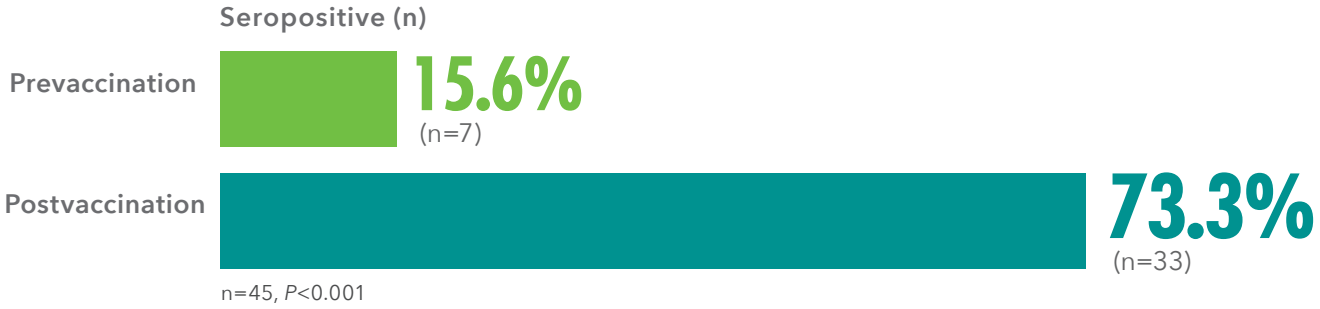
CLICK HERE FOR MORE INFO ABOUT PRESCRIBING REBIF®

TREATING MS WITH VACCINATIONS IN MIND

As a type 1 interferon, Rebif® is an immunomodulator. It does not continuously suppress the immune system.[1,2] Among disease-modifying drugs, interferons showed good seroprotection rates 1 month after flu vaccination.[3]

Seroprotection rates against 3 influenza strains (H1N1, N3N2, and B) in a real-life cohort of interferon-treated patients[3]



Study design/primary analysis: Prospective, multicenter, nonrandomized, observational study to evaluate the immunogenicity and safety of a seasonal influenza vaccine in a cohort of MS patients treated with different disease-modifying drugs (N=108).[3] Due to the various subgroups of patients treated with different DMT and the use of different antigens for vaccination, an approach to statistical analysis of predictors of antibody response is challenging and complex.[3]

No restrictions on vaccination are noted in the Prescribing Information (PI) for Rebif®.[4] Use your clinical judgment and refer to CDC and other current guidelines regarding vaccinations.

See page 2 for the safety profile of Rebif®.

INDICATION

Rebif® (interferon beta-1a) is indicated for the treatment of relapsing forms of multiple sclerosis (MS), to include clinically isolated syndrome, relapsing-remitting disease, and active secondary progressive disease, in adults.

IMPORTANT SAFETY INFORMATION

Rebif® is contraindicated in patients with a history of hypersensitivity to natural or recombinant interferon beta, human albumin, or any other component of the formulation.

Please see additional Important Safety Information on page 3 and the Full Prescribing Information and Medication Guide.

Rebif® (interferon beta-1a) subcutaneous injection

LEARN MORE AT REBIF.COM

REBIF® HAS A WELL-ESTABLISHED SAFETY PROFILE SUPPORTED BY 20+ YEARS OF COMBINED CLINICAL TRIAL AND REAL-WORLD EXPERIENCE[4-7]

PRISMS + EVIDENCE | *REAL-WORLD PATIENT EXPERIENCE INCLUDING NORDIC REGISTRY*

Rebif® has not been associated with progressive multifocal leukoencephalopathy (PML)[4]

IN CLINICAL STUDIES[8]:

Patients treated with Rebif® showed a similar incidence of infections compared to placebo

Rebif® did not result in increases in the incidence of viral, bacterial, or fungal infections

The USPI notes that patients may be more likely to get infections due to decreased peripheral blood counts[4]

Rebif® can cause serious adverse reactions:

- Depression, suicidal ideation, and suicide attempts
- Severe liver injury, including some cases of hepatic failure requiring liver transplantation
- Anaphylaxis and other allergic reactions, some severe
- Injection site reactions
- Decreased peripheral blood counts in all cell lines
- Cases of thrombotic microangiopathy (TMA), some fatal
- Seizures

The most common side effects with Rebif® are:

Injection-site disorders, headaches, influenza-like symptoms, abdominal pain, depression, elevated liver enzymes, and hematologic abnormalities.

Please see additional Important Safety Information on page 3 and the Full Prescribing Information and Medication Guide.

Rebif® (interferon beta-1a) subcutaneous injection

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INDICATION AND IMPORTANT SAFETY INFORMATION

INDICATION

Rebif® is indicated for the treatment of relapsing forms of multiple sclerosis (MS), to include clinically isolated syndrome, relapsing-remitting disease, and active secondary progressive disease, in adults.

IMPORTANT SAFETY INFORMATION

Rebif® is contraindicated in patients with a history of hypersensitivity to natural or recombinant interferon beta, human albumin, or any other component of the formulation.

Rebif® should be used with caution in patients with depression, a condition that is common in people with multiple sclerosis. Depression, suicidal ideation, and suicide attempts have been reported to occur with increased frequency in patients receiving interferon compounds, including Rebif®.

Severe liver injury, including some cases of hepatic failure requiring liver transplantation, has been reported rarely in patients taking Rebif®. The potential for liver injury should be considered when used in combination with other products associated with liver injury. Monitor liver function tests and patients for signs and symptoms of hepatic injury. Consider discontinuing Rebif® if hepatic injury occurs.

Anaphylaxis and other allergic reactions (some severe) have been reported as a rare complication of Rebif®. Discontinue Rebif® if anaphylaxis occurs.

In controlled clinical trials, injection site reactions occurred more frequently in Rebif®-treated patients than in placebo-treated and Avonex-treated patients. Injection site reactions including injection site pain, erythema, edema, cellulitis, abscess, and necrosis have been reported in the postmarketing setting. Do not administer Rebif® into affected area until fully healed; if multiple lesions occur, discontinue Rebif® until skin lesions are healed.

Decreased peripheral blood counts in all cell lines, including pancytopenia, have been reported in Rebif®-treated patients. In controlled clinical trials, leukopenia occurred at a higher frequency in Rebif®-treated patients than in placebo and Avonex-treated patients. Thrombocytopenia and anemia occurred more frequently in 44 mcg Rebif®-treated patients than in placebo-treated patients. Patients should be monitored for symptoms or signs of decreased blood counts. Monitoring of complete blood and differential white blood cell counts is also recommended.

Cases of thrombotic microangiopathy (TMA), some fatal, have been reported with interferon beta products, including Rebif®, up to several weeks or years after starting therapy. Discontinue Rebif® if clinical symptoms and laboratory findings consistent with TMA occur, and manage as clinically indicated.

Caution should be exercised when administering Rebif® to patients with pre-existing seizure disorders. Seizures have been temporally associated with the use of beta interferons, including Rebif®, in clinical trials and in postmarketing reports.

The most common side effects with Rebif® are injection-site disorders, headaches, influenza-like symptoms, abdominal pain, depression, elevated liver enzymes, and hematologic abnormalities.

Epidemiological data do not suggest a clear relationship between interferon beta use and major congenital malformations, but interferon beta may cause fetal harm based on animal studies. Data from a large human population-based cohort study, as well as other published studies over several decades, have not identified a drug-associated risk of major birth defects with interferon beta products during early pregnancy. Findings regarding a potential risk for low birth weight or miscarriage with the use of interferon beta products in pregnancy have been inconsistent.

REFERENCES

1. Kasper LH, Reder AT. Immunomodulatory activity of interferon-beta. *Ann Clin Transl Neurol*. 2014;1(8):622-631. **2.** Giovannoni G. Disease-modifying treatments for early and advanced multiple sclerosis: a new treatment paradigm. *Curr Opin Neurol*. 2018;31(3):233-243. **3.** Metze C et al. *CNS Neurosci Ther.* 2019;25(2):245-254. **4.** Rebif® [Prescribing Information]. Rockland, MA: EMD Serono, Inc. **5.** PRISMS Study Group. Randomised double-blind placebo-controlled study of interferon β-1a in relapsing/remitting multiple sclerosis. *Lancet.* 1998;352(9139):1498-1504. **6.** Panitch H, Goodin D, Francis G, et al; for EVIDENCE (EVidence of Interferon Dose-response-European North American Comparative Efficacy) Study Group and the University of British Columbia MS/MRI Research Group. Benefits of high-dose, high-frequency interferon beta-1a in relapsing-remitting multiple sclerosis are sustained to 16 months: final comparative results of the EVIDENCE trial. *J Neurol Sci*. 2005;239(1):67-74. **7.** Schwid SR, Panitch HS. Full results of the Evidence of Interferon Dose-Response–European North American Comparative Efficacy (EVIDENCE) study: a multicenter, randomized, assessor-blinded comparison of low-dose weekly versus high-dose, high-frequency interferon beta-1a for relapsing multiple sclerosis. *Clin Ther*. 2007;29(9):2031-2048. **8.** Data on file. EMD Serono, Inc. PRISMS study report.

Please see Full Prescribing Information and Medication Guide.