EPILEPSY AND PREGNANCY - THE FACTS

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Tim Betts is a consultant with a special interest in epilepsy; Lyn Greenhill is an Epilepsy Specialist Nurse. Together we run the Women’s Preconception and Pregnancy Service of the Birmingham University Seizure Clinic. The advice given in this leaflet is based on our audited experience in these clinics and on other research in this area. It is an area in which active development is taking place and our advice may change.

If you have epilepsy and are thinking about becoming pregnant the answers to the questions listed below will give you the basic facts that you need to make your decisions, in consultation with your medical advisor, about preparing yourself for pregnancy, becoming pregnant, going through labour and delivery and the early days after childbirth. The facts presented here must be discussed with your medical advisor, because, obviously, they have to be interpreted in the light of your own particular circumstances: information and knowledge in this area is changing rapidly. These are guidelines available for your medical advisor if he/she wants them. Some clinics, like ours, run a specific pre-conception counselling service which your doctor might feel would be of benefit to you. It is important to remember:

Most women with epilepsy should have no problems with pregnancy. However, all pregnancies in women with epilepsy should be planned, if at all possible, since most potential complications are avoidable: women with epilepsy should have talked through these issues with an appropriate health professional. There is evidence from the British Epilepsy Association that many women, however, do not get the advice that they need.

Q1  What is pre-conception counselling for women with epilepsy?

The definition varies from merely giving advice about risks, to complete reassessment of the woman’s epilepsy, withdrawing and/or modifying drug treatment where possible and using folic acid before conception (so called ‘pro-active pre-conception counselling’). Audited experience of pro-active counselling in our own clinic suggests that it may be advantageous for many women with epilepsy and
we continue to practice it, but some doctors believe it to be unnecessary and that an explanation of the potential risks is all that is needed.

Re-assessment of the epilepsy may show that the woman does not have epilepsy at all, may reveal a cause for the epilepsy that needs treatment before she becomes pregnant (like a blood vessel abnormality in the brain) and will give some guide as to whether she might be able to withdraw from medication before becoming pregnant. For some women investigation may show that surgery would be a treatment option which might be better carried out before she gets pregnant. At the same time a full medical screen can be done (in case other illness is present) advice given about pre-conception lifestyle and a plan developed for slow withdrawal or modification of medication if needed and folic acid 5 mg daily started: genetic advice can also be given where necessary. If pre-conception counselling involves a withdrawal of medication or substitution of other drugs, then it is a slow process and the woman must use reliable contraception until it is achieved as becoming pregnant during a complicated drug change is not a good idea (because taking more than one drug increases the risk). In some women pre-conception assessment may involve fertility assessment.

Q2 If I have epilepsy, am I more likely to have problems conceiving?
Women with epilepsy are slightly less fertile than women who do not have epilepsy - but if a woman with epilepsy does have a fertility problem related to her epilepsy, then it is treatable. Women with epilepsy who need fertility treatment (often for reasons unconnected with their epilepsy) should make sure that they have had any necessary drug withdrawal or change before they start fertility treatment. If given drugs to stimulate egg production women with epilepsy should remember that there may be a brief increase in seizure frequency during this time (or the return of previously controlled seizures). This tendency usually settles very quickly.

Q3 Why does having epilepsy sometimes make conception more difficult?
Women with epilepsy are more likely to have irregular periods than women who do not have epilepsy: irregular periods render women slightly less fertile. This is partly due to epilepsy itself which can upset the delicate balance of hormone release in the brain that controls the monthly cycle. It may also be partly due to the effect of antiepileptic medication on the way the ovaries work. Many women with epilepsy have polycystic ovaries (or polycystic ovaries) - when egg carrying cysts (or follicles) in the ovary fail to rupture at the right time of the month (thus releasing the egg). Some, but not all, women with this condition (itself so frequent that it can hardly be thought of as abnormal) develop hormonal changes as well that can lead to irregular periods and relative (but treatable) infertility. This condition (polycystic
ovary syndrome) may, in itself, be commoner in women with epilepsy and there is some evidence that one particular ant-epileptic drug (sodium valproate) may also induce the syndrome: this effect (if it is true - not all experts thinks so) is, from our own experience reversible: indeed we warn women coming off sodium valproate that they may get pregnant rather quickly when they have done so and should use contraception if they do not then wish to become immediately pregnant. Our present policy is to screen all adolescent girls with epilepsy and women seeking pre-conception counselling for the presence of polycystic ovaries and the hormonal changes and advise accordingly.

Q4 Does my epilepsy itself pose a risk to the development or health of my unborn baby?
A little. Women who do not have epilepsy have a 3% chance of having a baby with a significant abnormality at birth: this goes up to perhaps 4% if the woman has a history of epilepsy even if she is seizure free and not taking medication (this is not so if it is the father who has epilepsy). The reason for this increase is unknown, but the evidence is fairly solid.

Although it is better not to have seizures during pregnancy (for obvious safety reasons) there is no direct evidence that seizures of any kind effect the development of the child in the womb: status epilepticus (seizure after seizure without intervening return of consciousness) is, however, potentially fatal for both mother and child and needs to be prevented: this is why women with epilepsy discovering themselves to be unexpectedly pregnant should never suddenly stop their medication.

Q5 Will the medication I am taking for my epilepsy pose a risk to the development of my unborn child?
The short answer is yes, sometimes, but it depends. This is not a cop out: it is a difficult question to answer because earlier studies of the relationship between drugs a mother was taking and abnormalities in her baby tended to report abnormal babies but not normal ones, many women in these studies were taking too much anti-epileptic drug (i.e. they were intoxicated) or were taking more than one. It is possible to make a general statement that the background risk of abnormality in the baby is increased from 4% to 7% if a mother is taking one anti-epileptic drug at conception providing she is taking as little as possible: the risk goes up to 15% if she is taking two: some drug combinations of three drugs can raise the risk to 50%. Some other drugs, no longer used, were particularly damaging.
**What sort of abnormality can be caused?**

The severe abnormalities are those that directly affect the development of the brain, other organs or the skeleton and which will need treatment after birth or which will lead to long term problems for the baby: they include:

1) Malformations of the spinal cord and spine (spina bifida)
2) Malformations of the heart (e.g. hole in the heart)
3) Cleft palate and hare lip: malformation of the ribs
4) Malformation of the bladder and sexual organs
5) Malformation of fingers and toes - e.g. unseparated fingers

Less severe abnormalities, that usually correct themselves, are also described - so called ‘**dysmorphic features**’.

6) Facial abnormalities affecting the appearance of the face (e.g. eyes set too wide apart, thin upper lip).
7) Small fingers and toes with rudimentary nails.

There is present concern that children born with dysmorphic features may show later evidence of impaired intellectual development.

**Q6 What about the future development of the baby?**

Studies have tended to concentrate on abnormality at birth, but there is some evidence that a minority of babies at birth, born to mothers taking anti-epileptic drugs, are small for dates, have small heads and delayed development. It is usually assumed that they catch up, but there is some recent work to suggest that some babies born to mothers taking anti-epileptic drugs may have specific learning problems later on. This may be particularly likely with one anti-epileptic drug (sodium valproate), and needs urgent further work to clarify the extent of the problem. There is very little evidence to suggest that severe learning difficulty is associated with exposure to antiepileptic drugs in the womb.

**Q7 Will my baby be at risk all the time it is in my womb?**

The danger period seems to be the first 56 days or so of the pregnancy when the main organs and skeleton develop. The risk after 4 months of pregnancy is currently thought to be very low. Two things follow from this. Firstly, the danger period starts **before** the woman knows that she is pregnant (particularly if she has an irregular cycle) so it is important that she has sorted out her medication and is taking folic acid **before** she tries to get pregnant. The second is that some women who can get pregnant quickly may be temporarily able to withdraw from some of their medication (thought to be particularly risky) before conception and resume it after about four months.
Q8 Are some drugs thought to be more likely to affect the development of my baby than others?

The answer to this question is contentious, and there is no agreement among doctors. We can only tell you our present views (which may well change as we gather more evidence). The problem is, as in the answer to Q5, that most studies have been flawed by failing to include all babies born to mothers taking anti-epileptic drugs, especially the normal ones: most previous studies have also included women taking more than one anti-epileptic drug and often at what we would now consider to be toxic doses. Various registers been set up to try to measure the size of the problem properly but they do not yet contain enough information to fully guide us. Some, but not all, of the newer drugs may be relatively safer. The evidence for this is based on testing these drugs on various species of pregnant animals. All the older drugs, known to occasionally adversely affect the human baby, have similar effects in animals. Some of the newer drugs do not affect the development of animals in the womb, and are, therefore, probably safer but we need to assess human evidence to be certain. Some experts, on both sides of the Atlantic, like ourselves, take the view that the results of animal studies are helpful: others do not: all agree it is vitally important to record the outcome of every pregnancy occurring in women with epilepsy whether or not they are taking medication or still having seizures (for details of the UK register see the end of this leaflet).

Our present view is that some drugs are ‘high risk’ (and should be avoided, withdrawn or, where necessary, substituted before conception wherever possible): some are ‘medium risk’ and should be withdrawn or substituted sometimes, particularly if taken with another drug, but in low dose taken on their own (with the addition of folic acid) are probably reasonably safe and changing them might risk increasing seizure frequency. Some are ‘low risk’ where (on present evidence - which may change) the risk is probably not much greater than that of epilepsy itself (this view is largely based on animal work).

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NOTE: We may have used the official name of the drug: if you are more familiar with the trade name look at your drug pack for the official one. Of the high-risk drugs only Valproate is likely to be taken by young women of childbearing age. In our experience it can often, but not always, be withdrawn or substituted for Lamotrigine, but withdrawal or substitution is a long slow process. If it is impossible to completely withdraw from it we reduce the dose as much as possible and suggest it is taken three or four times a day (it is thought that this ‘dose spread’ reduces the risk). It is important to remember that even with a high-risk drug the majority of offspring will be fine. We would always try to remove Valproate if there is a family or previous history of spina bifida. Our present policy is to avoid using this drug in young women of childbearing potential unless it is the only drug that will help them. Preliminary evidence from the UK Pregnancy Register suggests it is the drug with the highest risk.

Q9 Why do we suggest taking folic acid?
All women who do not have epilepsy preparing for, or at risk of, conception should take 400 micrograms of folic acid daily (obtainable from health food shops and chemists). There is good evidence that this prevents spina bifida (malformation of the spinal cord and spine). In women at greater risk (ie those who have already had a spina bifida child) there is evidence that 5 milligrams daily (only obtainable on prescription) is usually protective against having another spina bifida baby. Many doctors, therefore, recommend that women with epilepsy (who are slightly more prone to having spina bifida in their offspring) take 5 mg of folic acid daily pre-conceptually and well into the pregnancy. Indeed, since accidental pregnancies are common, we often suggest that women with epilepsy whose contraceptive technique is a little shaky take 5 mg of folic acid daily all the time. There is no evidence that such a dose is harmful and we have some evidence that it may be protective (although there is, as yet, no absolute evidence that it is). There is no evidence that 5 mg of folic acid daily increases seizure frequency.

Q10 Is there any other precaution I can take?
Apart from ensuring that your pregnancy is planned and that you have had any necessary investigations and/or drug change before you get pregnant, make sure that you have a healthy lifestyle with a good diet and exercise and that, if you smoke, that you try to stop before you conceive: also, if you drink alcohol that you avoid it whilst trying to get pregnant and in the first few months of your pregnancy: it goes without saying that you should avoid street drugs whilst trying to get pregnant. There is also good evidence from Holland that avoiding caffeine containing drinks (coffee, tea, cola drinks etc) from before you conceive also reduces the risk. This may sound like ‘kill joy’ advice but it does help to minimise the risk to the baby.
Q11  What if I get pregnant accidentally and I have not had the chance to minimise the risks?
Don’t panic and don’t suddenly stop taking your anti-epileptic drugs, the resulting seizures would do more damage than the drugs themselves. See your doctor, do take folic acid and make sure you have the appropriate antenatal screening for foetal abnormalities so that you can decide whether to continue with the pregnancy.

Q12  What screening do I require during my pregnancy?
When you discover your are pregnant inform your GP and Consultant as soon as possible. Request care by an obstetric service which offers facilities for full pre-natal screening - make sure your obstetrician and midwife are aware that you have epilepsy and of any anti-epileptic drugs that you may be taking.

Most obstetricians offer an ultra-sound scan at 12 weeks (to ensure correct dates, etc.,) and a 18 - 20 weeks (to help detect any abnormalities such as spina bifida, which may have occurred during foetal development - this scan should be very detailed): some centres offer an extra scan at 24 - 26 weeks (this will help to detect any heart abnormalities).

The alpha-feto protein (AFP) blood test is currently offered to all women who are between 16 - 18 weeks pregnant. This can help to determine the risk of spina bifida. We recommend that all pregnant women with epilepsy should have this test, although for understandable reasons some women choose either not to have it or request not to be given the results. If the result suggests a ‘high risk’, a further detailed ultra-sound scan and an amniocentesis tests (removing and analysing some of the fluid that surrounds the foetus) may be carried out to confirm or refute the result of the AFP test. These tests are done at a stage of pregnancy where the parents can request a termination of the pregnancy if the foetus is heavily damaged.

Q13  Will my epilepsy get worse during pregnancy?
Most women will notice no change in their seizure frequency. A few may notice an increase in seizures during the first trimester (12 weeks) or third trimester (24 - 40 weeks): some women may stop having seizures altogether. Only extremely rarely is the increase in seizure frequency dangerous. Some seizure increase, particularly early in pregnancy, may be due to a woman cutting down on the amount of anti-epileptic medication she is taking due to fears of foetal damage. A woman thinking of doing this should discuss it with her doctor first. Any, of course, damage will usually have been done by the times she realises she is pregnant. Sometimes seizure increase early in pregnancy is due to ‘morning sickness’. Discussion about remedies for this condition and retiming of taking medication may be needed. An increase in seizure frequency late on in pregnancy is often due to levels of the anti-epileptic drug falling.
because of blood dilution, the dose of many anti-epileptic drugs has to be increased as pregnancy advances and may need to be decreased again when the baby is born. This dose increase in pregnancy will not harm the baby.

Q14 Will my baby inherit my epilepsy?
No, except in rare instances. A few forms of epilepsy are inherited. Seek further advice about your own particular form of epilepsy as knowledge in this area is changing rapidly.

Q15 Will epilepsy affect my pregnancy?
Women with epilepsy are only slightly more likely to have minor complications of pregnancy, such as severe morning sickness, toxaemia (raised blood pressure and protein in the urine) and vaginal bleeding during pregnancy. There is also a slightly increased risk of early labour (from approximately 30 weeks +) and a slightly increased risk of haemorrhage during labour. Most doctors would recommend that hospital birth is probably safer than home delivery for mother and child, if the mother has epilepsy. Recent studies of complication rates in pregnancies of women with epilepsy do suggest that the complication risk is only minimally raised.

Q16 Is there any further extra care I should receive during my pregnancy?
If you are taking anti-epileptic drugs that may affect vitamin K absorption (e.g. carbamazepine, phenobarbitone, phenytoin, primidone and possibly topirimate) it is advisable that your baby has some vitamin K at birth (by injection or by drops). This cuts down the small risk of severe bleeding during labour or afterwards in the baby. If you are not taking any of the above mentioned drugs, follow the vitamin K policy of your obstetric unit (policies vary). We currently suggest that all women with epilepsy taking the above drugs take 10 mg of vitamin K daily by mouth for the last month of their pregnancy.

Q17 Will I be able to have pain relief during labour?
YES. If you want epidural anaesthesia (spinal anaesthetic) you must inform the anaesthetist about your epilepsy and medication you are taking beforehand. It may be advisable to avoid the use of pethidine if possible as this has been known, in some of our patients, to induce seizures. The use of breathing techniques and gas and air are alsofavoured under instruction from your midwife. However, be careful not to over breathe (hyperventilate) if you know that over breathing is liable to trigger off your seizures (ask your doctor if you are not sure). TENS machines are safe.
If you have seizures where your consciousness is impaired, it is advisable to avoid bath births (water births) unless somebody who knows what to do if you should have a seizure can be with you at all times.

Q18 What happens if I have a seizure during labour?
Doctors and midwives will cope. The risk is small and can be minimised by ensuring that you take the normal dose of your anti-epileptic drugs during labour, and labour does not go on for so long that you become exhausted (especially in the second stage of labour). If you have frequent seizures or ones that are difficult to control, it may be best to use prophylactic medication like clobozam during labour and delivery. Make sure you take a small supply of your medication into hospital with you and that you take it at the appropriate times. Taking a small supply of medication with you is important if you are taking one of the newer anti-epileptic drugs which the hospital may not stock.

Q19 Will I be able to breast feed my baby?
Certainly, if you want to. Your baby has had nine months to get used to your drugs so a small amount of them in your breast milk usually won't cause problems. Only if your baby is consistently over sleepy and not waking for his/her feeds should you consider stopping breast feeding. It is a woman’s choice whether she breast feeds or not, but breast feeding for a few days after birth at least prevents the baby from being abruptly withdrawn from the drugs that his/her mother is taking. If your baby is very premature seek advice from your medical advisors before breast feeding (see our leaflet on care after birth). Some women who do not want to breast feed do add their breast milk to formula feed for a day or two to help prevent withdrawal jitters.

Q20 After my baby is born and I take him home what precautions should I take?
We have good evidence that learning and taking a few common sense precautions considerably minimises the risk of your seizures harming your baby. Even if you have been well controlled, however, the stress of looking after a young baby may increase the risk temporarily of you having seizures again so read our leaflet on looking after a baby if you have epilepsy, carefully. Depression after childbirth is relatively common (but treatable). Women with epilepsy are no more prone to this than women who do not have epilepsy: (indeed it is our own experience that the reverse may be true).
Copies of guidelines for the management of women with epilepsy and of our audited experience of pro-active pre-conception counselling are available for your doctor if he or she wants them from the above address. The address and phone number of the UK pregnancy register is:

UK Epilepsy & Pregnancy Register, Department of Neurology, Royal Victoria Hospital, Grosvenor Road, Belfast BT12 6BA. Patient self referral: 0800 389 1248

Leaflets are also available on:

Now I am pregnant; Management during labour; What happens after the birth; Being a woman, having epilepsy

Finally, all women are different. We can only offer a general guide in a leaflet. Do consult your medical advisor, but you can use these leaflets as a guide to that consultation. Our own experience in this area is increasing, so that some of the ideas expressed in this leaflet may change.

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