Remifentanil PCA for labour guideline (GL769)

Approval

<table>
<thead>
<tr>
<th>Approval Group</th>
<th>Job Title, Chair of Committee</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity &amp; Children’s Services Clinical Governance Committee</td>
<td>Chair, Maternity Clinical Governance Committee</td>
<td>6th September 2019</td>
</tr>
</tbody>
</table>

Change History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author, job title</th>
<th>Reason</th>
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<tr>
<td>3.0</td>
<td>2008</td>
<td>Dr R Jones (Consultant Anaesthetist)</td>
<td>Prescription form updated</td>
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<tr>
<td>4.0</td>
<td>Jan 2010</td>
<td>Dr R Jones (Consultant Anaesthetist)</td>
<td>Reviewed</td>
</tr>
<tr>
<td>4.1</td>
<td>April 2011</td>
<td>Dr C Skinner (Consultant Anaesthetist)</td>
<td>Reviewed, also amendment 4/5/11 made by C Skinner</td>
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<tr>
<td>5.0</td>
<td>April 2013</td>
<td>Dr G Jackson (Consultant Anaesthetist)</td>
<td>Reviewed</td>
</tr>
<tr>
<td>5.1</td>
<td>July 2015</td>
<td>Dr G Jackson (Consultant Anaesthetist)</td>
<td>Reviewed – no changes</td>
</tr>
<tr>
<td>6.0</td>
<td>Dec 2016</td>
<td>Dr G Jackson (Consultant Anaesthetist)</td>
<td>Reviewed – new pump info added Appendix 1 &amp; App 2 Remifentanil prescription form updated</td>
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<tr>
<td>7.0</td>
<td>July 2019</td>
<td>Dr L Williams (Consultant Anaesthetist)</td>
<td>Reviewed, minor changes throughout and appendix 2 updated proforma</td>
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Overview: Epidural analgesia is unsuitable for several groups of women. Remifentanil PCA (patient controlled analgesia) is an alternative method of providing analgesia in labour. Acting within 1-2 minutes and suited to patient controlled administration, this offers another choice for labour analgesia.

Maternity Information Leaflet Remifentanil PCA for women who cannot have an epidural

A printable version of the Remifentanil PCA proforma can be found under Stationery/AAnaesthetics

Indications

- Thrombocytopenia - patients requesting analgesia with a platelet count of less than $80 \times 10^9/l$
- Heparin therapy or coagulation abnormalities where regional techniques contraindicated:
  
  See guideline “Coagulation abnormalities and regional techniques (GL755)”
- Structural abnormalities of the back where regional techniques contraindicated
- Some neuropathies
- Failed epidural analgesia

Consent

Give patient the Remifentanil PCA maternity information leaflet.

This is an unlicensed use of Remifentanil and the woman needs to be informed of this. The points to cover are

- the unlicensed nature but that it is being used in an increasing number of units around the country;
- the reasons why an epidural would not be appropriate in her particular circumstances;
- describe the drug in terms that she can understand: i.e. it is a drug which works in the same way as pethidine and diamorphine but is quickly broken down both by her body and the baby.
- explain the potential problems of reduced respiratory drive, reduced blood pressure and drowsiness, but also the advantages of remifentanil over other opioids in these respects.
**Technique**

Discuss the particular case with the consultant on call and inform the obstetric registrar and midwife in charge of the decision. These women for the most part will be high-risk anyway and thus will be requiring a large input from the midwives. The paediatricians also need to be informed.

- Prepare a 40 microgramme/ml concentration of Remifentanil by dissolving 2 mg in 50ml of normal saline
- The drug and blue giving set is kept on delivery suite in the storeroom.
- Obtain BodyGuard ColourVision blue 575 PCA pump from equipment library.
- Ensure that the PCA pump is programmed for Remifentanil
  - see appendix 1a regarding the BodyGuard ColourVision 575TM PCA Infusion Pump
- Check demand dose at 40mcg (1ml)
- Check the lockout period at 2 min - this short lockout is to allow a dose with each contraction
- Check the bolus to be given as ‘stat’
- Anticipate a consumption of 300 - 1000 mcg per hour
- The Remifentanil pump MUST be connected to it own dedicated cannula, either 22G or 20G
- See appendices 1a & 1b regarding the setting up of the new PCA pumps

**Monitoring**

- **Be prepared** to stay in the room initially while the woman learns to use the pump and to ensure that there are no untoward effects.
- Monitor oxygen saturations using a pulse oximeter.
- CTG recording should be instituted. Pulse, blood pressure and respiratory rate need to be recorded quarterly hourly and a measure of pain relief should be made
- In particular be aware that respiratory depression can cause fetal bradycardia. This may well occur in the absence of a change in pulse oximetry reading. If it occurs turn the woman on her side, give oxygen via a face mask, do not allow any more demands on the machine, visually monitor respiratory rate and effort and encourage her to breath until her spontaneous rate improves.
- The woman must be continuously observed. Impress upon the midwives that she should not be left alone at any stage.
- Make sure that the woman knows where the hand unit is; put the strap around her wrist.
- Be certain that the midwife understands the possible problems.
• Liaise with the obstetricians and midwives when the woman commences active pushing in the second stage as it is probably best not to use the pump. The PCA can also be used following delivery for suturing in the room for example.

**Indications for contacting the anaesthetist**

• Excessive sedation
• Respiratory rate less than 8 breaths per minute
• SpO2 remaining below 90% despite nasal oxygen

**Safety points**

• Always use dedicated cannula
• Always have oxygen available if needed
• Only the patient is to use the PCA button

**Follow up**

Ensure that the obstetric anaesthetic team the next day know about the woman. She should be reviewed at least once and some assessment of her satisfaction made.

**References:**

BodyGuard ColourVision 575™ PCA Infusion Pump

PCA syringe giving set colour BLUE

The plunger of the syringe DOES NOT MOVE. Air replaces the fluid and air will be observed in the barrel of the syringe.

The rate of infusion will show as 0ml/hr UNLESS there is a background infusion in which case, the rate will be displayed.

Specific Guide

- Insert syringe and line into the device then lock the box
- Power on - press on hold the ON/OFF button.
- Level one code - enter level one code.
- Menu - press START/OK to resume or STOP/NO for menu (new patient).
- Prime - enter level one code PRIME during priming, air bubbles will be observed entering the syringe. This is normal for this device.
- Select protocol - enter level one code.
- New patient? If YES, press START, OK.
- Select protocol - confirm to start the infusion and lock the keypad.

Other than priming the BodyGuard ColourVision 575™ and syringe changes the instructions for use follows the standard BodyGuard user guides, which have been supplied to the clinical areas.

Note

- Blue giving set for PCA administration only.
- The prime volume is set at 5ml.
- Each subsequent syringe change will be required at 45ml infused.
Appendix 1b – Remifentanil PCA for labour (GL769)

Start a new infusion

Prepare bag and set as per local policy

To power on, press and hold down the ON/OFF key until a beep is heard and screen displays

Bodyguard

Screen displays pump identification

Level One Code

Enter code, press START/OK

Warning!

Ensure the set is disconnected from the patient. Press START/OK

Select Protocol

To select protocol, press START/OK

New Patient?

Enter the ID number for a new pt (optional)

Select Protocol

Select the Protocol required (use ↑↓ key if necessary), press START/OK

Start Infusion?

Connect set to the correct patient access port and unclamp if necessary. When ready to do, press START/OK to start protocol/infusion

Infusion screen running

Infusion type/current time

Protocol letter and name

Basal rate (mL/hr, mg/hr, or mcg/hr)

Patient controlled bolus dose and lock out time

Actual pressure bar

Rate Change During Delivery (Rate Titration)

Remember to de-activate and activate keypad lock if necessary

1. With the infusion in progress, enter the new rate using the numerical keypad, press START/OK
2. Enter relevant code, press START/OK
3. Check the rate change is complete on the infusion running screen

Changing Bolus Dose and/or Lock out time

Remember to de-activate and activate keypad lock if necessary

1. Press PRIME/DOLUS
2. Select either “Change Bolus Dose” or “Change Lockout Time”, press START/OK
3. Enter values required, press START/OK
4. Enter relevant code, press START/OK
5. Check change complete on protocol running screen

Clinician Bolus (Designated Users Only)

Remember to de-activate and activate keypad lock if necessary

1. Press STOP/NO
2. Press DOLUS
3. Enter Clinician Bolus access code, press START/OK
4. Follow on-screen prompt to enter the Bolus dose required, press START/OK to commence delivery
   - Press STOP at any time to stop delivery
   - On completion of Bolus delivery, the infusion running screen displays

Bag Change

Ensure set is clamped/disconnected from patient’s access device.

If end infusion alarm activates:

- Keypad lock is automatically removed
- Press STOP/NO to confirm end of infusion and mute alarm
- Follow screen prompts to return to main menu, complete bag change, re-coordinate protocol and activate keypad lock

If changing bag prior to end infusion alarm:

- Press INFO to record VTBI and VI
- De-activate keypad lock
- Press STOP/NO to stop the infusion
- Follow screen prompts to return to main menu, complete bag change, re-coordinate/unclamp set, resume protocol, and activate keypad lock

Notes: When a protocol is resumed and the protocol summary displays, the new VTBI and the total of all volume infused to date out of previous bag(s) will display.
## Appendix 2 – Remifentanil PCA Prescription form

### Remifentanil PCA proforma

<table>
<thead>
<tr>
<th>Name</th>
<th>Date of birth</th>
<th>Date</th>
<th>Time of set up</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hospital No</th>
<th>Anaesthetist</th>
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**Prior anaesthesia**
- none
- N2O
- pethidine
- other

**Indication for PCA**
- maternal request
- regional contraindicated

**Consent**
- Unlicensed medication but widely used internationally
- Describe in easy terms: it works like pethidine/diamorphine, it is quickly metabolised, it doesn’t accumulate
- May cause drowsiness, itching, nausea and dizziness
- 1 in 10 women experience transient saturation levels requiring administration of additional oxygen

**Technique**
- Prepare a 40 microgram/ml concentration remifentanil by dissolving 2 mg in 50 ml saline
- Select Remifentanil programme on the BodyGuard PCA pump
- Prescribe PCA on EPR via the Powerplan
- Patient told to press button just before or at the start of a contraction
- Anticipate a consumption of 300 mcg – 1000 mcg per hour
- Must be given through a dedicated cannula (2022G cannula) and with the specific PCA pump giving set
- Entonox may be used in addition

**Monitoring**
- Pulse oximeter (saturation) probe must be attached before the PCA is started and oxygen via nasal specula must be available and given if saturations fall below 93%. One-to-one midwife care is required at all times. If this is not available please contact the Consultant Anaesthetist and consider removal of PCA.
- Record observations and events as charted below in addition to routine observations in labour
- If patient is difficult to resuscitate or has any concerns: stop pump and call anaesthetist.

### Prescription

<table>
<thead>
<tr>
<th>Bolus dose</th>
<th>Lockout</th>
<th>Pain score</th>
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</thead>
<tbody>
<tr>
<td>40 mcg</td>
<td>2 min</td>
<td>0: No pain</td>
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<tr>
<td></td>
<td></td>
<td>1: Slight pain</td>
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<td>2: Fair pain</td>
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<td></td>
<td></td>
<td>3: Moderate pain</td>
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<td></td>
<td></td>
<td>4: Severe pain</td>
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<tr>
<td></td>
<td></td>
<td>5: Extreme pain</td>
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</table>

<table>
<thead>
<tr>
<th>Sedation score</th>
<th>1: Fully aware</th>
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<tbody>
<tr>
<td></td>
<td>2: Drowsy</td>
</tr>
<tr>
<td></td>
<td>3: Eyes closed, raspy voice</td>
</tr>
<tr>
<td></td>
<td>4: Eyes closed, raspy pain</td>
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<tr>
<td></td>
<td>5: Not rousable</td>
</tr>
</tbody>
</table>

**OBSERVATIONS:**

<table>
<thead>
<tr>
<th>Actual time</th>
<th>Dose</th>
<th>Good demand</th>
<th>Cumulative dose</th>
<th>Pain score</th>
<th>Saturation</th>
<th>Sedation / other side effects</th>
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<tr>
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**Comments / Post natal follow up**

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Dr L Williams (September 2019)