Ashford and St. Peter's Hospitals NHS
NHS Foundation Trust

WOMEN'S HEALTH AND PAEDIATRICS
MATERNITY UNIT

GUIDELINE FOR ANAESTHESIA FOR CAESAREAN SECTION

Amendments			
Date	Page(s)	Comments	Approved by
Sept 2012		Whole document review	Women's Health guideline group
June 2016		Whole Document review	Women's Health guideline group Chairs action
May 2019		Whole Document review	Women's Health Governance group

Compiled by: Dr James Margary Consultant Anaesthetist

In Consultation with: Consultant Anaesthetists. Obstetric Consultants, Women's Health Guideline group

Ratified by: Women's Health Guideline group

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Target Audience: Staff working within maternity services

Impact Assessment Carried Out By: Dianne Casey

Comments on this document to: Dr James Margary, Consultant Anaesthetist

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GUIDELINE FOR ANAESTHESIA FOR CAESAREAN SECTION

See also;

Failed Intubation Guideline

Fetal monitoring guideline

Caesarean section guideline

1. Epidural Top Up for emergency caesarean section

1. If a labouring woman who has a working epidural requires an emergency caesarean section the women should be given an epidural top-up as soon as possible.

   On arrival the anaesthetist should turn the woman into full lateral position on the side that the epidural is less dense and level the bed.

   - Immediately assess the epidural for signs of an accidental subarachnoid block.
   - Then quickly consent the patient and prepare the top-up mixture in a 20ml syringe using 10ml 2% lidocaine with 10ml 0.5% Chirocaine and 0.1ml 1:1000 epinephrine to make a 1:200,000 epinephrine solution.
   - Give 5ml boluses of the mixture with an interval of 1 minute between each bolus. Be alert for signs of systemic toxicity. (20ml of 2% lidocaine with 1:200,000 epinephrine in 5ml increments may be given as an alternative.)
   - Transfer the mother, in the lateral position, to theatre as soon as possible
   - If the epidural is unilateral remove the epidural catheter and perform a spinal anaesthetic in theatre.
   - Fentanyl 50micrograms may be added to the epidural bupivacaine if the patient has not received a significant amount of mobile mix for labour analgesia.
   - Do not delay the top-up if the fentanyl is not immediately available.

2. If the anaesthetist is not available to start the top-up procedure then a senior **Midwife** may proceed start the top-up as follows:

   - Turn the woman into full lateral position on the side that the epidural is less dense and level the bed.
   - Top-up the epidural using 10ml 0.5% L bupivacaine (Chirocaine) given as two 5ml doses with an interval of 1 minute between doses.
   - Transfer the mother, in the lateral position, to theatre as soon as possible
   - Monitor mother and baby while preparing her for surgery
   - Give oral ranitidine and metoclopramide if none has been given within 8 hours.
   - The anaesthetist will complete the top-up procedure when they arrive.

3. Perform a pre-operative assessment of patient. Discuss the anaesthetic and warn patient that they will feel some abdominal sensations. Also explain that intravenous analgesia and general anaesthesia are available if the patient has pain.

4. Anaesthetic equipment and drugs must be available and checked as for general anaesthesia.

5. On arrival in theatre give ranitidine and metoclopramide if the woman has not already received adequate antacid prophylaxis.

6. Position woman on her side on the operating table and connect monitors including CTG.

7. Assess and document level of block using cold or pinprick sensation. Upper margin of block should be at least to T6 bilaterally with signs of developing motor block in both legs. Test sacral dermatomes and look for missed segments.

8. Give antibiotic slowly before skin incision. (Dilute cefuroxime in 10ml water to avoid mistaking for thiopentone.)

9. When the epidural block is adequate, position patient supine and wedge the right buttock to produce 15° left lateral pelvic tilt. Remove the CTG and allow surgery to proceed.

10. Monitor mother very carefully for signs of hypotension. Give intravenous phenylephrine 5 micrograms or metaraminol 0.25mg if systolic blood pressure falls below 100mmHg or >20% below antenatal blood pressure. Give atropine 0.3mg if heart rate is less than 70bpm. Nausea may indicate hypotension.

11. Give mother O_2 via facemask until delivery of baby if foetal compromise.

12. At time of delivery give oxytocin 5 units intravenously over 5 minutes and remove pelvic wedge.

13. Monitor blood loss and avoid hypovolaemia.

14. Let mother hold the baby as soon as possible.

15. If partner is present, he should sit on a chair with a back support in case of faint.

16. If epidural block is inadequate convert to conventional general anaesthesia. If present, the partner should be asked to leave before induction.

17. If patient experiences discomfort give 1-2mg midazolam and 25% N_2O via the Hudson mask followed by increments of opioid e.g. alfentanil or fentanyl. Document the time to the nearest minute of the patient's symptoms, your treatment and its effects. Offer general anaesthesia if the block fails.

18. After delivery give:
    - Epidural diamorphine 3mg at a dilution of 0.5mg/ml in 0.9% sodium chloride
    - iv paracetamol 1 gram

19. At end of procedure remove epidural catheter (document time of removal) and give 100mg diclofenac suppositories (unless contraindicated). Document epidural diamorphine, paracetamol, diclofenac, antibiotic and all iv fluids on the prescription chart.

20. Prescribe postoperative analgesia, antiemetics and antipruritics:
    - regular ibuprofen 400mg 6 hourly po, starting > 6 hours after PR diclofenac
    - regular paracetamol 1g 6 hourly po
    - PRN oramorph 20-30mg 2 hourly po
    - PRN ondansetron 4mg iv and cyclizine 50mg slow iv (diluted in 20ml water)
    - PRN chlorpheniramine 4mg po.

21. Post-epidural caesarean patients must be recovered on the labour ward. In addition to routine postoperative observations the patient should have ECG, SaO_2 and NIBP monitoring for at least 1 hour.

22. Be alert for respiratory depression if epidural diamorphine has been given.

23. Follow up patient postoperatively and document visit on anaesthetic record form.

2. SPINAL ANAESTHESIA FOR CAESAREAN SECTION

Spinal anaesthesia is often preferable to epidural anaesthesia because of superior effectiveness and speed of onset (similar to induction of general anaesthesia).

1. Pre-operative assessment, discussion and management are the same as for epidural and general anaesthetics.

2. In addition, warn patient of possible:
    - chest and abdominal numbness making breathing feel restricted.
    - nausea associated with hypotension.
    - Discomfort or pain during surgery
    - small risk of lumbar puncture headache (incidence about 1:300).
    - itching due to spinal opioid.
    - High block
    - rare risk of nerve injury

3. Check equipment, etc. as for epidural anaesthesia, plus atropine 0.6mg and metaraminol 0.5mg/ml drawn up ready for injection.

4. 16g intravenous cannula in place. Pre-load with 1 litre Plasmalyte while lumbar puncture performed.

5. Establish ECG, pulse oximetry and NIBP monitoring before starting the spinal.

6. Patient in sitting position on operating table. Reduce spinal dose if lateral position used.

7. Wear gown and facemask. Prepare the skin with alcoholic 0.5% chlorhexidine using aseptic technique, taking care not to contaminate gloves or spinal equipment with (neurotoxic) chlorhexidine.

8. Perform lumbar puncture below the iliac crests (usually at L4-5 interspace) using 25g pencil-point needle. Always advance the spinal needle in a steady and controlled way.

9. Dosage (filter all drugs that are drawn up from glass ampoules):
   - 2.5 - 3.0 ml of 0.5% heavy bupivacaine unless patient is exceptionally short or tall.
   - 0.3 – 0.4 mg diamorphine

10. Inject solution over about 5 seconds then immediately position patient in supine position with hips and knees temporarily flexed to flatten the lumbar lordosis, slight Trendelenberg and a wedge under the right buttock to give left lateral pelvic tilt. Ensure the head and neck are well supported. Venous return can be improved by breaking the table to elevate legs.

11. Monitor the blood pressure every 2 minutes. If blood pressure falls > 20% below patient's preoperative BP or below 100mmHg systolic give phenylephrine 50mcg or metaraminol 0.25mg. Give atropine if heart rate < 70/min. Alternatively use phenylephrine infusion 10mg in 100ml (100mcg/ml) in a syringe pump starting at 10ml/hr (1mg/hr). Use vasopressors cautiously in PET (exaggerated response).

12. Give antibiotic slowly before skin incision. (Dilute cefuroxime in 10ml water to avoid mistaking for thiopentone.)

13. After 4 minutes check for hypoalgesia up to T4 bilaterally using cold or pinprick. There should be signs of motor weakness in both legs. At 10 minutes there should be absent light touch sensation a least to T10 (ideally to T6/T4).

14. Surgeons can then start preparing the patient.

15. Give patient O_2 via facemask until delivery for emergency caesareans if foetal compromise.

16. If patient experiences numbness in arms or weakness in the hands tilt the table head up and watch respirations closely.

17. Manage the rest of the procedure as for caesarean section under epidural. Stay in close contact with the patient and promptly manage any distress.

18. Document any untoward events. Including the precise times of the events, the management and the outcome. If the procedure was uneventful, specifically record the absence of paraesthesiae during the lumbar puncture and whether the woman was pain free during the operation.

19. Abdominal anaesthesia should last approximately 2 hours.

20. Post-spinal caesarean patients must be recovered on the labour ward until sensation returns in the legs. In addition to routine postoperative observations the patient should have ECG, SaO_2 and NIBP monitoring for at least 1 hour.

21. Be alert for respiratory depression if spinal diamorphine has been given.

22. If headache occurs, the patient should be nursed flat. Inform the consultant anaesthetist. Further management as per dural tap regime.

23. Follow up patient postoperatively and document visit on the anaesthetic record form.

3. SPINAL ANAESTHESIA FOR IMMEDIATE CAESAREAN SECTION

The lateral position is recommended if a fast onset is required (also more reliable for women who are very tall or who have a small uterus).

1. Position woman in left lateral position on operating table with some Trendelenberg. Support head and neck to avoid cervical spread.
2. Perform lumbar puncture using pencil-point needle. When the spinal needle is in the ligament identification of CSF can be more rapid if the needle is aspirated while it is advanced using a 2 ml syringe.
3. Give 2.5ml 0.5% heavy bupivacaine. Dose can be reduced if there are residual effects from an epidural. Omit spinal diamorphine if caesarean is very urgent.
4. The ODP should attach the monitoring and check the machine and drugs so that general anaesthesia can be induced without delay if the spinal is not successful.
5. Position patient supine with a wedge under the right buttock and ask the surgeon to prepare the skin.
6. Give antibiotic slowly before skin incision. (Dilute cefuroxime in 10ml water to avoid mistaking for thiopentone.)
7. When level of reduced sensation has reached T4 (usually after 2-3 minutes) remove trendelenberg. Check there are signs of leg weakness. Ask surgeon to pinch abdomen and, if no response, start surgery.
8. Continue management as for routine spinal for caesarean section.

4. GENERAL ANAESTHESIA FOR CAESAREAN SECTION

1. Review patient's notes and complete a preoperative assessment. Carefully assess the airway.
2. If not received ranitidine and metoclopramide within last 8 hours give iv metoclopramide 10mg. Give 30ml oral 0.3 molar sodium citrate before transfer onto operating table.
3. Check the anaesthetic machine and ventilator.
4. The sucker should be tested and running.
5. Two tested laryngoscopes and suitable (7.0mm and smaller) cuffed endotracheal tubes. Bougies and introducers should be available.
6. Patient in lateral position during transfer to theatre.

7. Position patient supine with some ramping to aid intubation, and wedge the right buttock to produce 15° left lateral pelvic tilt.

8. Pre-oxygenate for 3 minutes or with 4 vital capacity breaths. Also use a nasal oxygen catheter if difficulty with intubation is anticipated.

9. Start an iv infusion of Plasmalyte if not already present. Give 0.2mg glycopyrrolate iv.

10. Connect monitors. Attach end-tidal monitor tubing to the catheter mount.

11. Induce with thiopentone (or propofol) and suxamethonium. Consider alfentanil 0.5-1mg if patient hypertensive or asthmatic and warn the paediatrician that opioids have been given.

12. Bimanual cricoid pressure performed immediately consciousness is lost, by a skilled assistant. Push larynx Back, upwards and to the right (BURP) for easier alignment.

13. Intubate trachea, inflate cuff and confirm that both sides of the chest move with manual ventilation. Check for expired CO_2 on end-tidal monitor. Auscultate axillae and epigastrium. Release cricoid pressure.

14. Start ventilator. Again check chest movement and blood pressure. Set disconnect alarm and check tidal volume. Do not over-ventilate.

15. Ventilate with N_2O / O_2 mix sufficient to maintain oxygen saturation. Give isoflurane or sevoflurane to achieve 1 MAC . Reduce volatile agent after opiates given. Adjust according to clinical need.

16. After suxamethonium has recovered give non-depolarising relaxant if required. Use small doses (e.g 20mg atracurium or 20mg rocuronium) to aid detection of light anaesthesia.

17. At delivery:
    - Give syntocinon 5 i.u. iv slowly after delivery. Continue with oxytocin infusion (40iu in 500ml saline at 125mls/hr) if required.
    - Administer opiate analgesia (10-20mg morphine).
    - Remove pelvic wedge.
    - Give antibiotic slowly before skin incision.
    - Observe blood loss closely. Cardiovascular signs are indicative of significant blood loss.
    - Ask surgeon to infitrate abdominal wall with 40ml 0.25% Chirocaine.
    - Give IV paracetamol 1 gram.

18. Aspirate stomach before extubation if large gastric volume is suspected.

19. Give reversal if required and diclofenac suppository (unless contraindicated).

20. Extubate on the bed <u>when awake</u> with the patient on her side.

21. Prescribe regular ibuprofen 400mg po 6 hourly and regular paracetamol 1 gram 6 hourly together with PRN Oramorph and cyclizine.

22. Give oxygen 4 l/min until alert. In addition to routine postoperative observations the patient should have ECG, SaO_2 and NIBP monitoring for at least 1 hour.

23. Titrate further iv analgesia if required. Pethidine or fentanyl are more rapidly effective than morphine if patient is very uncomfortable. NB postoperative restlessness may be due to hypoxaemia, pulmonary oedema or cerebral irritation.

24. Set up morphine PCA if patient has high opiate requirement.

25. Hand over care of patient to midwife when patient stable, responsive and maintaining airway.

26. Follow up patient postoperatively and document visit on the anaesthetic record form.

5. References

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Garry M et al. Failure of regional blockade for Caesarean section. *Int J Obstet Anesth* 2002; **11**: 9-12

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Riley ET. Spinal anaesthesia for Caesarean delivery: keep the pressure up and don't spare the vasoconstrictors. *BJA* 2004; **92**: 459-461

Saravanan S et al. Minimum dose of intrathecal diamorphine required to prevent intraoperative supplementation of spinal anaesthesia or Caesarean section. *BJA* 2003; **91**: 368-372

Skilton RWH et al. Dose response study of subarachnoid diamorphine for analgesia after elective caesarean section. *IJOA* 1999; **8**: 231-235

7. Monitoring

Compliance with this policy will be monitored annually by the anaesthetic department through audits of anaesthetic complications and documentation, and by assessment of data submitted to the National Obstetric Audit Database (NOAD) and reported to the Labour ward forum. Where the monitoring has identified deficiencies, recommendations and action plans will be developed and changes implemented. Any actions will be monitored by the Women's Health Clinical Governance Group.

EQUALITY IMPACT ASSESSMENT TOOL

Policy/Service: ***Maternity services***
GUIDELINE FOR ANAESTHESIA FOR CAESAREAN SECTION

Background • This policy is to ensure the correct procedure is followed to prevent restricted access and to ensure the correct procedure is followed when restricted access is unavoidable
• To ensure consistent and high standards of care within the maternity service. • To ensure we continue to provide a safe maternity service at all times
Methodology This policy is to prevent a negative impact on all groups of people both staff and clients
• Impact assessment revealed no obvious impact identified • N/A • The multidisciplinary team delivering maternity care had the opportunity to contribute to development of the policy.
Key Findings • No negative impact found
Conclusion • Provide a summary of the overall conclusions
• No impact
Recommendations •
• Review in 3 years or earlier if required

Guidance on Equalities Groups

Race and Ethnic origin (includes gypsies and travellers) (consider communication, access to information on services and employment, and ease of access to services and employment)	**Religion or belief** (include dress, individual care needs, family relationships, dietary requirements and spiritual needs for consideration)
Disability (consider communication issues, access to employment and services, whether individual care needs are being met and whether the policy promotes the involvement of disabled people)	**Sexual orientation including lesbian, gay and bisexual people** (consider whether the policy/service promotes a culture of openness and takes account of individual needs
Gender (consider care needs and employment issues, identify and remove or justify terms which are gender specific)	**Age** (consider any barriers to accessing services or employment, identify and remove or justify terms which could be ageist, for example, using titles of senior or junior)
Culture (consider dietary requirements, family relationships and individual care needs)	**Social class** (consider ability to access services and information, for example, is information provided in plain English?)

If further assessment is required please see the Integrated Single Equality Scheme.

PROFORMA FOR RATIFICATION OF POLICIES AND GUIDELINES BY RATIFYING COMMITTEE

Policy/Guidelines Name: Policy	**GUIDELINE FOR ANAESTHESIA FOR CAESAREAN SECTION**
Name of Person completing form:	Dianne Casey
Date:	28/06/16

Author(s)	James Margary
Name of author or sponsor to attend ratifying committee when policy/guideline is discussed	Dianne Casey
Date of final draft	June 2016
Has this policy/guideline been thoroughly proof-read to check for errors in spelling, typing, grammar and consistency?	Yes
By whom:	Women's Health Guidelines Group
Is this a new or revised policy/guideline?	revised

Describe the development process used to generate this policy/guideline.
Consultant Anaesthetists Women's Health Guidelines Group,
Who is the policy/guideline primarily for?
Health Professionals working within the maternity service
Is this policy/guideline relevant across the Trust or in limited areas?
Maternity Services
How will the information be disseminated and how will you ensure that relevant staff are aware of this policy/guideline?
Intranet, newsletters,
Describe the process by which adherence to this policy/guideline will be monitored.
See *monitoring section of policy*
Is there a NICE or other national guideline relevant to this topic? If so, which one and how does it relate to this policy/guideline?
See *reference section of policy*
What (other) information sources have been used to produce this policy/guideline?
See *reference section of policy*
Has the policy/guideline been impact assessed with regard to disability, race, gender, age, religion, sexual orientation?
No impact
Other than the authors, which other groups or individuals have been given a draft for comment
All obstetric Consultants, Women's Health Guidelines Group,
Which groups or individuals submitted written or verbal comments on earlier drafts?
Any comments received considered by Women's Health Guidelines Group
Who considered those comments and to what extent have they been incorporated into the final draft?
All comments considered
Have financial implications been considered?
Yes