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Related Trust Policies (to be read in conjunction with)	(Refer to the main body of the text) 04071 Standard Infection Prevention 04072 Hand Hygiene 06036 Guideline for Maternity Record Keeping including Documentation in Handheld Records 04237 Guidelines for Waterbirth, Labour and Delivery in Water and Third Stage Management 04232 High Dependency Care transfer to ITU

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1.0	Julie Bishop		July 2003
2.0	Julie Bishop		November 2005
3.0	Chendrimada Madhu		February 2008
3.1	Sarah Moon	Front sheet, equality and diversity; audit and monitoring updates	March 2010
4.0	Dr Karthikeyan		May 2012
5.0	Madhu Joshi, Obstetric Consultant		6th October 2015
5.1	Vicki Machell	Clarification to point 4.5	17 July 2017
6.0	Anita Dutta	Full Review	22nd October 2018

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1.0 Purpose

1.1 This guideline addresses the care of epileptic women who are pregnant or are considering pregnancy.

1.2 Epilepsy is one of the most common medical conditions complicating pregnancy. 1:200 pregnant patients with epilepsy are reviewed in the Trust maternity antenatal clinics. Over 90% of babies born to epileptic mothers are normal. The risk of malformation in the growing fetus is twice higher than in the general population (2-3%).

1.3 The risk of complications in patients on anti-epileptic medication is three times that of the non epileptic population. The babies are also at increased risk of developing haemorrhagic disease of the newborn and 'abstinence syndrome'. Pregnancy is associated with an increase in the frequency of seizures and altered metabolism of anti-epileptic drugs.

2.0 Equality and Diversity

2.1 Mid Essex Hospital Services NHS Trust is committed to the provision of a service that is fair, accessible and meets the needs of all individuals.

3.0 Pre-Pregnancy Care and Counselling

3.1 Pregnancies in patients with epilepsy should, whenever possible, be planned pregnancies in order that the maximum benefits of peri-conception care can be obtained.

3.2 The avoidance of unplanned pregnancy requires the use of effective contraception. The efficacy of hormonal contraception is reduced in patients on enzyme-inducing anticonvulsants (carbamazepine, phenytoin, primidone, phenobarbitone). Combined contraceptive pill regimes containing at least 50 microgrammes of oestrogen/day or non- hormonal methods should be chosen by such patients. The other alternative options include Depo provera injection or Mirena Coil.

3.3 All patients with epilepsy should be provided with the following information from the point of diagnosis onwards, even if not immediately planning pregnancy.

3.4 The majority of babies born to mothers with epilepsy are normal. Nevertheless, patients with epilepsy, especially those receiving anti-epileptic drugs, have an increased risk of giving birth to a baby with major malformations, minor anomalies or dysmorphic features compared to patients without epilepsy.

3.5 It is possible that some of this risk is caused by a genetic predisposition for birth defect inherent in some families. Both potential parents' family histories should be reviewed.

3.6 Pre-natal screening using serum testing and ultrasound can detect many major malformations and anomalies.

3.7 Tonic-clonic convulsions during pregnancy carry risks for both mother and fetus.

Anticonvulsant treatment during pregnancy should be chosen so as to minimise the occurrence of convulsions.

3.8 Anticonvulsant therapy is associated with an increased risk of neural tube defects. Periconceptual folic acid supplementation is therefore of particular importance for patients with epilepsy. Ideally, patients should be on 5 mg folic acid one month prior to conception and throughout the first trimester.

3.9 Before and during pregnancy, the aim should be the lowest dose of anticonvulsants that protects against seizures. Pre-pregnancy withdrawal of anticonvulsants could be considered for selected patients who have been seizure free for 2-5 years with expert advice from a neurologist and a change from 'poly' to monotherapy could be considered for some others.

3.10 General advice regarding smoking, alcohol intake and optimising body mass index should be provided as part of pre pregnancy care. Patients with epilepsy who smoke are at increased risk of preterm labour and adequate health education should be provided.

4.0 Anti-epileptic Drugs before and during Pregnancy

4.1 Patients with epilepsy who present for pre-conception advice should be referred to a clinician with appropriate expertise for assessment. Such assessment should include full clinical history taking in order that the diagnosis of epilepsy is reviewed and the specific epileptic syndrome present is identified.

4.2 For selected patients presenting pre-conceptually who have been seizure-free for at least two years, specialist management may include supervised withdrawal of anticonvulsant medication over a period of 3-6 months.

4.3 For patients presenting pre-conceptually and for whom drug withdrawal is inappropriate (those who have not been seizure-free for two years, those whose specific epilepsy syndrome is known to require continual drug treatment and those unwilling to accept a risk of seizure recurrence) consideration should be given to converting multiple drug regime to single drug regime.

4.4 The treatment chosen for each patient should be at the lowest dose that protects against seizures.

4.5 In girls and women of childbearing potential, valproate should be initiated and supervised by a specialist and only when other medications have not been tolerated or have been found to be ineffective.

4.6 The Medicines and Healthcare Products Regulatory Agency (MHRA) has banned the antiepileptic drug sodium valproate in the UK in all women of childbearing potential who are not enrolled in a pregnancy prevention programme. It highlighted evidence that children born to women who take valproate in pregnancy are at considerable risk of birth defects and persistent developmental disorders. If valproate is taken in pregnancy as many as four in 10 babies are at risk of developmental disorders, and around one in 10 are at risk of birth defects.

4.7 For patients who first present for advice when already pregnant, modification of an effective anticonvulsant regimen is not usually warranted as the potential for reducing risks of teratogenesis is minimal.

4.8 There is little clinical experience relating to the effects of anti-epileptic agents in pregnancy. Clinicians managing patients on anticonvulsants should contribute to the accumulation of clinical information by notifying all pregnancies to the UK Register of Anti-epileptic Drugs in Pregnancy.

5.0 Monitoring and Adjustment of Dosage of Anticonvulsants during Pregnancy

5.1 Anticonvulsant dosage in pregnancy should be altered on clinical grounds. Increase in seizure frequency is an indication for increased dosage and/or addition of a new anticonvulsant (providing that poor compliance has been excluded).

5.2 Measurement of blood levels of anticonvulsants is not usually indicated. Total plasma levels may be misleading and there is no evidence of a clear-cut relationship between free levels and seizure control. Measurement of plasma levels may be of some use where there is concern about toxicity or compliance or where multiple drug regimens are used or if newer drugs like Lamotrigine is used. It has to be done in conjunction with a specialist.

6.0 Antenatal Care

6.1 Shared antenatal care is appropriate for most pregnant patients with epilepsy. Such care should be led by an obstetric consultant with a particular interest in this condition and each obstetric unit should have a mechanism whereby referrals of patients with epilepsy are channeled to the interested consultant. Many women with a history of epilepsy may be referred to the Maternal Medicine clinic for antenatal review. The provision of consistent advice and support continuing throughout the antenatal and post-natal periods is of particular importance for patients with epilepsy. Such support might appropriately be provided by a midwife or health visitor.

6.2 In common with all other pregnant patients, those with epilepsy should be offered nuchal screening. Pre-screening counselling of patients with epilepsy should include re-emphasis of the increased risk of neural tube defects. Staff must ensure that couples understand that the implications of such screening may include discussion of termination of the pregnancy should an abnormality be detected.

6.3 All patients with epilepsy should be offered a detailed ultrasound scan at 18-22 weeks. This scan should be performed by an ultrasonographer with sufficient expertise to identify fetal anomalies. (The ability to reliably identify cardiac lesions can be taken as a suitable level of competence.) Pre-scan counselling should emphasise that ultrasound, even in the most skilled hands, cannot exclude all anomalies.

6.4 Patients should be assessed by an anaesthetist at 32/40 weeks gestation.

6.5 Prolonged seizures during pregnancy should be managed as in the non-pregnant patient. A suggested regimen comprises diazepam 10-20mg IV (the first 10mg as a bolus with slow injection of further 2mg boluses, as required). If necessary, Phenytoin IV at 15mg/Kg can be given at a rate no greater than 50mg/minute. If venous access is difficult, the diazepam dose can be given rectally.

6.6 All patients with epilepsy should be advised to take **folic acid 5mg** daily while attempting to conceive and for at least 12 weeks after conception

6.7 The babies of patients treated with enzyme-inducing anticonvulsants (carbamazepine, phenytoin, primidone, phenobarbitone) are at increased risk of haemorrhagic disease of the newborn caused by deficiency of vitamin K-dependent clotting factors

6.8 Patients on these drugs should be treated prophylactically with Konakion 10mg orally daily from 36 weeks gestation until delivery and their babies should receive vitamin K 1mg intramuscularly at birth.

7.0 Management of Patients at Risk of Preterm Delivery

7.1 Steroid metabolism is potentiated by enzyme-inducing anticonvulsants. Patients taking any of these drugs, requiring antenatal steroid therapy because of a perceived risk of preterm delivery, should receive a steroid regime providing a total of 48mg (rather than the 24mg advocated for other patients). This dose may be delivered as two doses of 24mg betamethasone, 12 hours apart.

7.2 If steroid therapy is initiated in a patient on enzyme-inducing anticonvulsants, the perceived risk of preterm delivery also constitutes an indication to commence oral Konakion therapy at 20mg daily.

8.0 Labour and Delivery

8.1 The most appropriate place of delivery for patients with epilepsy is the Labour Ward, based in a Consultant-led Maternity Unit. In some cases where epilepsy has remained stable and there have been no fits during pregnancy then birth can be considered in the Co-Located Birthing Unit.

8.2 Patients with epilepsy should be reassured that most will have a normal vaginal delivery. A water birth however is contra-indicated.

8.3 Each patient's usual anti-epileptic regimen should be continued during labour. Missed doses and consequent falls in plasma levels of anti-epileptic drugs are to be avoided. They should have an intravenous access and dehydration should be avoided.

8.4 Continuous CTG monitoring is indicated on multiple anti epileptics and patients where epilepsy is poorly controlled.

8.5 Tonic-clonic seizures occur in up to 5% of patients with epilepsy during labour. Fits in labour may be managed with intravenous diazepam 10-20mg (the first 10mg as a

bolus with slow injection of further 2mg boluses, as required). IV Lorazepam can also be used. Repeated seizures in labour put the fetus at risk of anoxia and constitute an indication for early recourse to Caesarean section under general anaesthetic. If there is doubt whether a seizure is due to eclampsia, magnesium sulphate is recommended as per regime.

8.6 Patients with epilepsy should be offered the same range of methods of pain relief in labour, but excluding pethidine, as it is metabolised to Norpethidine which is an epileptogenic. In this situation morphine would be the drug of choice.

8.7 To limit the risk of precipitating a seizure due to pain and anxiety, early epidural analgesia should be considered.

8.8 Most women with epilepsy have normal vaginal deliveries and caesarean section only required if there are recurrent generalized seizures in late pregnancy or in labour.

8.9 Avoid prolonged second stage of labour. Consider instrumental delivery if required.

9.0 Postpartum Care and Care of the Infant

9.1 Epilepsy itself and anticonvulsants are not contra-indications to breast-feeding. All patients, including those with epilepsy, who wish to breastfeed, should be offered encouragement and support to do so.

9.2 Parents should be reassured that, although children born to parents with epilepsy have an increased risk of developing epilepsy themselves, this risk is around 3% for most forms of epilepsy, (but significantly higher for patients with a familial tendency to epilepsy or with certain specific syndromes).

9.3 Patients with epilepsy should be given appropriate advice and support regarding suitable settings for feeding (i.e. seated on the floor) and for other aspects of infant care in order to minimise danger to the infant should a maternal seizure occur.

9.4 Postpartum care of patients with epilepsy should include a review of the anticonvulsant regime, advice about appropriate contraception and re-emphasis of the importance of pre- conceptual care in a subsequent pregnancy.

9.5 Blood levels of anti-epileptic drugs (AED's) in infants who are breastfed are probably lower than in utero, provided the infant is healthy and born close to term. Accumulation of AED's may occur in the neonate as mechanisms for drug elimination are not fully developed at birth. AED's will pass into the breast milk at varying levels but breastfeeding and subsequent weaning usually allow for a gradual withdrawal.

9.6 All mothers should be encouraged to breastfeed and receive support from their health visitor, midwife and GP.

9.7 The possibility of sedation should be considered in infants of mothers taking phenobarbitone.

9.8 Family members can be educated to act in the event of a seizure. Safety advice like changing the nappy on the floor and not bathing the baby alone can be given to the mother.

10.0 Hormonal Contraception for women taking enzyme-inducing anticonvulsants (Phenobarbitone, Phenytoin, Primidone and Carbamazepine)

10.1 Combined oral Pill. Use a 50 microgrammes oestrogen pill (e.g. Norinyl-1, Ovran). Doubling of the pill in the event of breakthrough bleeding and tricycling to provide enhanced contraceptive cover can be used but with the advice of a specialist in order to avoid unplanned pregnancy.
Maintain extra contraceptive cover for 8 weeks if enzyme-inducers withdrawn.

10.2 Mirena Coil
Recent evidence support the use of Mirena as a long term contraceptive in women with Epilepsy

10.3 Progestogen-only pill (POP)
This method is best avoided. If no other method acceptable, doubling the daily dose of POP is reported to be effective.

10.4 Depot progestogen (Depo-provera)
Reduce interval between depo-provera injections from 12 weeks to 10.

10.5 Progestogen implants (Norplant)
Not recommended in long term users of enzyme inducing drugs

11.0 Staffing and Training

11.1 All midwifery and obstetric staff must attend yearly mandatory training which includes skills and drills training.

11.2 All midwifery and obstetric staff are to ensure that their knowledge and skills are up-to-date in order to complete their portfolio for appraisal.

12.0 Infection Prevention

12.1 All staff should follow Trust guidelines on infection prevention by ensuring that they effectively ‘decontaminate their hands’ before and after each procedure.

12.2 All staff should ensure that they follow Trust guidelines on infection prevention. All invasive devices must be inserted and cared for using High Impact Intervention guidelines to reduce the risk of infection and deliver safe care. This care should be recorded in the Saving Lives High Impact Intervention Monitoring Tool Paperwork (Medical Devices).

13.0 Audit and Monitoring

13.1 Audit of compliance with this guideline will be considered on an annual audit basis in accordance with the Clinical Audit Strategy and Policy (register number 08076), the Corporate Clinical Audit and Quality Improvement Project Plan and the Maternity annual audit work plan; to encompass national and local audit and clinical governance identifying key harm themes. The Women's and Children's Clinical Audit Group will identify a lead for the audit.

13.2 The findings of the audit will be reported to and approved by the Multi-disciplinary Risk Management Group (MRMG) and an action plan with named leads and timescales will be developed to address any identified deficiencies. Performance against the action plan will be monitored by this group at subsequent meetings.

13.3 The audit report will be reported to the monthly Directorate Governance Meeting (DGM) and significant concerns relating to compliance will be entered on the local Risk Assurance Framework.

13.4 Key findings and learning points from the audit will be submitted to the Clinical Governance Group within the integrated learning report.

13.5 Key findings and learning points will be disseminated to relevant staff.

14.0 Guideline Management

14.1 As an integral part of the knowledge, skills framework, staff are appraised annually to ensure competency in computer skills and the ability to access the current approved guidelines via the Trust's intranet site.

14.2 Quarterly memos are sent to line managers to disseminate to their staff the most currently approved guidelines available via the intranet and clinical guideline folders, located in each designated clinical area.

14.3 Guideline monitors have been nominated to each clinical area to ensure a system whereby obsolete guidelines are archived and newly approved guidelines are now downloaded from the intranet and filed appropriately in the guideline folders. 'Spot checks' are performed on all clinical guidelines quarterly.

14.4 Quarterly Clinical Practices group meetings are held to discuss 'guidelines'. During this meeting the practice development midwife can highlight any areas for future training needs will be met using methods such as 'workshops' or to be included in future 'skills and drills' mandatory training sessions.

15.0 Communication

15.1 A quarterly 'maternity newsletter' is issued to all staff with embedded icons to highlight key changes in clinical practice to include a list of newly approved guidelines for staff to acknowledge and familiarise themselves with and practice accordingly. Midwives that are on maternity leave or 'bank' staff have letters sent to their home address to update them on current clinical changes.

15.2 Approved guidelines are published monthly in the Trust's Staff Focus that is sent via email to all staff.

15.3 Approved guidelines will be disseminated to appropriate staff quarterly via email.

15.4 Regular memos are posted on the guideline and audit notice boards in each clinical area to notify staff of the latest revised guidelines and how to access guidelines via the intranet or clinical guideline folders.

16.0 References

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