Aneurin Bevan University Health Board

Epilepsy in Pregnancy Management Guideline

N.B. Staff should be discouraged from printing this document. This is to avoid the risk of out of date printed versions of the document. The Intranet should be referred to for the current version of the document.

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Contents:

Background

Epilepsy affects approximately 1 in 20 people in the UK at some point in their life. In Wales, epilepsy is the commonest neurological condition with an estimated number of 20, 000 – 30, 000 people suffering with active epilepsy[1]. The current prevalence in pregnant women is thought to be around 0.5-1%, with 2,500 infants born to affected mothers each year in the UK. The risk of death is increased ten-fold in women with epilepsy compared with those without the condition. Twenty two maternal deaths between 2016-2018 were attributed to epilepsy in the 2020 MBRRACE-UK report (an increase from 13 women between 2013-2015). Eighteen of these deaths were classified as SUDEP (sudden unexpected death in epilepsy), with poorly controlled seizures being the main contributory factor.[2] The majority of these women had poorly controlled epilepsy pre-pregnancy, however very few had pre-pregnancy counselling and less than half had a specialist review during pregnancy.[10]

Aims

To provide information to healthcare staff about the services available within the Health Board to patients with epilepsy. The aim is to highlight: how to access these resources; inform staff about the care required in the antenatal period; and what to do in an emergency situation. The overarching aim is to provide multidisciplinary working to standardise and improve the care of pregnant women with epilepsy.

Objectives

Clarity in decision making for women with epilepsy during pregnancy, labour and delivery.

Scope

This document relates to all maternity staff and women with epilepsy in pregnancy.

Clinical Features of Epilepsy

The epilepsies are a heterogeneous group of brain diseases with the common feature of seizure.[2] Epilepsy is classified according to the clinical type of seizure or specific Electro-encephalographic (EEG)

features. Many types of epilepsy are characterized by more than one type of seizure. These may broadly be divided into:

- Primary generalized epilepsy (including tonic-clonic seizures, absences and myoclonic jerks)
- Partial (focal) seizures with or without loss of consciousness
- Temporal lobe seizures which are a form of partial seizures.[3]

Uncontrolled tonic-clonic seizures are the strongest risk factor for Sudden Unexpected Death in Epilepsy (SUDEP), which is the main cause of death in pregnant women with epilepsy. SUDEP is defined as 'sudden, unexpected, witnessed or unwitnessed, non-traumatic and non-drowning death in patients with epilepsy, without evidence for a seizure and excluding documented status epilpeticus in which post-mortem examination does not reveal a toxicologic or anatomic cause for death.[2]

Common Types of Epilepsy / Seizures	Clinical Presentation	Effects on mother and fetus
Tonic-clonic seizures	Dramatic events with stiffening, then bilateral jerking and a post-ictal state	Sudden loss of consciousness with an uncontrolled fall without prior warning. Associated with a variable period of fetal hypoxia.
Absence seizures	Generalised seizures that consist of brief blank spells associated with unresponsiveness, which are followed by rapid recovery.	Effects mediated through brief loss of awareness although physiological effects are modest. Worsening absence seizures place the woman at high risk of tonic-clonic seizures.

Juvenile myoclonic epilepsy	Myoclonic jerks are the key feature of this form of epilepsy and often precede a tonic-clonic convulsion. These jerks present as sudden and unpredictable movements and represent a generalised seizure	Occurs more frequently after sleep deprivation and in the period soon after waking or when tired. The sudden jerks may lead to falls or dropping of objects, including the baby.
Partial / focal seizures	Symptoms are variable depending on the regions and networks of the brain affected. Within an individual, the attacks are recognisable and stereotypical. Seizures may impair consciousness.	Impairment of consciousness increases risk of injury such as head injury. They can be associated with a variable period of hypoxia and risk of SUDEP.

Diagnosis of Epilepsy

Most women with epilepsy in pregnancy have already been diagnosed, however when a first seizure occurs in pregnancy, the following investigations are appropriate:

- BP, Urine dipstick, FBC, Coag, blood film, Serum glucose, Bone profile, U&Es, LFTs

Following discussion with medical team:

- CT or MRI Brain (Although not necessarily recommended for the first seizure in the non-pregnant patient, is of value to exclude some of the differential diagnoses – see below. The risk to the fetus from a single CT exposure is minimal.[2])
- EEG[3]

The diagnosis of epilepsy should be established by a specialist medical practitioner with training and expertise in this range of conditions.[4] It may not be possible to make a definite diagnosis and

further investigations anor referral to a tertiary centre should be considered. Any assessment of the condition in pregnancy should include:

- duration and severity,
- frequency and type of seizures,
- impact of epilepsy on the mother such as driving, accidents, family life and employment.
- A drug history of effective and ineffective medications.[4]

Women who have remained seizure-free for at least 10 years, with at least 5 of these off medication or those with a childhood epilepsy syndrome who have reached adulthood seizure/treatment-free are no longer considered to have epilepsy.

A neurologist, could also make the decision regarding the resolution of epilepsy on an individual basis. These women can be managed as low-risk individuals in their pregnancy provided that there are no other risk factors.[2]

Differential Diagnoses

Other causes of seizures in pregnancy include:

- Eclampsia
- Cerebral vein thrombosis
- Thrombotic thrombocytopenic purpura
- Stroke
- Subarachnoid haemorrhage
- Drug / alcohol withdrawal
- Hypoglycaemia
- Hypocalcaemia
- Hyponatraemia
- Infections
- Post-dural puncture
- Gestational epilepsy
- Non-epileptic seizure disorder

Any pregnant woman presenting in the second half of pregnancy with seizures that are not clearly attributable to epilepsy should have immediate treatment via the existing eclampsia protocol until a definitive assessment or diagnosis can be made.[2]

Effect of Pregnancy on Epilepsy

Two-thirds of women will not have seizure deterioration in pregnancy. The seizure free duration is the most important factor when assessing the risk of seizure deterioration. Women who have been seizure free for approximately 1 year prior to pregnancy are likely to continue to

be seizure free during pregnancy, unless AEDs are stopped or reduced abruptly. [2,3] Conversely, those with poorly controlled epilepsy, in particular when seizure frequency exceeds >1 per month, are more likely to deteriorate in pregnancy. There is no clear evidence to support therapeutic drug-level monitoring in the management of these patients.[2] Other features such as suspicion of non-adherence, toxicity and/or intractable seizures may support this practice on an individual case basis.

Possible reasons for deterioration in seizure control during pregnancy include:

- Pregnancy in itself
- Poor compliance due to fears regarding teratogenesis
- Decreased drug levels secondary to nausea and vomiting
- Decreased drug levels related to an increased volume of distribution and increased drug clearance through the liver and kidney
- Decreased drug levels related to reduced absorption during labour
- Hyperventilation during labour[3]

Effect of Epilepsy on Pregnancy

Health professionals caring for women with epilepsy should be aware of the side effects that AEDs and/or epilepsy itself can have on mental health and wellbeing of patients.

AEDs have the potential to affect maternal cognition, particularly when used in higher doses or with polytherapy. Some epilepsies themselves can cause an increased risk of depression, poor concentration, irritability or anger. Clinicians should take every opportunity to raise patient awareness and self-monitoring of this and offer early referral to the perinatal mental health team if there are any concerns.

There is a very small but significant risk of certain obstetric complications in women with epilepsy and clinicians should be aware of this when counselling and monitoring patients. These are:

- Spontaneous miscarriage
- Antepartum or postpartum haemorrhage
- Hypertensive disorders
- Induction of labour
- Caesarean section
- Fetal growth restriction
- Preterm delivery

Pre-conceptual Counselling and Management

In patients not exposed to Anti-Epileptic Drugs (AEDs,) the incidence of major congenital malformations is similar to the background risk for the general population.

In those who are taking AEDs, the risk of major congenital malformation to the fetus is dependent on the type, number and dosage of the AED. The most common major congenital malformations are neural tube defects, congenital heart disorders, urinary tract and skeletal abnormalities and cleft palate defects. Poly-therapy with more than one medication increases these risks.

Lamotrigine and carbamazepine monotherapy at lower doses carry the least risk of major congenital malformation in the fetus.[2]

Sodium valproate must not be used in pregnancy, and only used in girls and women when there is no alternative and a pregnancy prevention plan is in place. This is because of the prevalence of malformations affects around 11% of babies with developmental disorders detected in up to 30-40% of children after birth.[5]

Pre-pregnancy Counselling:

- Women with epilepsy should be reassured that most will have a normal pregnancy and delivery.
- Genetic counselling regarding risk of inheriting epilepsy is low in most types of epilepsy.
- There is a risk of congenital anomalies associated with AEDs.
- Monotherapy is preferable at the lowest effective dosage. Women tend to overestimate the risks of teratogenicity associated with intake of AEDs in pregnancy. Risk perception is likely to have an effect on adherence to therapy. Good compliance with treatment is essential. Women should be informed of the potential risks as a result of stopping AED medication suddenly. Routine monitoring of AED levels in pregnancy is not recommended.
- Folic acid – 5mg daily should be taken from 3 months before conception to at least the end of the first trimester to reduce the risk of neural tube defects and cognitive deficits.[2] Ideally this should be continued throughout pregnancy as there is a small risk of folate-deficiency anaemia.[3]
- Antenatal screening tests – will be as for the general population of pregnant women - ultrasound can detect over >90% of neural tube defects.[6]
- Expected course of epilepsy and risk of seizures – the frequency of seizures in pregnancy remains unchanged in around two-

thirds of cases. Drug doses may need to be increased in some women to maintain adequate seizure control.

- Expected course of pregnancy and delivery – women with epilepsy should receive joint care between medical, obstetric and midwifery teams. The birth outcome is usually uneventful and caesarean section is indicated only in the most difficult cases or for obstetric reasons.

Antenatal Management

Freedom from seizures is the ultimate aim in the treatment of patients with epilepsy. This is only possible with a multi-disciplinary collaboration of joint care between GPs, midwives, obstetricians, neurologists and Epilepsy Specialist Nurses (ESNs).

Role of Midwives

The community midwife book patients at home and identify those who are diagnosed with epilepsy. The woman is then booked under the appropriate Consultant depending on the place of delivery- see ***Appendix 1.***

It is important that along with booking an appointment to the ANC the community midwife also should liaise with the Epilepsy Specialist Nurse to request an early review.

At every point of contact with the patient, the opportunity should be taken to give information about the importance of continuing good compliance with AEDs and to ensure that the woman is taking high dose Folic acid (5mg.)

Women with epilepsy who have become unexpectedly pregnant should be able to discuss therapy with an Obstetrician on an urgent basis. It is not recommended to stop or change AEDs abruptly without an informed discussion.[2]

Patients should be advised to download/given the "Epilepsy and Having a Baby Booklet":

<https://store.epilepsy.org.uk/collections/booklets-on-epilepsy/products/epilepsy-and-having-a-baby-booklet>

The community midwife will also continue to review women in between the antenatal clinic visits and liaise with the Obstetrician and/or ESN in case of any problems.

It is also important that whilst patients are receiving focused care regarding their epilepsy, they also continue to have fundamental care and support surrounding normal labour, breastfeeding and parenting.

Role of Obstetricians

The lead obstetrician is responsible for the overall care of the woman and will review the care at regular intervals in the antenatal clinic. They will also be responsible for inpatient care if the woman needs admission. Patients with well controlled epilepsy can attend general ANC and be jointly managed with the ESN. Poorly controlled or high risk patients should be referred to the Medical ANC

Each hospital has a lead clinician for the Medical ANC, being Mrs Pinto in Nevill Hall, and Mrs Singh in the Royal Gwent.

The Obstetrician and ANC midwife will arrange anomaly scan at 18-20^{+6} weeks to check for fetal anomalies and further review and scans will be decided as clinical need arises. There is currently no evidence to support additional fetal echocardiography unless concerns are detected on the routine anomaly US.[2]

Pregnant women should be informed about the UK Epilepsy and pregnancy register, and invited to participate.[2,7]

The Obstetrician will also liaise with the Neurologist and/or ESN to put an individualised plan of care into place.

At each appointment, women should be assessed for risk factors for seiures including: sleep deprivation; stress; compliance with AEDs and seizure type and frequency.[2] Early discussion with the neurologist and/or ESN is essential with any deterioration in seizure control. In women with active seizures, safety advice regarding time periods they are unobserved or supported may be necessary to minimise risk.

Serial growth scans should be offered from 28 weeks to screen for growth restriction. This risk is over three times higher in those taking AEDs.[2]

The fetus is relatively resistant to short episodes of hypoxia, and there is no evidence of adverse effects of single seizures on the fetus. Acute changes have been documented during convulsions, however cerebral damage is not a feature in the long term. There is therefore no evidence for routine CTG monitoring.[2,3]

Fetal and maternal safety can be compromised secondary to injury or abdominal trauma that can occur during seizures. Women should therefore be made aware of the risks of uncontrolled seizures both to themselves and to the fetus and thus the importance of compliance with medication.

Status Epilepticus is dangerous for both mother and fetus and should be treated vigorously. Fortunately it complicates <2% of pregnancies in women with epilepsy.[3]

Role of Epilepsy team

Including lead Consultant Neurologist and ESN (Louise Capeling)

All pregnant women with Epilepsy should be referred to the Epilepsy clinic at booking by the CMW.

The ESNs will aim to see the women as early as possible following referral by the community midwife and should also review women at least once every trimester. The ESN should have an active involvement in the management of the Epilepsy and in implementing the antenatal management plan. She will also take the lead in the registration of these women with the UK Epilepsy and pregnancy register.[7]

Seizure frequency should be monitored carefully during the pregnancy and adjustments made to AED doses to minimise the number of seizures (in particular generalised tonic clonic seizures).

The ESN will also review these women post-natally within the general epilepsy clinic.

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Intra-partum period

Patients who have been seizure free for a significant period and who are managed without the use of any AEDs can have a discussion regarding suitability for low risk birth pathways or water birthing for pain relief. This should be a discussion between the neurologist(?) and obstetrician with regards the woman's feelings towards labour and birth. The decision to use water for analgesia must be based on the seizure risk, the experience of the healthcare team, availability of additional safety equipment such as a hoist and an informed discussion with the patient and family about the small potential risk of drowning.[2]

In patients who have good seizure control and no obstetric risk factors, there is no indication for early delivery.[2] .

In patients presenting with premature labour, there is no need to increase the dose of antenatal steroids in those patients taking enzyme inducing AEDs.[2]

Most women with epilepsy will have a normal labour and vaginal delivery- but stress, pain, sleep deprivation, hyperventilation, dehydration increase the risk of seizures in labour (3.5%.)[2,3]

High risk women should deliver in the obstetric labour ward with one to one care by a midwife in labour. It is important that both the Obstetric and Anaesthetic registrars and /or consultants are informed of the admission and the woman has taken her routine medication as normal.

Factors predisposing to increased seizures should be minimised – i.e. ensuring good support and care to reduce anxiety, adequate hydration and effective analgesia. This may involve a discussion with the woman about early epidural.

The usual AED doses should be taken when in labour and continued post-natally. In women unable to tolerate oral medication, AEDs can be given by alternative routes.

Epilepsy in itself is not an indication for Caesarean section. Women have the usual maternal choice regarding choosing mode of delivery. In a small proportion of women with significant deterioration of seizures (which are recurrent and prolonged) and therefore who are at high risk of status epilepticus, elective Caesarean can be considered.[2] Otherwise caesarean is performed for obstetric reasons as indicated.

All of the available methods of labour analgesia can be used with women with Epilepsy safely with the exception of Pethidine. This is metabolised to norpethidine which has been shown to be epileptogenic when administered in high doses to patients with normal renal function. Pethidine should therefore be avoided or used with caution.[2]

If general anaesthesia is necessary, the attending Anaesthetist should carefully select the agents used in order to avoid either lowering the seizure threshold or provoking dystonic movements. In addition, hyperventilation (and subsequent hypocarbia) should be avoided as this lowers the seizure threshold. Starvation times should be limited as best as possible, and care should be given to

maintain anti-epileptic therapy up until surgery, and re-institute as soon as possible in the post-operative period. Any epileptiform activity in the peri-operative period should be carefully documented the misdiagnosis of post-operative shivering/dystonic movements on induction as epilepsy can have profound implications.

Seizures in labour

The risk of a seizure during labour for women with epilepsy is 1-2%. A further 1-2% will have one in the first 24hrs post-partum. Women should therefore not be left unattended in labour or in the first 24hrs post-partum.[3]

Any seizure lasting more than 5 minutes is unusual and represents a high risk of progressing to status epilepticus.

Status epilepticus is characterised by prolonged and persistent seizures and is very rare but is associated with significant increase in maternal as well as fetal mortality and is a medical emergency.

The aim is to terminate the seizure as soon as possible using IV lorazepam or diazepam. Please see ***appendix 2*** for guidance on the emergency management of seizures in hospital.

If there is confusion whether the diagnosis represents epileptic seizure or eclampsia it is appropriate to also give an IV Magnesium Sulphate infusion followed by the infusion for 24 hours, as per the eclampsia protocol.

With concurrent uterine hypertonus, consideration should be given to the use of tocolytics such as terbutaline.

Delivery should be expedited after a seizure in labour eg- ARM, syntocinon augmentation, assisted delivery if in second stage of labour. Caesarean section is usually reserved for obstetric indications, or if the woman has any further seizures or develops status epilepticus.

The neonatal team should be informed in all such cases as there is a risk of withdrawal following benzodiazepine and/or AED use.

For patients who have suffered seizures in previous deliveries, or who are at very high risk of seizures, consideration should be given to rectal or IV methods of administering the usual treatment of AED, to ensure adequate absorption.[3] Prophylactic oral clobazam (10mg) can

also be considered for short periods of time, (e.g. starting the day before planned delivery or at the onset of labour) however the risk of respiratory depression in the neonate must be considered in the balance of risk.[2]

Postnatal period

It should be recommended to women on enzyme inducing AEDs that the neonate receives 1mg of Vitamin K IM. The neonatal team should also be informed promptly of babies born to mothers on AEDs as additional monitoring for withdrawal may be necessary, particularly if delivered prematurely.

Following delivery, the maximal time for exacerbation of seizure frequency is the 3 days post-natally. Seizures can be provoked due to stress, anxiety and sleep deprivation; therefore mothers should have the necessary support to minimise this. Women should be prompted to continue taking the same dose of AED after delivery that they were taking at full term.

If the dose of AED was increased during pregnancy, a plan for this dose to be initially reduced within the following 10 days this may be too short a period? should be clearly documented in the notes. These regimes for reduction are dependent on the dose and drug used, hence discussion with the neurologist or ESN should occur promptly for advice following delivery to avoid the risk of from toxicity.[2,3] Clinicians should be aware of the signs and symptoms of toxicity, which include: drowsiness, diplopia or unsteadiness. In the event of these occurring, urgent neurological review is indicated.

Women with epilepsy are at increased risk of postnatal depression compared to women without epilepsy. Mothers should be informed about the symptoms and given contact details for help if necessary. Early detection and treatment can improve quality of life significantly.

Breastfeeding

The magnitude of AED transfer to the baby through breast milk that is required to affect neonatal and childhood outcomes is not known. Based on current evidence women should be advised that the risk of cognitive outcomes is not increased in children exposed to AEDs in breastmilk. Women with epilepsy including those taking AEDs should be encouraged and supported with breastfeeding.

If a baby of a mother taking non-slow release AEDs is unusually sleepy or has to be woken for feeds, the mother should be encouraged to feed or express before taking that dose.[3]

Patient Safety and care of the baby

Pregnant or post-natal women with epilepsy should never be accommodated in a single room.[4] **How can we do this in GUH?**

Injuries to infants from maternal seizures (although uncommon), is a possibility, especially if mothers have myoclonic epilepsies. It is important appropriate care is taken when bathing or changing the infant, such as bathing in shallow water and changing nappies on the floor.

The leaflet "Epilepsy and Having a baby" provided by Epilepsy Action elaborates on this aspect further, and is available online at:
<https://store.epilepsy.org.uk/collections/booklets-on-epilepsy/products/epilepsy-and-having-a-baby-booklet>
There is also generic safety advice available here:
<https://www.epilepsy.org.uk/info/daily-life/safety>

Extra support should be put in place for mothers with learning difficulties.

Contraception

Women with epilepsy should be offered effective contraception to avoid unplanned pregnancies. Some AEDs are liver enzyme inducers which can increase the metabolism and clearance of both oestrogens and progesterones, therefore making them less effective.

Copper IUDs, the Levonorgestrel-releasing intrauterine system (Mirena IUS) and medroxyprogesterone acetate injections (Depo) should be promoted as reliable, long acting and reversible methods of contraception that are not affected by enzyme-inducing AEDs.

AEDs which induce hepatic enzymes	**AEDs that DO NOT induce hepatic enzymes**

Carbamazepine (Tegretol) Oxcarbazepine (Trileptal) Phenobarbital Phenytoin (Epanutin) Primidone (Mysolin) Topiramate (Topamax) Eslicarbazepine (Zebinix)	Acetazolamide (Diamox) Benzodiazepines (diazepam, midazolam, lorazepam) Ethosuximide (Zarontin) Gabapentin (Neurontin) Lamotrigine (Lamictal) Levetiracetam (Keppra) Tiagabine (Gabiltril) Valproate (Epilim) Vigabatrin(Sabril) Lacosomide (Vimpat)

Women taking non-enzyme inducers can use any form of contraception. Those on enzyme inducers should be counselled that when using oral contraceptive pills (Combined and progesterone only;) transdermal patches; vaginal rings or implants, additional barrier contraception is required.[8]

With the combined pill, increasing the dose of oestrogen to 50-70 micrograms has been previously recommended, as has tricycling, however there is no data on how reliable this would be.

If emergency contraception is required in women taking enzyme-inducing AEDs, only the copper IUD is recommended. It is unclear whether a higher dose of levonorgestrel or ulipristal acetate is a sufficiently effective strategy. A double dose of levonorgestrel (3 mg as a single dose within 120 hours of unprotected sexual intercourse) may be used pragmatically, however the efficacy is unknown.[9] Ulipristal acetate should not be used.[2]

UK Epilepsy and Pregnancy Register

Ideally all pregnant women with epilepsy, whether on medication or not, should be entered with their consent on the UK pregnancy register. This information is useful in assessing the safety of different drugs used to treat epilepsy. Women can either self-register or their health professional can do this providing consent is given. Details can be found at:
<www.epilepsyandpregnancy.co.uk> Tel 0800 389 1248.

Staff Education

Staff Education will be addressed via day-to-day clinical training on the maternity unit.

Written information to women

The Welsh Risk Pool Standards for Maternity Services (2011) require women with epilepsy to be given written information during pregnancy relevant to safety measures.

Information for women relating to their epilepsy is provided by Epilepsy Action. The 'Mothers in mind' booklet includes:

- Understanding epilepsy
- Seizure control
- Epilepsy and the menstrual cycle
- Epilepsy and sexuality
- Epilepsy and contraception
- Planning a family
- Once you are pregnant
- Giving birth
- After the birth
- Caring for your baby or toddler

The booklet is available here:
<https://www.epilepsy.org.uk/sites/epilepsy/files/images/about/epilepsyaction_mothersinmind.pdf>

Epilepsy Action also provide a 'Mothers in Mind Obstetrics Resource Pack' and 'Mothers in Mind Information Resource for Health Visitors and Community Practitioners' available on their website:
<https://www.epilepsy.org.uk/involved/campaigns/women/mothers>

NHS Choices provide a web site containing information on epilepsy in pregnancy "The pregnancy care planner" (http://www.nhs.uk). This site can be accessed through the maternity web page on Aneurin Bevan Health Board web site.

Auditable standards

All women considering pregnancy on AEDs should be offered pre-conceptual counselling and commence high dose folic acid.
All women should receive multidisciplinary input into pre-pregnancy, antenatal, intrapartum and postpartum care.
All women should have an anomaly scan
All women should see the Epilepsy team at least once in pregnancy
All women should be encouraged to register on the UK Epilepsy register
All women should be given written information regarding safety measures

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Appendix-1

PATHWAY OF CARE FOR PREGNANT WOMEN WITH EPILEPSY IN ABHB		
Midwifery team	Obstetric Team	Epilepsy team (ESN) Keri John Clinics: RGH- Monday pm 4 weekly NHH- 1st Tuesday am of the month
1st Trimester		
Booking at home: □ Epilepsy Action leaflet, □ high dose folic acid □ check compliance with treatment □ Early booking appointment in joint medical ANC Referral to Epilepsy team on 01633238528 /book into epilepsy CNS clinic	Review and make Obstetric plan: □ Arrange anomaly scan □ letters to relevant specialists/ GP. □ Ensure the midwifery community team are aware of any care plans	Initial assessment: □ Review of medication □ Management plan for pregnancy care
2nd trimester		
□ Routine screening tests & support □ Anomaly scan □ Reiterate advice around medication, personal safety etc	□ Review of results/ amendment to care plan □ Consider anaesthetic review □ Arrange serial growth scans	□ Epilepsy and medication review □ Reiterate general advice □ Register pregnancy onto the UK Epilepsy register
3rd trimester		

□ Routine Obstetric examination □ Discuss labour, labour analgesia, infant care, breastfeeding etc □ Arrange parentcraft sessions	□ Consider plan for mode of delivery □ Discuss queries about labour □ Discuss analgesia options in labour □ Ensure clear plan is documented for any reduction in dosage regime for AEDs after delivery	□ Epilepsy and medication review □ Reiterate general advice and specific to labour, drug levels and dose adjustments in postnatal period etc □ Give booklet 'epilepsy and having a baby'
Labour & Delivery		
□ Ensure taken regular medication □ Good hydration, analgesia, psychological support □ Avoid hyperventilation □ Inform on call doctors (Obstetrics, anaesthetics, neonatologists)	□ Early review by Obstetric and Anaesthetic registrar □ 1 to 1 care by midwifery team	
Postnatal period		

□ Review of labour events □ Encourage breast feeding □ Teach infant care and reiterate personal and infant safety. □ Ensure compliance with medication □ Strategies to cope with stress and sleep better □ Give leaflet on 'After the birth' and 'Caring for your infant and toddler' from Epilepsy action group if patient has not had them. □ Inform ESN of delivery	□ Review of labour events □ Examination to assess suitability for discharge □ Reassurance re: breastfeeding □ Discuss and prescribe contraception □ Need for good fit control and high dose FA before embarking on next pregnancy	□ Arrange postnatal review (usually at 3/12) □ ESN review within general epilepsy clinic/Neurologist as appropriate □ Drug alteration as necessary □ Breastfeeding and contraception □ Childcare and Personal safety

Appendix-2

Flow Chart for the Management of Epileptic seizures in Labour

(NB. In women with no prior history of epilepsy, eclampsia is the most common cause of seizure in labour)