

Pregnancy, lactation, and postpartum care

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Pregnancy Planning

Contraception

Genetics of multiple sclerosis

Infertility and multiple sclerosis

When should I start pregnancy discussions with my multiple sclerosis provider?

- At least one year before starting to try to become pregnant

What if I don't want to have kids right now?

- Any form of contraception is safe for patients with multiple sclerosis

[Review](#) > [Mult Scler.](#) 2017 May;23(6):757-764. doi: 10.1177/1352458517701314.
Epub 2017 Mar 24.

Contraception for women with multiple sclerosis: Guidance for healthcare providers

Maria K Houtchens ¹, Lauren B Zapata ², Kathryn M Curtis ², Maura K Whiteman ²

Affiliations + expand

PMID: 28338393 PMID: PMC5785786 DOI: 10.1177/1352458517701314

[Free PMC article](#)

Will I pass my multiple sclerosis to my children?

- Children of one parent with multiple sclerosis
 - Male: 0.3-2.1%
 - Female: 1.1-3.5%
- Children with both parents having multiple sclerosis
 - Male: 12.0-32.0%
 - Female: 12.5-30.4%

[Ann Neurol. 2000 Dec;48\(6\):927-31.](#)

Conjugal multiple sclerosis: population-based prevalence and recurrence risks in offspring. Canadian Collaborative Study Group

G C Ebers¹, I M Yee, A D Sadovnick, P Duquette

Affiliations + expand

PMID: 11117550

Is Multiple Sclerosis associated with infertility?

- Evidence is conflicting, no clear evidence there is decreased fertility secondary to multiple sclerosis
 - Recommend referral to fertility treatment if pregnancy is not achieved after 3-6 months of optimal conception attempts



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Pregnancy

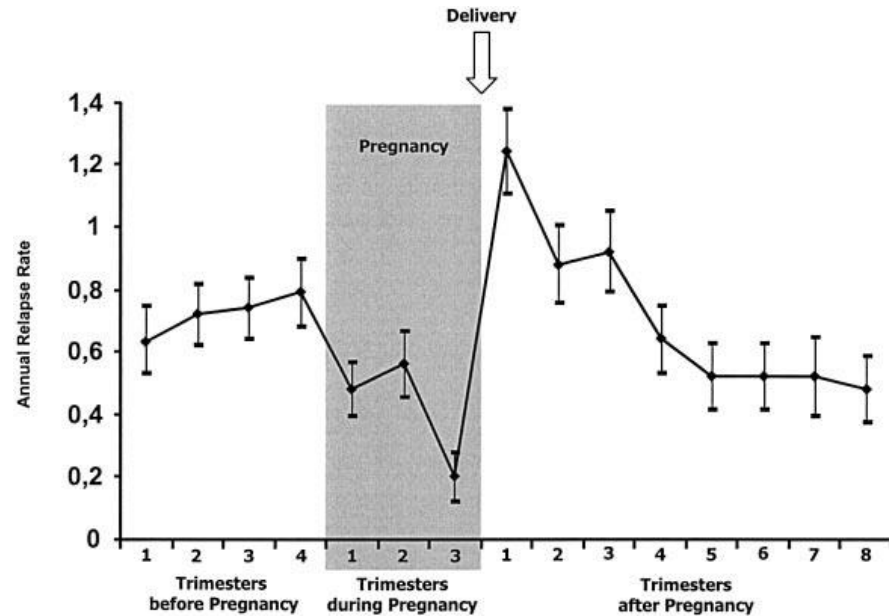
What can we expect in pregnancy

Disease modifying therapy and pregnancy

Symptomatic management during pregnancy

What is the risk of relapse during pregnancy and after delivery?

- Relapses in MS decrease during pregnancy
- Relapse rate increases during the first 3-6 months following delivery
 - Increased rate of both clinical and radiographic relapse



Brain. 2004 Jun;127(Pt 6):1353-60. doi: 10.1093/brain/awh152. Epub 2004 May 6.

Pregnancy and multiple sclerosis (the PRIMS study): clinical predictors of post-partum relapse

Sandra Vukusic¹, Michael Hutchinson, Martine Hours, Thibault Moreau, Patricia Cortese-Tranquiere, Patrice Adeliné, Christian Confavreau, Pregnancy In Multiple Sclerosis Group

Affiliations + expand
PMID: 15130950 DOI: 10.1093/brain/awh152

What increases rate of relapse?

- If you had an active MRI brain before becoming pregnant
- If you suddenly discontinued either Tysabri or Gilenya (without treatment planning) you were more likely to experience post partum relapse
- This odds of postpartum relapse decreases with exclusive breastfeeding (chestfeeding) for at least 3 months.

What happens if I have a relapse while pregnant

- MRI imaging safe to undergo while pregnant
 - Avoid contrast dye
- We want to try to avoid steroids in the first trimester
- High dose steroids can be given in the second or third trimester



Pregnancy

What can we expect in pregnancy

Disease modifying therapy and pregnancy

Symptomatic management during pregnancy

Disease modifying therapies and pregnancy

Self-Injectable therapies

- **Interferon beta (Avonex, Rebif, Plegrity etc)**
 - This medication can be used right up until positive pregnancy test (**discontinue at positive pregnancy test**)
 - Extensive data on use during early pregnancy

- **Glatiramer acetate (Copaxone)**
 - This medication can be used right up until positive pregnancy test, and during pregnancy
 - Extensive safety data

Disease modifying therapies and pregnancy

Self-Injectable therapies

■ Ofatumumab (Kesimpta)

- Short drug half life (16 days), average total clearance 12 weeks
- No adverse effects seen in animals exposed during pregnancy
- As of August 2021, no congenital anomalies or malformations have been reported
- Recommendation is to stop this medication 3-6 months before attempting to conceive

Disease modifying therapies and pregnancy

Oral medications

■ Teriflunomide (Aubagio)

- Known to cause embryofetal toxicity
- If you wish to become pregnant, must discontinue the medication and undergo an accelerated drug elimination procedure, check blood levels (must be $<0.02\text{mg/L}$)
- Without accelerated drug elimination it takes between 8 months- 2 years to achieve desired blood level
- This is recommended for both men and women

Disease modifying therapies and pregnancy

Oral medications

- **Sphingosine-1-phosphate (S1P) receptor modulators (Fingolimod, Siponimod, ozanimod, ponesimod)**
 - This medication has evidence for birth defects in animal studies
 - Recommend to discontinue the medication at **least 2 months** prior to attempting to conceive
 - **Possible rebound** multiple sclerosis activity after stopping these medications (reported incidence of 4-25%)
 - Recommend to transition to another DMT rather than sudden stop

Neurotherapeutics. 2021 Oct;18(4):2598-2607. doi: 10.1007/s13311-021-01106-6. Epub 2021 Sep 7.

Disease Reactivation after Fingolimod Discontinuation in Pregnant Multiple Sclerosis Patients

Assunta Bianco ¹, Matteo Lucchini ², Roberto Sotani ³, Roberta Fantuzzi ⁴, Giovanna De Luca ⁵, Sima Di Lemme ⁶, Giorgia Pirello ⁷, Luana Evangelista ³, Valeria Di Tommaso ⁷, Roberta Pastorino ⁸, Chiara De Fazio ³, Valeria De Arcangelis ³, Diego Cantonze ⁹, Massimiliano Mirabella ³

Abbreviations & expand
PMID: 34494237 PMCID: PMC8803993 DOI: 10.1007/s13311-021-01106-6
Free PMC article

Disease modifying therapies and pregnancy

Oral medications

- **Dimethyl Fumarate (Tecfidera and generic)**
 - This medication has no known current evidence for human fetotoxicity
 - Recommend discontinuation of medication and attempt to conceive
 - No rebound associated with stopping this medication

Disease modifying therapies and pregnancy

Oral medications

■ Cladribine (Mavenclad)

- Known to cause fetal harm in animal studies
 - Recommend two forms of birth control while on medication!
- Recommend waiting 6 months after last dose before attempting to conceive
 - Due to the mechanism of action of this drug, protection against relapse continues after last dose
 - This medication will drop your white blood cell count, with the lowest counts occurring 2-3 months after treatment. Need to make sure these counts recover before attempting pregnancy

Disease modifying therapies and pregnancy

Infusion medications

- **B cell depleting agents (Ocrevus/Ocrelizumab, Rituxan/Rituximab)**
 - Recommendation to wait **2-3 months after infusion date** to attempt to conceive
 - B cells still depleted for a total of 6 months (in some individuals this effect may be longer), allowing for continued protection against relapse while attempting to conceive

Disease modifying therapies and pregnancy

Infusion medications

- **Alemtuzumab (Lemtrada)**
 - Recommend to wait **4 months from last infusion** before attempting to conceive
 - Due to the mechanism of action of this drug, protection against relapse continues after last infusion
 - Development of thyroid related complications are common with this medication
 - **Recommend thyroid studies prior to attempting to conceive and continued monitoring during pregnancy**

Disease modifying therapies and pregnancy

Infusion medications

- **Natalizumab (Tysabri)**

- Recommended to wait to attempt to become pregnant **1-3 months after last infusion.**
- High risk for rebound multiple sclerosis activity after stopping infusion
 - Up to 40% of women will experience rebound relapse
 - 10-20% risk of significant long-term disability from rebound activity
- Please make a plan with your multiple sclerosis provider!



Pregnancy

What can we expect in pregnancy

Disease modifying therapy and pregnancy

Symptomatic management during pregnancy and post-partum considerations

Fatigue, Multiple Sclerosis, and Pregnancy

- Fatigue is a common symptom of multiple sclerosis, reported by at least 75% of MS patients.
- Some (off label) medications used to treat fatigue include Modafinil, Ritalin, Adderall, Amantadine
 - Modafinil should be discontinued prior to pregnancy due to data suggesting increased risk for congenital malformation
- **Cognitive behavioral therapy**
 - Shown to be as effective in reducing fatigue as compared with modafinil

Session CE1 - Cutting Edge Developments 1

CE1.2. A Comparative Effectiveness Trial of Telephone-Delivered Cognitive Behavioral Therapy, Modafinil, and Combination Therapy of Both Interventions for Fatigue in Multiple Sclerosis: Primary Results From the COMBO-MS Trial

Postpartum considerations

- Consideration for pelvic floor physical therapy for any worsening urinary symptoms or pain
- Monitor post partum depression and anxiety
- Consideration of physical or occupational therapy needs



Breastfeeding (chestfeeding)

Disease modifying therapy and breastfeeding

Reasons to consider breastfeeding (chestfeeding)

- Breastfeeding (chestfeeding) decreases risk of postpartum relapse
- Decreases risk for type 2 diabetes, postpartum depression, high blood pressure, breast and ovarian cancer for mom
- Breastfed (chestfed) babies have a lower risk of infections, SIDS, type 2 diabetes

Meta-Analysis > JAMA Neurol. 2020 Mar 1;77(3):327-338. doi: 10.1001/jamaneurol.2019.4173.

Association Between Breastfeeding and Postpartum Multiple Sclerosis Relapses: A Systematic Review and Meta-analysis

Kristen M Krysko¹, Alice Rutatangwa¹, Jennifer Graves^{1,2}, Ann Lazar³, Emmanuelle Waubant¹

Affiliations + expand

PMID: 31816024 PMCID: PMC6902174 DOI: 10.1001/jamaneurol.2019.4173

Disease modifying therapies and Breastfeeding (chestfeeding)

- **Safe for breastfeeding** (data available to confirm safety)
 - Glatiramer acetate (copaxone)
 - Interferon beta (Avonex, Rebif, etc)

Disease modifying therapies and Breastfeeding

- **Probably Safe for breastfeeding, (limited data)**
 - Rituximab/Rituxan
 - Ocrelizumab/Ocrevus
 - Ofatumumab/Kesimpta
 - Natalizumab/Tysabri

► [Neurol Neuroimmunol Neuroinflamm.](#) 2020 Apr 23;7(4):e723. doi: 10.1212/NXI.0000000000000723. Print 2020 Jul 2.

Monoclonal antibody treatment during pregnancy and/or lactation in women with MS or neuromyelitis optica spectrum disorder

► [Neurol Neuroimmunol Neuroinflamm.](#) 2019 Nov 12;7(1):e637. doi: 10.1212/NXI.0000000000000637. Print 2020 Jan.

Minimal breast milk transfer of rituximab, a monoclonal antibody used in neurological conditions

Kristen M Krysko¹, Sara C Laflue³, Annika Anderson³, Alice Rutatangwa³, William Rowles³, Ryan D Schubert¹, Jacqueline Marcus¹, Claire S Riley², Carolyn Bevan¹, Thomas W Hale¹, Riley Eove²

Affiliations + expand
PMID: 31719115 PMID: PMC6857908 DOI: 10.1212/NXI.0000000000000637
[Free PMC article](#)

► [J Neurol Neurosurg Psychiatry.](#) 2022 Jul 25;94(1):38-41. doi: 10.1136/jnnp-2022-329545. Online ahead of print.

Safety of breast feeding during rituximab treatment in multiple sclerosis

Brit Ellen Rad¹, Øivind Torkildsen¹, Kjell-Morten Myhr¹, Lars Bo¹, Stig Wergeland⁴

Affiliations + expand
PMID: 35879056 PMID: PMC9763193 DOI: 10.1136/jnnp-2022-329545
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