Breastfeeding and Multiple Sclerosis

Information on this page outlines the consensus opinion of the UK MS Pregnancy Register Steering Group and has been produced to help you in your discussions with your MS team about what you should do.

Decisions around breastfeeding for mothers with multiple sclerosis

- Decisions around breastfeeding can be very emotive. MS and its treatments can influence this decision. For some people, breastfeeding might be easy, for others it might not go as well as hoped. It's important to seek support if things aren't working for you and your baby.
- There are benefits of breastfeeding for both mothers and babies outside of MS, and these should be considered alongside decisions around MS treatments.
- Benefits of breastfeeding for the mother include a decreased risk of breast and ovarian cancers, type 2 diabetes and metabolic syndrome.[1, 4, 5]
- Benefits of breastfeeding for your baby include decreased risk of infections, and lower infectious mortality.[6]
- The World Health Organisation therefore recommends exclusive breastfeeding for 6 months.[7]
- The MS trust recommends that mothers with MS (not on medication contraindicated for breastfeeding) follow current general guidance. Exclusive breastfeeding is recommended for around the first 6 months of your baby's life and alongside solid foods from 6 months and older. It is recommended that you continue breastfeeding in this way for up to two years or more.[2, 3]
- The MS trust recommends that women with MS consider storing supplies of breast milk in the freezer to use as a backup in case of relapse-associated disability or severe fatigue.[3]
- Not everyone can, or wants to, breastfeed; people should not feel pressured into having to breastfeed if they do not want to, or made to feel guilty if they cannot do so for any reason. The information on this page is designed to support women who are thinking about breastfeeding alongside taking DMT with their decisions.

Taking medications when breastfeeding – general considerations

- For people living with MS there is little data available on the safety of different medications used to treat Multiple Sclerosis during breastfeeding, making decisions for these mothers tough.
- One reason why these decisions are particularly difficult is that labels on drugs tend to err on the side of caution, protecting the baby from any possible exposure. Drug licensing therefore tends to recommend against breastfeeding[1] due to a lack of available data on the safety of these medications during pregnancy and breastfeeding.

- In the last decade, approvals have started to specifically consider breastfeeding safe in women treated with some disease modifying therapies.[1]
- Information on this page is taken from a range of recent studies and research papers for you to review yourself, and with your healthcare team to help with your decision.
- There are an increasing number of studies being done to evaluate the safety of different medications in pregnancy and breastfeeding, however it can take decades to get enough data to be able to provide definite answers. This means that whilst the results of many studies are encouraging, they cannot guarantee safety.[1]

Breastfeeding and risk of postpartum relapses – what does the data indicate?

- Breastfeeding exclusively for at least two months has been associated with a reduced risk of postpartum relapses, and some breastfeeding with no effect or marginal benefit.[8]
- Between 6-12 months postpartum, the proportion of women who had their first postpartum relapse was very similar among women who breastfed exclusively for at least the first 2 months postpartum, those who breastfed exclusively and those who did not breastfeed.[8]
- The results from this study are in line with another study of 501 female participants which investigated for any links between pregnancies and breastfeeding and the risk and evolution of MS in those with CIS (Clinically Isolated Syndrome).[9]
- It did not find a link between increased risk of Clinically Definite Multiple Sclerosis or increased disability due to MS following pregnancy or breastfeeding.[9]
- A meta-analysis (examination of data from multiple studies on the same topic) of 24 studies that together included nearly 3000 women concluded that breastfeeding is likely protective against post-partum relapses in MS, however there is the potential for bias in these studies.[10]
- People with MS who breastfed had around a third lower odds of postpartum relapse compared with those who did not breastfeed or did not exclusively breastfeed post-partum.[10]
- The association between breastfeeding and reduced risk of relapse seemed to be stronger in studies of exclusive breastfeeding for 2 or more months.[10]
- It is important to recognise that the link between longer breastfeeding and fewer relapses could be due to the fact that these women had milder MS to start with - because women with higher MS activity are more likely to decide not to start, or stop breastfeeding early to start DMT.[11]
- The meta-analysis therefore concluded that whilst current data indicates that there is a protective nature of breastfeeding, high-quality studies that emulate a randomised trial (a particularly reliable type of clinical trial) would be of benefit to eliminate the influence of confounding factors. [10]

Relative infant Dose and its significance

- It is possible to calculate the Relative Infant Dose (RID) for medications. This is a number that gives an indication of how much of the medication the baby gets via breastmilk compared to the maternal dose. It is calculated through a range of factors including factors specific to the drug, such as its size, and the child's health status.[1]
- A Relative Infant Dose less than 10% is generally considered safe for breastfeeding.[1, 12]

  However, even if the RID is less than 10%, how the drug works still needs to be taken into account, as a RID of less than 10% may still be too high for highly toxic medications such as chemotherapy.[1]
- Monoclonal antibody therapies in general have low transfer to mature breastmilk (>2 weeks post-partum, after the colostrum), and are not usually absorbed in the stomach. Reassuring infant outcomes have been reported in more than 350 infants exposed to breastmilk of women treated with these kind of drugs.[1, 13, 14]
- Available data show promising results with low breastmilk concentrations for natalizumab, rituximab and ocrelizumab and no negative effects on infant growth, development, infections or lymphocyte levels.[1, 13,15, 16, 17](discussed below)

Summary of recent studies that have investigated risks of specific MS treatments on breastfeeding

- **Glatiramer acetate:**
  - A study of 702 pregnancies specifically examined the risk of maternal exposure to glatiramer acetate (Copaxone) during pregnancy and/or breastfeeding. and found that it did not appear to be related to adverse infant outcomes.[18]
  - The European Marketing Authorisation (EMA) label states that glatiramer acetate is safe for use in breastfeeding.
- **Interferon betas:**
  - the European Marketing Authorisation (EMA) for Interferon betas changed in 2019 to state that these medications could be used during breastfeeding.[1, 19]
- **Ocrelizumab:**
  - A study found that the median average relative infant dose in women taking ocrelizumab whilst breastfeeding was below 1%. Ocrelizumab was nearly undetectable in breastmilk after 90 days.[22]
  - These babies growth and development did not differ from those in the study who were not breastfed.
  - The SOPRANINO study has provided further reassuring data showing that ocrelizumab is not detectable in the blood of breastfed infants of mothers receiving ocrelizumab, and that B cell levels in the infants are normal.

- The EMA license for ocrelizumab has recently been updated to state that "ocrelizumab can be used during breastfeeding starting a few days after birth".

- **Rituximab (not used in the UK but widely used off license for MS treatment elsewhere)**
  - A study from 2020 determined that there is very minimal transfer of rituximab into mature breast milk.[21]
  - The RID for rituximab was less than 0.4% and therefore much lower than the 10% acceptable threshold; it is also thought that the low oral bioavailability of rituximab will limit its absorption by the infant.[21]
  - Infants in the study were followed up to 8-12 months of age and demonstrated no serious infections and normal growth and development.[21]
    It is therefore reasonable to use rituximab during breastfeeding.

- **IV and high dose steroids (methylprednisolone)**
  - Steroids such as methylprednisolone are used to treat relapses in MS. If you are breastfeeding and have a relapse, steroids are generally accepted top be safe to take.
  - A recent study showed that methylprednisolone does cross into breast milk, but at very low levels. The amount of steroid peaks after 1 hour after infusion, and quickly reduces. Although the amount of steroid that a breastfed baby would receive is very low, you can further reduce this exposure by delaying breast feeding for 2-4 hours after each steroid treatment. You may wish to consider storing breast milk in the freezer in case this becomes necessary.

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Summary of medications and available data on impact on / of breastfeeding:

Disease Modifying Therapy	Current labelling (EMA = European Medicines Agency) (FDA = Food and Drug Administration in the USA)	Transfer into breastmilk	Potential effect on infant following exposure through breastmilk	Recommendation for use during breastfeeding from two weeks postpartum
Interferon betas (subcutaneous or intramuscular)	EMA: can be used during breastfeeding. FDA: Consider the benefits of breastfeeding for the baby along with the mother's clinical need for interferon beta and potential adverse effects on baby from interferon beta or from underlying maternal condition.	Very low concentrations.	Overall no side effects and typical development and growth.	Yes, no interval needed between injection and next breastfeeding. Premedication with ibuprofen or paracetamol is allowed.
Glatiramer acetate (subcutaneous)	EMA: can be used during breastfeeding. FDA: Consider the benefits of breastfeeding for the baby along with the mother's clinical need for glatiramer and potential adverse effects on baby from glatiramer or from underlying maternal condition.	No data but we presume low or undetectable amount due to large molecule size.	Overall typical development and growth.	Yes, no interval needed between injection and next breastfeeding.
Dimethyl fumarate and diroximel fumarate (oral)	EMA: a decision must be made whether to discontinue breastfeeding or discontinue therapy. FDA: Consider the benefits of breastfeeding for the baby along with the mother's clinical need for dimethyl fumarate and diroximel fumarate and potential adverse effects on baby from the medication or from underlying maternal condition.	Very low reported concentrations (although small sample size) for dimethyl fumarate. No data for diroximel fumarate.	No data	Discuss with your neurologist – given low concentrations in breastmilk may be possible to breastfeed on this medication.
Teriflunomide (oral)	EMA and FDA: contraindicated during breastfeeding.	No data although presumed to be present. Detected in milk in animal studies.	No data	No
S1P receptor modulators (oral) (includes fingolimod, ponesimod, ozanimod, Siponimod)	EMA: should not breastfeed FDA: Consider the benefits of breastfeeding for the baby along with the mother's clinical need for S1P receptor modulators and potential adverse effects on baby from the medication or from underlying maternal condition.	No data although presumed to be present. Detected in milk in animal studies.	No data	No

Cladribine (oral)	EMA: breastfeeding contraindicated for 1 week after last dose. FDA: breastfeeding contraindicated for 10 days after last dose.	Study found low molecular calculated RIDs of 2.99% (10 mg dosage) and 4.73% (20 mg dosage), below the 10% safety threshold.[24]	No data	Need to stop breastfeeding when taking a course, and wait until at least a week after the last dose before restarting.
Natalizumab (intravenous or subcutaneous)	EMA: discontinue breastfeeding during treatment. FDA: Consider the benefits of breastfeeding for the baby along with the mother's clinical need for ocrelizumab and potential adverse effects on baby from ocrelizumab or from underlying maternal condition.	Low concentration but unclear if accumulation could occur. Low amounts detected in 20 women's breastmilk.	No effects on infant development and health found. No haematological abnormalities in infants exposed only during lactation. No natalizumab detected in blood of two infants after first infusion during lactation.	Yes, in discussion with neurologist. No interval needed between infusion and next breastfeeding.
Ocrelizumab (intravenous)	EMA: ocrelizumab can be used during breastfeeding starting a few days after birth. FDA: Consider the benefits of breastfeeding for the baby along with the mother's clinical need for ocrelizumab and potential adverse effects on baby from ocrelizumab or from underlying maternal condition.	Low or undetectable concentrations.	No adverse effects and typical development observed.	Yes
Ofatumumab (sc)	EMA: In humans, excretion of IgG antibodies in milk occurs during the first few days after birth, decreasing to low concentrations soon afterwards. Consequently, a risk to the breast-fed child cannot be excluded during this short period. Afterwards, ofatumumab could be used during breast feeding if clinically needed.	Unknown; presumed to be low.		Yes

This table is adapted from 'Family Planning considerations in people with multiple sclerosis' in the Lancet[1] and collates the most up-to-date data available from a number of recent studies. New data on cladribine not from the original source is referenced within the table. Where SmPC have been updated this is reflected in the table.

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