

Pregnancy and Epilepsy

Nowhere is the problem more evident—or more complicated—than in pregnancy. In the United States, epilepsy affects nearly one million women of childbearing potential. Alarm bells should go off for women with epilepsy who become pregnant or who are trying to become pregnant. Nevertheless, most women with epilepsy can and do have normal pregnancies.

- Some well-documented risks are associated with taking antiepileptic drugs (AEDs) while pregnant, but the answer usually is not to stop taking the medication.
- Seizures in the mother can also cause risks to mom and baby. For instance, what if you had a seizure and fell and injured yourself? A mother falling on her abdomen could injure the fetus. In addition, a generalized tonic clonic seizure may actually induce premature labor and a miscarriage.
- Women with epilepsy should follow the traditional rules for having a healthy pregnancy. People who have the most successful pregnancies are the people who are healthiest when they're not pregnant.

What should women with epilepsy who are trying to get pregnant do?

- Talk to your neurologist before you get pregnant so you understand the risks.
- Get their seizures under control.
- Find the right medication in the right dose.
- Try to get on just one medication if possible.
- Take a vitamin supplement containing folic acid.
- Avoid smoking.
- Be close to normal weight levels.
- Eat a sensible and balanced diet.

Credit to: Epilepsy Foundation, www.epilepsy.com

Risks During Pregnancy

Epilepsy is one of the most common medical conditions in women of reproductive age. It has been estimated that more than 1.1 million women with epilepsy in the United States are of childbearing age. With a birth rate of 3-5 per 1000 births, approximately 24,000 babies are born to women with epilepsy each year. Women with epilepsy have a number of unique concerns during pregnancy. Nevertheless, the overwhelming majority of these women will have a normal baby and the pregnancy will not significantly affect their epilepsy. Using strategies to lessen risks will promote a good outcome for mother and baby.

What are the risks of seizures during pregnancy?

Seizure frequency fortunately declines or remains the same in the majority of women during pregnancy.

- Yet in 15% to 30% of women, there may be an **increase** in seizure frequency, most often in the first or third trimester.
- The increased seizure frequency is not predictable by the type of seizures the woman has, how long she has had epilepsy, or even the presence of seizures in a previous pregnancy. Even having catamenial epilepsy, seizures occurring with the menstrual cycle, does not predict whether the woman will have more seizures during pregnancy.
- A number of factors have been suggested as possible triggers for these seizures, including hormone changes, water and sodium retention, stress, and decreasing blood levels of antiepileptic medications.
- Not enough sleep and not taking medications as prescribed may be the most important factors that women with epilepsy can control, along with consulting her neurologist during this time.
- There is good news though! Women who are seizure free for the 9 months **prior to pregnancy** have a very high chance of remaining seizure free during pregnancy!

Pregnancy and Epilepsy (continued)

What other risks may be associated with seizures?

Having seizures during pregnancy can cause injury or problems for the mother and child. The extent of risks are associated with seizure type.

- Partial seizures probably do not carry as much risk as generalized seizures.
- Yet partial seizures can secondarily generalize. These generalized seizures (especially tonic clonic ones) carry more risk to both mother and baby.
- These risks include trauma from falls or burns, increased risk of premature labor, miscarriages, and lowering of the fetal heart rate.
- Getting and keeping good seizure control during pregnancy is crucial. Most epilepsy specialists feel that the risks from seizures in the mother during pregnancy are greater than the risks from seizure medications.

What are the risks of seizure medications during pregnancy?

- The risk to the developing baby from anti-epileptic drugs taken during pregnancy is primarily that of congenital malformation or birth defects. In the general population, there is a 2% to 3% occurrence of congenital malformations that cannot always be predicted or prevented. In women with epilepsy, the risk is doubled to about 4% to 6%, but overall remains low.
- Risks to the developing baby may be greater when more than one type of medication is used and with a higher dose of medication.
- There clearly is a genetic role, with a previous pregnancy or family history of a congenital malformation raising the risk during the current pregnancy. Genetic counseling is needed in this circumstance.
- The most common malformations include cleft lip and cleft palate, which most often can be corrected surgically. Cardiac and urogenital defects also occur. Research is ongoing concerning the risks for developmental delays.

Which AEDs have the greatest risks?

There is limited information available on our new anti-epileptic drugs and only slightly more on the classic antiepileptic drugs. Given available information, it is recommended that the most effective drug with the fewest side effects be used.

Pregnancy registries have been established to help gain information. All pregnant women with epilepsy are encouraged to enroll in the North American Anti-Epileptic Drug Pregnancy Registry prior to having the initial pregnancy screening to help add to our knowledge base. Women outside North America are encouraged to enroll in their pregnancy registry via their neurologist.

While most of our anti-epileptic drugs can be and are used safely, some carry increased specific risks.

Valproate or valproic acid (VPA):

- When VPA is used in the early days of pregnancy, there is a 1% to 2% risk of neural tube defects (lack of spinal cord closure) and an overall 10% risk of any major congenital malformation in newborns.
- The NEAD study found that children of women taking valproic acid during pregnancy had children with lower IQ and an increased risk of autism.
- All of these risks are worse when higher doses of valproate are used.

What can help lower risks or problems for the baby?

- The risks of major birth defects is decreased in the general population when women take folate before the time of neural tube closure early in the first trimester.

Pregnancy and Epilepsy (continued)

- Although it may not be as protective in women with epilepsy, folate should be taken daily **prior** to becoming pregnant since most women do not know they are pregnant until after the time of neural tube closure (24-28 days after conception).
- A daily multivitamin containing 0.4 mg folate, as well as an additional 1- to 4-mg folate supplement, is recommended for all women taking AEDs who are of childbearing age.
- Selenium and zinc, contained in a multivitamin with minerals, also may be of some benefit.
- Vitamin K may be given to women taking enzyme-inducing AEDs in the last month of pregnancy to prevent rare bleeding complications in the newborn. Also, children born to women taking these medications should be given Vitamin K (usually 1 mg IM) at the time of birth.

What other strategies may lessen these risks?

- Most importantly, women should get accurate information prior to and during pregnancy.
- If antiepileptic drugs are not needed, multiple medications are being taken, or medications are given at high dosages, changes should be considered with a neurologist prior to a planned pregnancy. The lowest possible dose of seizure medication that will control seizures is recommended. Being on a single drug will decrease the risk of birth defects and result in fewer drug interactions, fewer side effects, and improve compliance.
- Monitoring drug levels is also very important. Antiepileptic drug levels should be checked throughout the pregnancy and following delivery. The levels of AEDs decline during pregnancy, with some being more affected than others. Dosage adjustments may be needed. Since the levels then rise following delivery, monitoring in the post-partum period is also needed to minimize side effects.
- Monitoring the baby with maternal serum-alpha-fetoprotein testing and a high resolution or level II ultrasound should be performed by the obstetrician.
- Epilepsy is not an indication alone for a cesarean section, and most women deliver vaginally.
- While AEDs are present in breast milk, breastfeeding is encouraged. Breastfeeding can generally be done safely, since the baby has been exposed to these drugs throughout the pregnancy and the absolute amounts of drug are low. Strategies such as taking seizure medications the immediately after a feeding should be considered to lessen the amount of drug in a feeding. Breastfeeding is generally safe and recommended for its important benefits to the infant.
- Caring for the baby can also be a concern. Changing diapers on the floor and bathing the infant with other adults present or with a sponge bath are some useful strategies.

More tips to remember:

- Seeing the doctor before becoming pregnant, keeping regular appointments, and checking antiepileptic drug blood levels during pregnancy are recommended.
- Taking the appropriate medications as prescribed, as well as having adequate rest and sleep are of utmost importance.
- Paying attention to nutrition with adequate weight gain and taking a multivitamin and additional folate before, during, and after pregnancy are needed.
- Avoiding cigarettes, alcohol, and caffeine are important for all women during pregnancy.
- Keeping all these factors in mind, the overwhelming majority of women with epilepsy will have a normal healthy baby.

Pregnancy and Epilepsy (continued)

Additional information for your doctors:

- [Physician's Discussion Checklist for Women with Epilepsy](#)
- [Physician's Discussion Guide for Women with Epilepsy](#)

Reviewed by: Steven C. Schachter, MD | Joseph I. Sirven, MD | Kimford J. Meador MD on 3/2014

Credit to: Epilepsy Foundation, www.epilepsy.com

Pregnancy, Seizures and Medications

What are the risks to my baby if I become pregnant?

Both seizures and medications are associated with some risks. The risk of seizures is associated with seizure type. Partial seizures probably do not carry as much risk as generalized seizures. Yet, they can lead to a generalized seizure. Generalized tonic-clonic seizures are associated with increased risk to both the mother and baby. These risks include:

- Trauma from falls or burns
- Increased risk of premature labor
- Miscarriages
- Lowering of the baby's heart rate
- Change in seizures

Seizure control is critical because the risks from seizures are greater than the risks from medications.

What are the risks of seizure medications to the baby?

The risk to the developing baby from seizure medications taken during pregnancy is primarily that of congenital malformation or birth defects.

- In the general population, there is a 2 to 3 of every 100 babies born may have a congenital malformation that cannot always be predicted or prevented.
- In women with epilepsy, the risk is doubled to about 4 to 6 of every 100 babies (which is a 4 to 6 % risk). While this risk is higher in women with epilepsy, the number remains low.
- There may be a higher risk when a woman is taking more than one drug, especially if one of the medicines is valproic acid/valproate.
- There clearly is a genetic role, with a previous pregnancy or family history of a congenital malformation raising the risk during the current pregnancy. Genetic counseling is needed in this circumstance.
- The most common malformations include cleft lip and cleft palate (which can be surgically corrected), problems with the heart, urinary or genital systems.
- Some medications, for example valproic acid/valproate, may also affect a child's development. Research continues in this area.

Pregnancy and Epilepsy (continued)

What is the 'best drug' to take during pregnancy?

- There is limited information available on new antiepileptic drugs and only slightly more on the classic antiepileptic drugs.
- Given available information, it is recommended that the most effective drug with the fewest side effects be used.
- Most of the seizure medications can be used safely, though some carry increased specific risks.
- Valproate used in the early days of pregnancy carries a 1% to 2% risk of neural tube defects (lack of spinal cord closure) and an overall 10% risk of any major congenital malformation.
- Moreover, research from the NEAD study (Neurodevelopmental Effects of Antiepileptic Drugs) found that children of women taking valproic acid during pregnancy had children with lower IQ and an increased risk of autism.
- The risks associated with VPA are greater when higher doses of VPA are used.

What can be done to lower the risk of birth defects?

- In the general population, the risk of birth defects is decreased by taking folate at the time when the brain and spinal cord are forming early in the first trimester of pregnancy.
- Although it may not be as protective in women with epilepsy, folate should be taken daily prior to becoming pregnant. Since most women do not know they are pregnant until after the time of neural tube closure (24-28 days after conception), taking it all the time is a good idea.
- During pregnancy, a daily multivitamin containing 0.4 mg folate, as well as an additional 1- to 4-mg folate supplement, is recommended for all women of childbearing age.
- Selenium and zinc, contained in a multivitamin with minerals, also may be of some benefit.
- Women with epilepsy on certain seizure medications (enzyme-inducing AED such as carbamazepine, phenytoin, phenobarbital, primidone) may be asked to take Vitamin K in the last month of pregnancy to prevent rare bleeding complications in the newborn.
- Babies of women taking one of these enzyme-inducing seizure medications should be given an injection of Vitamin K at birth.

What else can I do?

- Most importantly, women should get accurate information prior to and during pregnancy.
- See the doctor before becoming pregnant, keep regular appointments, and check blood levels during pregnancy as recommended by your health care team.
- If anti-epileptic drugs are not needed, multiple medications are being taken, or medications are given at high dosages, changes should be considered with a neurologist prior to a planned pregnancy.
- The lowest possible drug dose that will continue to maintain seizure control is needed.
- Being on a single drug may lower the risk of birth defects and result in fewer drug interactions, fewer side effects, and improve compliance.
- Taking the appropriate medications as prescribed.
- Monitoring drug levels is also very important. Anti-epileptic drug levels should be checked throughout the pregnancy and following delivery.
 - The levels of all anti-epileptic drugs decline during pregnancy, with some being more affected than others. Dosage adjustments may be needed.
 - Since the levels then rise following delivery, monitoring in the post-partum period is also needed to minimize side effects.

Pregnancy and Epilepsy (continued)

- Monitoring the baby with maternal serum-alpha-fetoprotein testing and a high resolution or level II ultrasound should be performed by the obstetrician. Epilepsy is not an indication alone for a cesarean section, and most women deliver vaginally.
- Remember to stay healthy!
 - Get enough rest and sleep.
 - Paying attention to nutrition with adequate weight gain and taking a multivitamin and additional folate before, during, and after pregnancy are needed.
 - Avoiding cigarettes, alcohol, and caffeine are important for all women during pregnancy.
- Keeping all these factors in mind, the overwhelming majority of women with epilepsy will have a normal healthy baby.

Can I breastfeed my baby?

While the anti-epileptic drugs are present in breast milk, breastfeeding is encouraged.

- Breastfeeding can generally be done safely, since the baby has been exposed to the seizure medication throughout the pregnancy and the absolute amounts of drug are low.
- Recent research* have found no side effects from breastfeeding in infants whose mothers were taking AEDs, when the children were tested at 3 years old. One study has followed children up to 6 years old and found that the children who were breastfed while their mothers were taking AEDs actually had higher IQs than children of women with epilepsy who were not breastfed.
- Other health benefits of breastfeeding to the baby are very important to consider.
- Strategies such as taking the antiepileptic drugs immediately after a feeding should be considered to lessen the amount of drugs in a feeding.

How can I help?

Pregnancy registries have been established to help gain information.

- All pregnant women with epilepsy are encouraged to enroll in the North American Anti-Epileptic Drug Pregnancy Registry prior to having the initial pregnancy screening to help add to our knowledge base.
- Women outside North America are encouraged to enroll in their pregnancy registry via their neurologist.

References for Breastfeeding:

[NEAD Study Group. Effects of breastfeeding in children of women taking antiepileptic drugs.](#)

[Early child development and exposure to antiepileptic drugs prenatally and through breastfeeding.](#)

Meador KJ, Baker GA, Browning N, et al: NEAD Study Group. Breastfeeding in children of women on antiepileptic drugs: Cognitive outcomes at age 6 years. *JAMA Pediatrics* 2014 (in press)

Reviewed by: Joseph I. Sirven MD | Patricia O. Shafer RN MN | Kimford J. Meador MD on 3/2014

Credit to: Epilepsy Foundation, www.epilepsy.com