Many women with epilepsy find that their seizures are affected by hormonal changes. Understanding the facts about this can help to maintain seizure control.

Women and epilepsy

A number of different hormones in a woman’s body control bone and muscle growth, heart rate, hunger, emotions and the menstrual cycle. The hormones associated with the menstrual cycle, oestrogen and progesterone, have a clearly established link with seizures. When seizures are exacerbated or occur exclusively during ovulation or just prior to or during menstruation it is termed Catamenial epilepsy.

Seizures and hormones

Although hormones generally do not cause seizures, they can influence their occurrence. Oestrogen and progesterone act on certain brain cells. Oestrogen excites the brain cells and can make seizures more likely to occur, whereas progesterone may inhibit the brain cells preventing seizures in some women. This is why some women have seizures or experience changes in seizure patterns frequently at times of hormonal fluctuations such as puberty, ovulation, menstruation or menopause.

Keeping a diary is a good way to identify if hormones trigger seizures.

Puberty

Puberty is a time of complex physical and emotional changes. Fluctuating hormone levels during puberty can affect seizure control. The physical changes can also happen so quickly that the dose of antiepileptic medication which worked previously may no longer do so. This is a good time to have antiepileptic medication blood levels checked to determine if the dosage needs to be changed.

Menstruation

Women with epilepsy may have a tendency to have more seizures at certain times of the menstrual cycle.

This can be due to:

- Hormonal fluctuations
- Fluid retention
- Reduced blood levels of antiepileptic medications before menstruation
- Sleep disruption
- Stress and anxiety

Menstrual changes have been identified in 30-50% of women with temporal lobe epilepsy as compared to 7% of women without epilepsy. These can include irregular menstrual cycles ranging from several months without menstruation to prolonged or shortened menstrual cycles.

Discuss concerns about menstruation and seizures with the doctor.
**Fertility**

Fertility can be affected in women with epilepsy. This means that women with epilepsy may find it more difficult to become pregnant, and are more likely to have difficulties during pregnancy or to miscarry. One of the reasons for this may be polycystic ovarian disease.

**Polycystic ovaries syndrome (PCOS)**

Polycystic ovaries syndrome affects 6% of women of reproductive age. Evidence suggests polycystic ovaries are more common in women with epilepsy. No clear reason has been established for this, however the single most highest risk factor for PCOS is weight gain. Long term use of Sodium Valproate (Epilim) has been shown to increase the occurrence of polycystic ovary syndrome in women, most likely because one of its unwanted effects is weight gain. There are also theories that it may be that epileptic discharges in the brain interfering with pituitary hormones. It is important for women with epilepsy to be aware of the indications for polycystic ovaries. These include:

- A menstrual cycle length that is shorter than 23 days or longer than 35 days
- Mid-cycle menstrual spotting/bleeding
- Weight gain and obesity
- Increase in body hair (male distribution) or thinning of scalp hair
- Acne
- Reduced sexual interest or difficulty in becoming aroused

Signs or symptoms of polycystic ovaries should be discussed with the doctor.

**Oral contraception (contraceptive pill)**

**Antiepileptic drugs that can interfere with oral and subdermal implant contraceptives***

- Carbamazepine (*Tegretol, Tegretol CR, Teril, Caramazepine Sandoz*)
- Oxcarbazepine (*Trileptal*)
- Phenobarbitone
- Phenytoin (*Dilantin*)
- Primidone (*Mysoline*)
- Topiramate (*Topamax, Tamate, Epiramax, APO-Topiramate, RBX Topiramate, Topiramate Sandoz, Topiramate-GA*)

*Antiepileptic drugs that can interfere with oral and subdermal implant contraceptives: Carbamazepine, Lamotrigine, Oxcarbazepine, Phenytoin, Primidone, Topiramate.*
Antiepileptic drugs that do not interfere with oral and subdermal implant contraceptives*

- Acetazolamide (*Diamox*)
- Clobazam (*Frisium*)
- Clonazepam (*Rivotril, Paxam*)
- Diazepam (*Valium, Antenex, Chemmart Diazepam, Diazepam-GA, GenRx Diazepam, Ranzipam, Terry White Chemists Diazepam, Valpam*)
- Ethosuximide (*Zarontin*)
- Lacosamide (*Vimpat*)
- Pregabalin (*Lyrica*)
- Sulthiame (*Ospolot*)
- Tiagabine (*Gabitril*)
- Vigabatrin (*Sabril*)
- Zonisamide (*Zonegran*)

Antiepileptic drugs that may have a limited clinical interaction and in some people may require additional contraceptive measures to be discussed with your prescribing doctor*

- Sodium Valproate (*Epilim, Valprease, Valpro, Valproate Winthrop, Sodium Valproate Sandoz*)

* Source: NSW Medicines Information Centre – Drug Information Pharmacist 16 Feb 2011

The decision to take an oral contraceptive should be discussed with the doctor, as additional contraceptive precautions may be necessary. For women taking an antiepileptic medication that does not interfere with the contraceptive’s metabolism, a low dose oral contraceptive, or mini pill (progestogen only) can be considered.

The morning after pill

Women who are taking antiepileptic medications may require a higher dose of the morning after pill. It is advisable to discuss the dose with the doctor.

Non-hormonal contraception

Epilepsy and antiepileptic medications do not hinder the effectiveness of the intrauterine contraceptive device (IUD), cervical cap, diaphragm or condom. The persona/rhythm method relies on testing urine for hormonal changes indicating ovulation. The rhythm method depends on identifying hormonal changes. As hormones can be affected by both epilepsy and antiepileptic medications, this method of contraception can be more unreliable.

It is recommended that women with epilepsy discuss contraceptive options with the doctor.
Pre-pregnancy counselling

Pre-pregnancy counselling is very important as antiepileptic medications and epilepsy management may need to be reviewed well before pregnancy. By working with your doctor you will minimise any risks to your children.

This is the time to ask important questions:

**Is epilepsy inherited?**

The risk of passing on epilepsy to your child is low. Accurate diagnosis of your epilepsy may give more indication of the risk. Many inherited epilepsies are outgrown at adolescence and easily treated. Even though epilepsy is rarely inherited, the tendency to have seizure can be.

**Can specific medications for epilepsy affect an unborn baby?**

Some medications for epilepsy are associated with a higher risk of birth defects than others. Pre-pregnancy planning is essential as treatment changes may need to be made such as:

- Adjustment to medication dose
- Change of medication type
- Withdrawal of some medication
- Adding vitamin supplements that contain folic acid

**Can anything be done to minimise the risk of birth defects?**

Some medications for epilepsy can increase the risk of spina bifida (abnormal development of the spine often causing leg weakness and impairment of bladder and bowel control). Increasing your intake of *folic acid* prior to conception and for the first three months of pregnancy might decrease this risk.

It is important to talk to the doctor and obstetrician about the likelihood of possible abnormalities and the screening tests that may be performed for detection of abnormalities.

*A healthy diet, regular moderate exercise and abstaining from tobacco and alcohol will help to minimise risks in pregnancy.*

**Pregnancy**

If a pregnancy is planned, it is advisable to be well informed. If it is unplanned it is important not to alter antiepileptic medication dose and to tell the doctor about the pregnancy as soon as possible. In brief:

- Over 93% of women with epilepsy can expect to have normal pregnancies and healthy babies.
- Approximately 25-30% of women with epilepsy will have an increase in the number of seizures during pregnancy. However, most women will see no change in their seizure frequency.
- It is desirable to establish the best possible seizure control prior to pregnancy.
- There is little evidence that partial or absence seizures result in increased risk to the unborn baby.
- Generalised tonic clonic (‘grand mal’) seizures, however, can be potentially harmful to both mother and baby.
It is preferable, but not always possible, to take only one antiepileptic medication. Both a neurologist and obstetrician will be involved in reviewing the medications.

As folic acid is thought to reduce the risk of birth defects, it is advisable to take a recommended dose (5mg/day) before conception and for the first three months of the pregnancy.

Since the metabolism of antiepileptic medications may change during pregnancy, it may be necessary to monitor blood levels and adjust medication.

Women are invited to enrol with the Australian Pregnancy Register for Women to assist with research into antiepileptic medication and pregnancy.

For more information call 1800 069 722 (free call).

**Breastfeeding**

Most mothers wish to breastfeed and are usually encouraged to do so.

The presence of antiepileptic medications in breast milk rarely causes problems to the baby. However, if your baby continually appears drowsy, seek specialist advice. Breastfeeding can be a tiring process and lack of sleep may trigger seizures in some mothers. These aspects should be fully discussed with your doctor.

**Caring for the baby**

- Caring for a new baby is tiring, especially if the baby wakes often at night. As lack of sleep may trigger seizures, a daytime nap may be helpful.
- If seizures are occurring, it may be safer to feed and change the baby on the floor.
- If alone, sponge rather than bathe baby.
- Always use a safety harness when baby is in a pram or stroller.
- Should you have a seizure, the usual fire-guards, play pens and stair gates will protect the child from dangers in the home.
- Consider attaching toddler reins to your wrist until your child understands the importance of staying near you should a seizure occur.
- Children love to mimic adults. So store medications in child-proof containers safely out of reach at all times.
- As your child gets older, it is important to discuss your epilepsy with them. Storybooks are available that may help you explain your epilepsy to your children.

**Menopause**

When the ovaries stop working, a woman goes through menopause. The effect of menopause on seizures has not been the subject of extensive research. At this stage the effects cannot be well predicted. But because there are changes in the hormones produced by the ovaries, oestrogen and progesterone, it is likely this will affect seizures in some way. For some women seizures may stop while others may experience an increase in seizures.

Epilepsy can begin at any age and may even begin during menopause. Preliminary research has raised the possibility that some women may have a greater risk of developing epilepsy during menopause. This is more likely to be related to stroke.
Hormone Replacement Therapy (HRT)

Menopause is a time of much hormonal change and HRT may be prescribed to alleviate some of the unpleasant symptoms. It is essential for women with epilepsy to know what effect HRT may have on their seizure control.

Unfortunately, there is little research about this. If menopausal symptoms need treatment, it would be advisable to discuss this with the doctor. If HRT is commenced and seizures increase, then other options may need to be considered.

Along with hormonal changes, metabolic changes also occur as we age. This may influence the rate at which medications for epilepsy and other conditions are absorbed and excreted.

Menopausal women with epilepsy have an increased risk of osteoporosis.

The role of HRT in preventing osteoporosis is particularly important for women with epilepsy. Some antiepileptic medications can reduce bone density and some people with epilepsy are at risk of falls, and therefore at higher risk of bone fractures.

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This information is given to provide accurate, general information about epilepsy. Medical information and knowledge changes rapidly and you should consult your doctor for more detailed information. This is not medical advice and you should not make any medication or treatment changes without consulting your doctor.