

INDICATION

LEMTRADA is indicated for the treatment of patients with relapsing forms of multiple sclerosis (MS). Because of its safety profile, the use of LEMTRADA should generally be reserved for patients who have had an inadequate response to two or more drugs indicated for the treatment of MS.

CONTRAINDICATIONS

LEMTRADA is contraindicated in patients who are infected with Human Immunodeficiency Virus (HIV) because LEMTRADA causes prolonged reductions of CD4+ lymphocyte counts.

IMPORTANT SAFETY INFORMATION

WARNING: AUTOIMMUNITY, INFUSION REACTIONS, AND MALIGNANCIES

- **LEMTRADA causes serious, sometimes fatal, autoimmune conditions such as immune thrombocytopenia and anti-glomerular basement membrane disease. Monitor complete blood counts with differential, serum creatinine levels, and urinalysis with urine cell counts at periodic intervals for 48 months after the last dose of LEMTRADA.**
- **LEMTRADA causes serious and life-threatening infusion reactions. LEMTRADA must be administered in a setting with appropriate equipment and personnel to manage anaphylaxis or serious infusion reactions. Monitor patients for two hours after each infusion. Make patients aware that serious infusion reactions can also occur after the 2-hour monitoring period.**
- **LEMTRADA may cause an increased risk of malignancies, including thyroid cancer, melanoma, and lymphoproliferative disorders. Perform baseline and yearly skin exams.**
- **Because of the risk of autoimmunity, infusion reactions, and malignancies, LEMTRADA is available only through restricted distribution under a Risk Evaluation and Mitigation Strategy (REMS) Program. Call 1-855-676-6326 to enroll in the LEMTRADA REMS Program.**

WARNINGS AND PRECAUTIONS

- **Autoimmunity:** Treatment with LEMTRADA can result in the formation of autoantibodies and increase the risk of serious autoimmune mediated conditions, and may increase the risk of other autoimmune conditions because of the broad range of autoantibody formation. Obtain complete blood counts (CBC) with differential, serum creatinine levels, and urinalysis with cell counts before starting treatment and then at monthly intervals for 48 months after the last dose of LEMTRADA, or longer, if clinically indicated.
- **Infusion Reactions:** LEMTRADA causes cytokine release syndrome resulting in infusion reactions. In clinical studies, 92% of LEMTRADA-treated patients experienced infusion reactions. Serious reactions occurred in 3% of these patients and included anaphylaxis in 2 patients (including anaphylactic shock), angioedema, bronchospasm, hypotension, chest pain, bradycardia, tachycardia (including atrial fibrillation), transient neurologic symptoms, hypertension, headache, pyrexia, and rash. In some patients, infusion reactions were reported more than 24 hours after LEMTRADA infusion. Premedicate patients with corticosteroids

immediately prior to LEMTRADA infusion for the first 3 days of each treatment course. Consider pretreatment with antihistamines and/or antipyretics. Infusion reactions may occur despite pretreatment.

- **Malignancies:** Monitor for symptoms of thyroid cancer. Because LEMTRADA is an immunomodulatory therapy, caution should be exercised in initiating LEMTRADA in patients with pre-existing or ongoing malignancies.
- **LEMTRADA REMS Program:** Only prescribers, patients, pharmacies and healthcare facilities certified and enrolled in the REMS program can prescribe, receive, dispense or administer LEMTRADA. Healthcare facilities must have on-site access to equipment and personnel trained to manage infusion reactions (including anaphylaxis and cardiac and respiratory emergencies).
- **Immune thrombocytopenia (ITP)** occurred in 2% of LEMTRADA-treated patients in clinical studies in MS. One LEMTRADA-treated patient developed ITP that went unrecognized prior to the implementation of monthly monitoring requirements, and died from an intracerebral hemorrhage. ITP has been diagnosed more than 3 years after the last LEMTRADA dose. If ITP is confirmed, promptly initiate medical intervention.
- **Glomerular nephropathies** occurred in 0.3% of LEMTRADA-treated patients in MS clinical trials and have been diagnosed up to 40 months after the last dose of LEMTRADA. Anti-glomerular basement membrane (anti-GBM) disease can lead to renal failure requiring dialysis and transplantation and has in post-marketing cases of MS patients treated with alemtuzumab. Anti-GBM disease can be life threatening if untreated; early detection and treatment may decrease the risk of poor outcomes.
- **Autoimmune thyroid disorders** occurred in 34% of LEMTRADA-treated patients in clinical studies. Newly diagnosed thyroid disorders occurred throughout the uncontrolled clinical study follow-up period, more than 7 years after the first LEMTRADA dose. Serious thyroid events occurred in 2% of patients, including cardiac and psychiatric events. In LEMTRADA-treated patients, 3% underwent thyroidectomy. In patients with an ongoing thyroid disorder, LEMTRADA should be administered only if the potential benefit justifies the potential risks. Obtain thyroid function tests prior to initiation of treatment and every 3 months until 48 months after the last infusion, or longer, if clinically indicated. Thyroid disease poses special risks in women who are pregnant.
- **Autoimmune cytopenias** occurred in LEMTRADA-treated MS patients in clinical trials. One LEMTRADA-treated patient with autoimmune pancytopenia died from sepsis. Prompt medical intervention is indicated if a cytopenia is confirmed.
- **Infections** occurred in 71% of LEMTRADA-treated patients compared to 53% of patients treated with interferon beta-1a. Serious infections occurred in 3% of patients treated with LEMTRADA and 1% of patients treated with interferon beta-1a and included: appendicitis, gastroenteritis, pneumonia, herpes zoster, and tooth infection. Consider delaying

LEMTRADA administration in patients with active infection until the infection is fully controlled.

- Do not administer live viral vaccines following a course of LEMTRADA, as patients may be at increased risk of infection.
 - Concomitant use of antineoplastic or immunosuppressive therapies could increase the risk of immunosuppression.
 - Herpes viral infection developed in 16% of LEMTRADA-treated patients compared to 3% of interferon beta-1a patients. Administer antiviral prophylaxis for herpetic viral infections starting on the first day of each treatment course and continue for a minimum of two months following treatment with LEMTRADA or until CD4+ lymphocyte count is ≥ 200 cells per microliter, whichever occurs later.
 - Cervical human papilloma virus (HPV) infection occurred in 2% of LEMTRADA-treated patients. Annual screening is recommended for female patients.
 - Active and latent tuberculosis cases occurred in 0.3% of LEMTRADA-treated patients, most often in endemic regions.
 - Fungal infections, especially oral and vaginal candidiasis, occurred in 12% of LEMTRADA-treated patients compared to 3% of interferon beta-1a patients.
 - Cases of listeria meningitis occurred within 1 month of LEMTRADA dosing. Advise patients to avoid or adequately heat foods that are potential sources for *Listeria monocytogenes*.
 - Before initiating LEMTRADA, consider screening patients at high risk of Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) infection. Carriers of HBV and/or HCV who receive LEMTRADA may be at risk of irreversible liver damage relative to a potential virus reactivation.
- **Pneumonitis**, including hypersensitivity pneumonitis and pneumonitis with fibrosis, occurred in 6 of 1217 (0.5%) LEMTRADA-treated patients in clinical studies. Advise patients to report symptoms of pneumonitis (e.g., shortness of breath, cough, wheezing, chest pain or tightness, and hemoptysis).
 - **Drug Products with Same Active Ingredient:** LEMTRADA contains the same active ingredient (alemtuzumab) found in CAMPATH[®]. If LEMTRADA is considered for use in a patient who has previously received CAMPATH, exercise increased vigilance for additive and long-lasting effects on the immune system.

Adverse Reactions

In clinical trials, the most common adverse reactions (incidence $\geq 10\%$ and $>$ interferon beta-1a) with LEMTRADA vs interferon beta-1a were: rash (53% vs 6%), headache (52% vs 23%), pyrexia (29% vs 9%), nasopharyngitis (25% vs 19%), nausea (21% vs 9%), urinary tract infection (19% vs 8%), fatigue (18% vs 13%), insomnia (16% vs 15%), upper respiratory tract infection (16% vs 13%), herpes viral infection (16% vs 3%), urticaria (16% vs 2%), pruritus (14% vs 2%), thyroid gland disorders (13% vs 3%), fungal infection (13% vs 4%), arthralgia (12% vs 9%), pain in extremity (12% vs 9%), back pain (12% vs 8%), diarrhea (12% vs 6%), sinusitis (11% vs 8%), oropharyngeal pain (11% vs 5%), paresthesia (10% vs 8%), dizziness (10% vs 5%), abdominal pain (10% vs 5%), flushing (10% vs 4%), and vomiting (10% vs 3%).

Use in Specific Populations

LEMTRADA should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Autoantibodies may be transferred from the mother to the fetus during pregnancy. Placental transfer of anti-thyroid antibodies resulted in a case of neonatal Graves' disease. Safety and effectiveness in pediatric patients less than 17 years of age have not been established. Use of LEMTRADA is not recommended in pediatric patients due to the risks of autoimmunity and infusion reactions, and because it may increase the risk of malignancies.

Please see full Prescribing Information, including boxed WARNING.