



Interferon Beta

Revised: July 15, 2023.

CASRN: 145258-61-3; 145155-23-3

Drug Levels and Effects

Summary of Use during Lactation

The levels of interferon beta-1a in breastmilk are minuscule. In addition, because interferon is poorly absorbed orally, it is not likely to reach the bloodstream of the infant. Many women have breastfed while taking interferon beta-1a with no adverse infant effects reported. Interferon beta is generally considered safe by most experts and appears to be one of the preferred disease-modifying agents for treating multiple sclerosis during breastfeeding. [1-5] No special precautions appear to be required during breastfeeding while using interferon beta and breastfeeding can resume immediately after injection.[6]

Drug Levels

Maternal Levels. Six women were receiving interferon beta-1a (Avonex, Biogen) 30 mcg intramuscularly once weekly for multiple sclerosis. Milk samples from both breasts were collected after pumping with an electric breast pump 8 times after a dose at baseline and at 7 other times during the first 72 hours after a dose. Samples were combined and analyzed for interferon beta-1a. About half of the samples had undetectable (<20 ng/L) amounts of drug. The highest concentrations were found at 1 or 4 hours after the dose in all women. The highest concentration found was 171 ng/L in one woman. Using this value, the authors estimated that the maximum weight-adjusted dosage that an infant would receive is 0.006% of the maternal dose.[7]

Infant Levels. Relevant published information was not found as of the revision date.

Effects in Breastfed Infants

Six women had been receiving interferon beta-1a (Avonex, Biogen) 30 mcg intramuscularly once weekly for multiple sclerosis for months to years. None of the mothers noticed any adverse effects in their breastfed infants. [7]

Disclaimer: Information presented in this database is not meant as a substitute for professional judgment. You should consult your healthcare provider for breastfeeding advice related to your particular situation. The U.S. government does not warrant or assume any liability or responsibility for the accuracy or completeness of the information on this Site.

Attribution Statement: LactMed is a registered trademark of the U.S. Department of Health and Human Services.

A woman received interferon beta-1b (Betaferon, BayerHealthCare; dosage unspecified) for multiple sclerosis throughout pregnancy. She continued the drug while she exclusively breastfed her infant. At 5 months of age, the infant was monitored regularly by a physician and was developing well with no abnormalities.[8]

One mother received interferon beta-1a for multiple sclerosis during pregnancy and postpartum. All of their infants were exclusively breastfed for 6 months and no noticeable problems were reported in any of them.[9]

In data collected from 4 countries, 17 women received interferon and 41 women received glatiramer during pregnancy and postpartum for treatment of multiple sclerosis. Of these, 63% breastfed (extent not stated) their infants for a mean of 8.8 months. No mention was made of adverse reactions in breastfed infants.[10]

Thirty-nine women with multiple sclerosis who were treated with interferon beta-1a during breastfeeding were followed by the German Multiple Sclerosis and Pregnancy Registry. During breastfeeding, the drug was administered every other day (n = 8), 3 times a week (n = 15), or once a week (n = 12). In addition, one woman receive peginterferon beta-1a every 2 weeks, and in 3 additional women, the frequency was not known. One woman received both interferon beta-1a every other day and glatiramer daily. Most infants were also exposed during pregnancy. Infants were breastfed for an average of 9.2 months (range 1.6 to 28.5 months) during interferon therapy. Infants were followed for 1 year and most developed normally; the percentages of infants with developmental delay, courses of antibiotics and hospitalizations did not differ from the reference German population. No conditions attributable to interferon beta-1a were found.[4] In a follow-up report on 28 infants whose mothers received interferon beta-1a, interviews were conducted at 1, 3, 6, and 12 months postpartum. One case of delayed motor development was identified, but the authors felt that there was no evidence of drug exposure during lactation causing any adverse infant outcomes.[11]

A single-center study in Germany enrolled 426 women taking beta-interferon or peginterferon-beta during pregnancy who delivered 466 infants. Of these, 158 infants were breastfed, 112 exclusively until month 5 postpartum. In total, 34 of the 158 infants (21.5%) were breastfed while the mother was taking interferon. Seven infants were breastfed up to one week, 11 were breastfed over 1 week and up to 2 months, 10 were breastfed over 2 months and up to 6 months, and 6 were breastfed over 6 months and up to 12 months. In the peginterferon beta-1a group, a higher percentage stopped breastfeeding under interferon exposure within the first month after childbirth compared to the interferon beta-1a group (68.8% vs. 22.2%). Preliminary analyses did not indicate any differences in the development of weight, length, and head circumference between exposed and unexposed subgroups during breastfeeding, but the analysis was not adequately powered to reliably detect or exclude differences.[12]

Effects on Lactation and Breastmilk

Relevant published information was not found as of the revision date.

Alternate Drugs to Consider

(Hepatitis C) [Interferon Alfa](#), [Interferon Alfacon-1](#) (Multiple Sclerosis) [Glatiramer](#), [Immune Globulin](#)

References

1. Bove R, Alwan S, Friedman JM, et al. Management of multiple sclerosis during pregnancy and the reproductive years: A systematic review. *Obstet Gynecol.* 2014;124:1157–68. PubMed PMID: 25415167.
2. Fragoso YD. Glatiramer acetate to treat multiple sclerosis during pregnancy and lactation: A safety evaluation. *Expert Opin Drug Saf.* 2014;13:1743–8. PubMed PMID: 25176273.
3. Thöne J, Thiel S, Gold R, et al. Treatment of multiple sclerosis during pregnancy - safety considerations. *Expert Opin Drug Saf.* 2017;16:523–34. PubMed PMID: 28333552.

4. Ciplea AI, Langer-Gould A, Stahl A, et al. Safety of potential breast milk exposure to IFN-beta or glatiramer acetate: One-year infant outcomes. *Neurol Neuroimmunol Neuroinflamm*. 2020;7:e757. PubMed PMID: 32434802.
5. Dobson R, Dassan P, Roberts M, et al. UK consensus on pregnancy in multiple sclerosis: 'Association of British Neurologists' guidelines. *Pract Neurol*. 2019;19:106–14. PubMed PMID: 30612100.
6. Krysko KM, Dobson R, Alroughani R, et al. Family planning considerations in people with multiple sclerosis. *Lancet Neurol*. 2023;22:350–66. PubMed PMID: 36931808.
7. Hale TW, Siddiqui AA, Baker TE. Transfer of interferon beta-1a into human breastmilk. *Breastfeed Med*. 2012;7:123–5. PubMed PMID: 21988602.
8. Rockhoff M, Hellwig K. *Aktuelle Neurologie*. 2012;39 Suppl 1:S49–S51. [10.1055/s-0032-1304879](https://doi.org/10.1055/s-0032-1304879). [Family planning and interferon (beta)-1b - A case report of successful hormonal stimulation, pregnancy and breast-feeding under interferon (beta)-1b]. doi.
9. Hellwig K, Gold R. Glatiramer acetate and interferon-beta throughout gestation and postpartum in women with multiple sclerosis. *J Neurol*. 2011;258:502–3. PubMed PMID: 20878174.
10. Fragoso YD, Boggild M, Macias-Islas MA, et al. The effects of long-term exposure to disease-modifying drugs during pregnancy in multiple sclerosis. *Clin Neurol Neurosurg*. 2013;115:154–9. PubMed PMID: 22633835.
11. Ciplea A, Stahl A, Thiel S, et al. Treatment of multiple sclerosis during lactation with interferon-beta 1a or glatiramer acetate. *Mult Scler J* 2020;26 (3 Suppl):360-1. P0507. doi:10.1177/1352458520974937
12. Klehmet J, Begus-Nahrman Y, Taipale K, et al. Impact of interferon beta exposure on birth outcome and child development - Results from the post-authorisation safety study PRIMA. *Mult Scler Relat Disord*. 2023;77:104844. PubMed PMID: 37393802.

Substance Identification

Substance Name

Interferon Beta

CAS Registry Number

145258-61-3; 145155-23-3

Drug Class

Breast Feeding

Lactation

Milk, Human

Immunologic Adjuvants

Biological Response Modifiers