



## Multiple Sclerosis: Pregnancy Q&A

### 1. Does having multiple sclerosis affect my fertility?

Having multiple sclerosis (MS) does not seem to affect fertility in any significant way. Women with MS have a normal fertility rate and no increase in fetal abnormalities or spontaneous miscarriage. The standard immunomodulating agents for MS (the interferons and copolymer) do not affect fertility itself, although they are not recommended during pregnancy. Mitoxantrone (Novantrone<sup>®</sup>), an FDA-approved medication for progressive MS, may affect fertility in the same way that other chemotherapies may. It is probably a good idea to discuss fertility with your neurologist before going on such medications.

### 2. Does having children alter the long-term course of multiple sclerosis?

In the past doctors often advised women with MS to avoid getting pregnant. It is unclear how the doctors decided on this advice, but over the past 20 years we have learned a lot about the interaction of pregnancy and MS. We now know that having children does not have a major impact on the course of MS in the long term. One study from Sweden in the 1990's indicated that having children may, in fact, improve the course of MS in the long run. A well-designed follow-up study of pregnancy in MS (the PRIMS study) showed that while the relapse rate increased post-partum, there was no change in the overall course of MS during a three-year follow-up period.

### 3. How does pregnancy affect the short term course of multiple sclerosis?

There are many follow-up studies of women with MS going through pregnancy. We now know that during pregnancy there is a significant reduction in attacks, particularly in the third trimester. In the PRIMS study, the relapse rate dropped 70% during the third trimester. We don't know yet which changes during pregnancy cause this reduction, but there are many factors that are altered in pregnancy. There are elevated hormonal levels during pregnancy. One of these hormones, estriol, has been shown to reduce MRI activity in women with MS. Other hormones may also be important.

We also know that levels of some immune chemicals such as IL-12 and TNF-alpha are reduced during pregnancy. In addition, cells that make interferon-gamma, an interferon that worsens MS, are reduced during pregnancy compared with the post-partum period. Finally, there appears to be an increase in certain immune cells (regulatory T cells) that may also suppress MS activity in pregnancy. These and other changes may help protect against attacks of MS.

#### **4. What about after pregnancy?**

We know that in the first three to six months after delivery there is an increased risk of MS attacks. The overall rate of attacks during the pregnancy and post-partum period does not differ from the attack rate before and after the pregnancy year. In the largest prospective study of pregnancy in MS (the PRIMS study), 72% of women followed did not experience a relapse during the first three months post-partum. There are no specific factors that predict a relapse after delivery.

#### **5. Is the outcome of pregnancy any different for a mother with MS?**

Using data from a Medical Birth Registry in Norway, Dahl and colleagues found that mothers with MS had a higher proportion of small-for-gestational age babies. They also had a higher rate of induction of labor and operative interventions during delivery.

Another study of mothers who had become pregnant while on interferon therapy showed an increased rate of miscarriages and stillbirths compared with controls. This study also found low birth weight compared with controls.

In another study from Seattle, mothers with MS were twice as likely to need to be re-hospitalized compared with controls; however, in this study, there was no increase in small-for-gestational age infants, preterm infants, or infants with fetal malformations. Differences among such studies may reflect different populations, obstetrical practices, and differences in the MS disease course. In general, these differences were not major and did not appear to affect the long-term health of the baby.

#### **6. What about breastfeeding?**

Studies done in the 1980s showed that breastfeeding does not have an impact on MS. As with any medication, there is little or no information on the standard MS medicine and breastfeeding, so, in general, it is best to

avoid medications during breastfeeding if possible. How long to breastfeed before restarting immune modulating medications is an individual decision.

#### **7. Are immunomodulating medications okay to use in pregnancy?**

There are a variety of registries that have reported on women using immunomodulating medications in pregnancy. The interferons as a class (Avonex®, Betaseron®, Betaferon®, Rebif®) are contraindicated in pregnancy. In animal models they cause miscarriages. In women who have become pregnant while on these agents, there is an increased risk of stillbirth and miscarriage as well as small-for-gestational age babies.

Limited data on copolymer (Copaxone®) indicates that it has little or no impact on infant outcomes. In general, it is recommended that women stop such medications about three months before trying to become pregnant to avoid problems during pregnancy. Chemotherapeutic agents such as mitoxantrone are contraindicated in pregnancy.

#### **8. Will pregnancy affect my MS symptoms?**

There are no well-designed studies of symptoms of MS during pregnancy outside of attack rate and progression of MS. Anecdotally, women often feel well during pregnancy, but there are no good measures of this. One study looked at urinary function during pregnancy in MS and showed no effect of vaginal delivery on urinary function after pregnancy in women with MS.

#### **9. Can I have an epidural if I need it?**

In the past there were concerns that various anesthetic agents might affect MS negatively, and women were often encouraged to avoid anesthetics such as an epidural. However, the best evidence we have indicates that there is no special risk for an epidural in women with MS. It is an individual choice as to whether or not to have an epidural.

## 10. What about having a caesarean section?

Prospective studies have shown that in general women with MS are more likely to have a caesarean section than other women. It is unclear why this is. It may reflect a delay in labor in women with muscular weakness. It may reflect heightened concerns by physicians and nurses when caring for a woman with MS. However, what is known is that a caesarean section does not have an impact on the MS course. There is no evidence that having a caesarean section will cause a relapse or progression of MS beyond the already established course of the disease. In addition, there is no evidence for a benefit of caesarean section over vaginal childbirth; each birth decision is an individual one.

## 11 What are my children's chances of getting MS?

It is known that MS has some genetic features. Children of women with MS have a 3% to 5% lifetime chance of developing MS. In other words, they have an approximately 96% chance that they won't develop MS, or 24 to one odds against having MS.

## 12. Can I breast-feed after pregnancy?

There is no evidence that breast-feeding is a problem for patients for MS or their children. Breast-feeding may be important for many reasons for the developing child. A major question in women with MS is when to start back on immunomodulating medications. There is no specific timeline for weaning.

## 13. Can I take steroids if I have a relapse during pregnancy?

The best evidence we have shows that steroids can be used during pregnancy without a major risk to the mother or baby. In general, we try to avoid using steroids during the first trimester, and then use them only when necessary during the rest of pregnancy. Usually they will be needed only when the mother has an attack that affects her ability to function.

## 14. Should I take anything else after pregnancy?

In general, women who have needed immunomodulating medication before pregnancy are started back on their medication after they finish breastfeeding. One study showed that using IV steroids once a month for the first six months after delivery seemed to reduce the relapse rate compared with controls. However, there was no difference in neurological function or progression, and steroids have their own side effect profile. Using IV steroids or other medications such as IV immunoglobulin after delivery are at present not standard approaches in the United States in the postpartum period.

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