement Membrane disease (anti-GBM): A disease caused by the immune system turning against the kidneys and in some cases, the lungs. The kidneys are damaged and do not work properly, or completely fail. As a result you may require dialysis and/or kidney transplantation. If detected promptly it is treatable, but if untreated, it can lead to death.

Adult onset still's disease (AOSD): Rare condition that has the potential to cause multi-organ inflammation.

Autoimmune conditions/disorders: The immune system usually protects the body from bacteria, viruses, and other harmful agents. When the immune system turns against a person's own cells and organs, this is known as an autoimmune disorder or condition. In MS, the immune system mistakes the brain or spinal cord as foreign and damages them. Other autoimmune conditions can damage other organs or blood cells.

Autoimmune hepatitis: A certain type of liver inflammation that occurs when the body's immune system, which ordinarily attacks pathogens (e.g. viruses and bacteria), targets the liver. This attack on your liver can lead to inflammation and cause serious damage to liver cells. If you develop one or more of the following symptoms report this to your doctor: nausea, vomiting, abdominal pain, fatigue, loss of appetite, yellow skin or eyes, dark urine, or bleeding or bruising more easily than normal.

Autoimmune thyroid disorder: A disorder that occurs when the immune system mistakenly attacks the thyroid gland. Autoimmune thyroid disorders are treatable. They can come in different types:

- Hyperthyroidism: when the thyroid produces too much hormone
- Hypothyroidism: when the thyroid does not produce enough hormones

Dialysis: A process for removing excess water and waste products from the blood when the kidneys are not working properly.

Haemophagocytic lymphohistiocytosis (HLH): A life-threatening condition that occurs when certain types of immune cells don't work properly. These cells become overactive, causing too much inflammation. In HLH, the immune system begins to damage your own tissues and organs, including the liver and bone marrow where blood is made. HLH can be challenging to diagnose because the initial symptoms may mimic other problems such as common infections. Signs and symptoms of HLH may include: persistent fever, skin rash, swollen glands.

Immune system: Your body's defence system against infection, foreign substances, and abnormal cells.

Infusion: A method of administering a treatment whereby a solution (a liquid containing a medicine) is slowly passed into a vein through a needle.

Immune thrombocytopenic purpura (ITP): A condition which results in a low number of platelets in the blood. Platelets are necessary for normal blood clotting, therefore ITP can cause severe bleeding. ITP is treatable if detected promptly, but if left untreated it can lead to serious health problems and may be fatal.

Platelets: Platelets travel in the bloodstream and are necessary for normal blood clotting. They help stop bleeding by sticking together to form a clot, helping to seal small cuts or breaks in the skin.

Progressive Multifocal Leukoencephalopathy (PML): A rare but serious viral infection of the brain. You should contact your doctor immediately if you develop any symptoms like progressive weakness or clumsiness of limbs, disturbance of vision, speech difficulties or changes in thinking, memory, and orientation leading to confusion and personality changes.

Thyroid: A gland found in the lower part of your neck. This gland produces hormones that are important for regulating metabolism.

Thrombotic thrombocytopenic purpura (TTP): Blood clotting disorder where blood clots form in blood vessels throughout the body. Blood clots can block small blood vessels, resulting in damage to organs such as the brain, kidney and heart. TTP also results in a low number of platelets in the blood. This condition requires immediate medical treatment and can result in death.

How to reach your doctors



To make it easier to contact your healthcare team, write their contact details in the chart below.

Name of doctor or MS nurse: Phone number: Email address:
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Notes



