4 LABOUR ANALGESIA

4.1 EPIDURAL ANALGESIA IN LABOUR

KEY WORDS
Epidural, combined spinal epidural (CSE), labour analgesia, anaesthetist

PURPOSE
Neuraxial analgesia, using epidural and CSE techniques, is the most effective method of pain relief in labour and is available on request. It is important to discuss with the mother the benefit of epidural/spinal analgesia on the grounds of:

FETAL AND NEONATAL BENEFIT
Neonatal outcome in comparison to systemic opioid analgesia includes better Apgar scores and reduced metabolic acidosis and compared with no analgesia better acid-base status. Epidural analgesia is also useful -
1. to minimise the risk of neonatal respiratory depression compared with repeat doses of systemic opioid
2. in the compromised fetus (e.g. severe preeclampsia, intrauterine growth restriction) to improve uteroplacental blood flow and limit opioid effects.
3. in the premature, breech or multiple pregnancy to assist with a controlled birth.

MATERNAL BENEFIT
1. In severe pre-eclampsia, as an adjunct to antihypertensive therapy, to stabilise blood pressure.
2. For women with certain cardiac, respiratory, neuromuscular and neurological diseases, for whom effective pain control may have significant safety benefits.
3. For women who have significant risk factors at general anaesthesia e.g. difficult airway management; morbid obesity.

MEDICAL CONTRAINDICATIONS INCLUDE:
1. Local infection or systemic sepsis.
2. Defective haemostasis imposing an increased risk of epidural or spinal haematoma e.g. severe thrombocytopenia; coagulopathy; blood factor disorders; recent enoxaparin (Clexane). It is often necessary to check the platelet count, coagulation status or platelets function, in women with severe preeclampsia, abruption, inherited bleeding disorders or recent anticoagulant therapy.
3. Uncorrected hypovolaemia.
4. If an aseptic technique cannot be guaranteed.
5. Refusal or withdrawal of consent.
6. Inadequately trained or credentialed staff for safe care and/or monitoring.
EPIDURAL MANAGEMENT

Epidural pain relief in labour is provided to approximately 46% of women at King Edward Memorial Hospital (KEMH Stork Data 2012). Epidurals are inserted both at the woman's request and for obstetric or medical reasons.

Women vary considerably in their knowledge and understanding of epidurals and where possible methods of pain relief should be discussed in the antenatal period and/or in early labour before pain or medication, as well as prior to insertion in established labour. This information should be realistic, balanced and available in different formats. A member of the Anaesthetic Department can be contacted to provide a more detailed discussion.

Despite the acknowledged effectiveness of epidural analgesia and high levels of satisfaction in the majority of women, there are inherent risks and potential sources of dissatisfaction such as inadequate relief, prolongation of labour, need for urinary catheterisation and increased risk of instrumental birth.

Use of higher concentrations and doses of local anaesthetic which cause dense neural block is undesirable because of unwanted sequelae such as:
• marked motor block – leading to unpleasant numbness, immobility, inability to walk or squat, urinary retention and poor expulsive efforts at birth
• an increased incidence of hypotensive episodes
• shivering/shaking
• a prolonged second stage due to an absent urge to push, leading to an increased risk of instrumental birth
• increased risk of local anaesthetic toxicity.

The use of spinal analgesia or low-dose epidural bupivacaine (0.125% or less) or ropivacaine (0.2% or less) and fentanyl combination is recommended for initial boluses and lower concentrations for maintenance with patient-controlled delivery. Advantages compared with more concentrated solutions are:
• less immediate and delayed onset of increasing leg weakness, such that the majority of women are initially capable of weight bearing
• the urge to push is retained by most women
• the incidence of hypotension, shivering and urinary catheterisation are reduced
• instrumental birth rates are reduced
• maternal satisfaction is higher.

Adverse fetal and neonatal clinical effects are rarely seen in the healthy, mature fetus.

KEMH has midwives accredited to administer both local anaesthetic and opioid epidural solutions. Midwives are in the ideal position to monitor the effectiveness of epidural analgesia and to administer supplementary epidural solution because they are in frequent communication and contact with the woman. The prescribed epidural solutions allow a flexible approach so that solutions can be provided according to current analgesic requirements or as appropriate supplements to patient-controlled (PCEA), infusion and bolus techniques.

See Clinical Guidelines, Section E 4.3.1 Administration of epidural therapy via intermittent top ups
See Clinical Guidelines, Section E 4.3.2 Administration of epidural therapy via PCEA
**Epidural analgesia is available on a 24-hour basis.**

The anaesthetist should be contacted by the obstetrician or the midwife (especially if there are obstetric or medical complications). Midwives should have obtained the obstetrician's consent and be prepared to provide an adequate history to the anaesthetist. Even though it is the anaesthetic department’s intention that patients will be seen within 30min of a request for epidural analgesia, delays may occur with exceptional workload circumstances. All patients require intravenous access, however it is not necessary to administer a specific volume of intravenous fluid prior to insertion of epidural/spinals.

**INITIATION OF NEURAXIAL ANALGESIA IN LABOUR**

Initial analgesia is provided either by epidural alone or combined spinal epidural analgesia.  An anaesthetist must always administer the first epidural/spinal dose. The choice of initial technique and drug delivery method is the decision of the anaesthetist, in consultation with the woman, obstetrician and midwife. All subsequent infusions/PCEA/top-ups are generally initiated and managed by the attending midwife. The anaesthetist must administer all supplementary (top-up) epidural doses in any case where the position of the catheter is in doubt or after a dural tap. See clinical guideline: E.4.9.1.

**Accidental Dural Puncture**

Observations made by the midwife (See Clinical Guidelines, Section E.4.3.1 Administration of epidural therapy via intermittent top ups) must be recorded on MR280. It is safe practice to give all boluses incrementally, observing for signs of toxicity or rapidly ascending block.

**EPIDURAL ANALGESIA SHOULD BE CONTINUED UNTIL BIRTH AND SOMETIMES INTO THE EARLY PUERPERIUM**

Discontinuation of epidural pain relief at full dilatation does not improve spontaneous birth rate and increases late labour pain. Women should be given the opportunity to continue pain relief in the second stage of labour and should be encouraged to use low-dose combination solutions if pain relief is adequate. The decision to withhold further solution shall only occur after discussion with the woman, obstetrician and anaesthetist.

**INDICATIONS FOR THE EPIDURAL TO BE LEFT IN SITU (FOR POST BIRTH ANALGESIA)**

Women who
- sustain third / fourth degree tears or have a large episiotomy
- have significant perineal / labial swelling
- appear to have a high risk of needing a surgical intervention e.g. removal of retained placenta or products of conception.

The Acute Pain Service (APS) will follow up these women. They should have oral analgesia (e.g. paracetamol ± non-steroid anti-inflammatory drugs if appropriate) charted before being transferred to the postnatal ward. Epidural opioid analgesia may also be prescribed.

**PREVENTION OF FALLS**

Prior to ambulation, assess the woman for risk of falls see Clinical Guideline A.2.12 Falls Risk Assessment and Management of Patient Falls.

**BEFORE WOMEN SUPPORT THEIR BODY WEIGHT OR STAND AND WALK**

Complete a Bromage Score See Clinical Guidelines,  E.4.6 Assessment of motor function and MR280 for Bromage Score.
- Confirm leg strength by performing and maintaining a straight leg raise with each limb
- Sit the woman upright to exclude syncope from postural hypotension or drug effects
• With assistance, determine whether the woman can weight bear next to the bed prior to walking.

**FOR ASSISTED BIRTH OR TO PERFORM PERINEAL SUTURING**
A dense neural block should be obtained with concentrated local anaesthetic prior to intervention.

**MONITORING**
Continuous electronic fetal monitoring should be used as per Clinical Guidelines, Section B 5.6.2 Labour and Birth Suite quick reference guide to intrapartum fetal heart rate monitoring
Blood pressure and pulse should be recorded prior to all top-ups (including initial) and then at 5, 10, 15 & 20 min post top-up.
Additional maternal monitoring (e.g. pulse oximetry, arterial blood pressure and central venous pressure) may be indicated in certain situations or at the request of the obstetrician or anaesthetist.

**PRESSURE INJURY PREVENTION**
Monitor for Pressure injuries and Ensure Pressure Injury Prevention strategies are in place
See Clinical Guideline A.2.11 Pressure Injury Prevention and Management.

**CARE OF BLADDER FUNCTION**
This is an important part of epidural management since urinary retention occurs commonly with epidural analgesia during labour. Both during labour and for a period of time into the early puerperium (until the effect of the epidural has waned and the woman has passed urine) the bladder should be checked for over-distension and catheterisation may be required.
See clinical guideline B 5.8.1 Care of a Woman during the First Stage of Labour and B.6.2.2.1. Bladder Care in the post partum period

*If women receive epidural or spinal morphine, bladder function checks should continue for 24 hours after dosing.*

**NEURAXIAL REGIMENS USED AT KEMH**

**INITIATION OF ANALGESIA**
- Epidural – 0.125% bupivacaine with fentanyl 5 mcg/ml 10-15 mL
- CSE– spinal (intrathecal) bupivacaine 1 - 2.5 mg with fentanyl 10-25 mcg [2 ml of 0.125% bupivacaine + fentanyl 5 mcg/ml provides 2.5 mg bupivacaine + 10 mcg fentanyl], followed by epidural 0.125% bupivacaine with fentanyl 5 mcg/ml 4-10 mL

**MAINTENANCE**

Epidural infusions and patient controlled epidural analgesia (PCEA)
- 0.0625% bupivacaine with fentanyl 2.5 mcg/ml +/- clonidine 1.5-3 mcg/ml 24
- Background infusion: 5 ml/h
- PCEA : demand bolus 10 ml at 20 min lockout
Advantages

- more reliable analgesia
- reduced midwifery workload
- lower rates of drug use
- fewer hypotensive episodes
- greater maternal satisfaction

INTERMITTENT BOLUSES

- **bupivacaine 0.125% (1.25 mg/mL) or ropivacaine 0.2% (2 mg/mL) with fentanyl 2.5 - 5 mcg/mL (10-15mL)**
  - Effective in 80 to 90% of women as an initial dose and can be repeated hourly throughout labour with low risk of clinically adverse neonatal effects.
  - Less effective in late labour but usually retains the urge to push and good muscle strength. Preferable when good maternal expulsive efforts are important (e.g. breech, multiple pregnancy).
  - *Can be used as sole technique or for breakthrough pain in patients with infusion/PCEA*

- **0.25% plain bupivacaine or ropivacaine 0.2% (5 - 10mL)**
  - of similar efficacy to the above
  - slightly longer duration
  - results in more marked motor block
  - reserve for inadequate analgesia from lower concentration solutions or when fentanyl is inappropriate (e.g. high fentanyl dose requirements, intractable itch)

- **0.5% (5 mg/mL) plain bupivacaine or ropivacaine 0.5% (5 mg/mL) (4 - 10mL)**
  - marked motor block is to be expected
  - reserve as supplement when less concentrated solutions prove inadequate or to increase neural block for instrumental or caesarean birth.

- **2% lignocaine with adrenaline 1:200,000 (4 – 10 ml)**
  - slightly faster onset than bupivacaine or ropivacaine:
  - suitable test dose (but results in more marked motor block) or to increase neural block for instrumental or Caesarean birth

Fentanyl 50 mcg, Pethidine 50 mg or Clonidine 75 mcg may be helpful for patchy blocks, unrelieved backache or early perineal pain.

INFUSIONS

INFUSIONS ALONE ARE RARELY USED AT KEMH AND ARE RESERVED FOR SITUATIONS WHERE THERE IS A CONCERN ABOUT CARDIOVASCULAR INSTABILITY EG. MATERNAL CARDIAC DISEASE. IN THIS CIRCUMSTANCE ALL ADDITIONAL EPIDURAL MEDICATIONS SHOULD BE GIVEN BY THE ATTENDING ANAESTHETIST

**0.0625% plain bupivacaine plus fentanyl 2.5 mcg/mL (5 – 15 mL/h)**
Infusions should be delivered by an appropriately labelled pump and can be:

- effective but can lead to marked motor block
- associated with higher rate of supplementary boluses than PCEA
- may require titration of the infusion rate and patient position changes to achieve satisfactory dermatomal spread.

Prolonged periods in one lateral position should be avoided or unilateral block may occur. If fentanyl is to be avoided, 0.125% plain bupivacaine can be substituted at the expense of greater motor block. Lower concentrations with fentanyl, adrenaline or clonidine are also effective.

**After vaginal birth**

In most instances epidural catheters can be removed shortly following vaginal birth.

If significant perineal trauma occurs, consider retention for administration of epidural Pethidine 50 mg in 10ml saline 2 hrly as required.

**Post caesarean birth**

Patient controlled epidural analgesia (PCEA): Pethidine 20 mg bolus at 15 min lockout.

Epidural Morphine top-ups: 3 – 5 mg Morphine, then removal of epidural catheter or 6-12 hourly prn

**Follow-up**

All patients who have received neuraxial analgesia are seen by the acute pain service (APS) for at least 24 hrs after epidural removal.

**REFERENCES**


