

## Anaesthesia Guideline for Use of Remifentanil PCA On Delivery Suite

### Applicable to (please mark with an X)

<b>Group-wide</b>	<b>LUHFT-wide</b>	<b>Liverpool Women's</b>	<b>x</b>
<b>Aintree Hospital</b>	<b>Broadgreen Hospital</b>	<b>LCL</b>	<b>Royal Liverpool Hospital</b>

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<b>Associated Documents</b>	
<b>Evidence Base and References</b> e.g. Regional or National Guidelines such as NICE or Royal College.	Obstetric Anaesthetists' Association- Remifentanil PCA Guideline
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### What is new in this version?

Latest Version	Page	Changes Made	Date
	3-6	<ul style="list-style-type: none"> <li>Indications and contraindications</li> <li>Mandatory training of midwives</li> <li>Introduction of patient information leaflet</li> <li>Transition to Electronic Charting for Remifentanil PCA</li> <li>Adding more safety measures</li> </ul>	<b>06/05/25</b>

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## 1 Introduction

Remifentanil is a short-acting opioid drug. It provides labour analgesia via a patient-controlled analgesia (PCA) pump. Its rapid onset (1 min) and peak effect (2 min) make it a valuable option when epidural is contraindicated. However, in common with other opioids (e.g. IM diamorphine), it may cause maternal sedation, respiratory depression, pruritus and nausea and vomiting.

## 2 Guidance

### 2.1 KEY CONSIDERATIONS

- The plasma concentration in a pregnant woman is half that in a non-pregnant woman following the same dose – due to a greater volume of distribution and clearance.
- Remifentanil freely crosses the placenta but has no clinically significant neonatal depressant effects at doses commonly used and is rapidly metabolized by the foetus.
- It has the potential to cause serious respiratory depression and therefore the safety measures in this guideline **MUST** be put in place whenever it is used.
- Its use in labour is widespread but unlicensed.

### 2.2 INDICATIONS

Remifentanil PCA is an alternative form of analgesia for patients who do not want epidural or other forms of analgesia. It may be used when epidural analgesia is failed, and other forms of analgesia are insufficient.

Remifentanil PCA may also be preferred in patients when epidural analgesia is contraindicated including but not limited to:

- Coagulopathy, thrombocytopenia or full anticoagulation.
- Metalwork or anatomical deformity of the lumbar spine.
- Sepsis.
- Certain neurological diseases e.g. demyelination.

### 2.3 RELATIVE CONTRAINDICATIONS

- Allergy to remifentanil.
- Other parenteral long-acting opioid administration within the last **4 hours**.
- Lack of adequate monitoring and staffing unavailable.
- **< 36 weeks'** gestation (except in cases of intrauterine death or termination of pregnancy).
- Pregnancies with a poor foetal prognosis should be discussed on a case-by-case basis with both the anaesthetic and obstetric consultants.

## 2.4 CRITERIA FOR USE

- A midwife must be assigned to give one to one care. Only midwives who have undergone training and been assessed as competent may monitor a patient using a remifentanil PCA.
- Patient should be **> 36 completed weeks gestation** and be in **established labour**.
- Remifentanil PCA may be considered for use at less than 36 weeks' gestation **ONLY** in intrauterine death or termination of pregnancy.
- Entonox and/or TENS may be used in addition
- **Mandatory SpO2 monitoring** must be established before the woman starts using the PCA and must be continued throughout PCA use.

## 2.5 PATIENT PREPARATION

- The patient should receive and read the LWH remifentanil PCA patient information leaflet ([Remifentanil PCA Information leaflet](#)) which should be available in each Delivery room. It contains key information that should be discussed with the patient when obtaining verbal consent (see Appendix B).
- The woman should be informed of the common side effects, such as drowsiness, itching, nausea and dizziness.
- Explain the risk of reduced breathing and low oxygen levels (1:10) and that oxygen administration as well as continuous monitoring of oxygen saturations will be required.
- Commence continuous oxygen saturation monitoring before starting the PCA. Do not commence remifentanil PCA if baseline SpO2 < 95%.
- Commence oxygen at 2L/min via nasal specs before starting the PCA.
- No other type of opiates should be administered simultaneously, and the patient must NOT have received other parenteral opiates in the preceding 4 hours.
- A dedicated intravenous cannula must be used with remifentanil PCA. Do not administer any other drugs or fluids through this cannula. BP cuff should be applied to the contra lateral arm.
- **Patient education:**
  1. Press the PCA button **just before or at the start of a contraction (first subjective sign or in anticipation of labour contraction)**.
  2. It will take 60-90 seconds to reach peak effect.
  3. Do not use the handset in-between contractions.
  4. **You alone** can press the remifentanil PCA button (no assistance from staff or birth partner).
  5. The patient should not have access to the PCA if the midwife is not present.

## 2.6 EQUIPMENT PREPARATION

- **ONLY** the anaesthetist may prepare the drug.
- Add 4 mg remifentanil to a 100ml bag of 0.9% NaCl (final concentration 40 mcg/ml).
- Shake thoroughly to mix.
- Use a dedicated pump (CADD Solis) and select the remifentanil PCA programme.
- There is only one programme, but there are 3 options for the bolus dose. Booking weight can be used as a guide to selecting bolus dose (see below), but there can be

considerable individual variation in requirement. Close monitoring is essential; be prepared to change to a different protocol according to response.

- Be aware that in high BMI patients, weight may over-estimate their dose requirement. **If in doubt, start at a lower dose protocol** and increase if inadequate analgesia.

Booking Weight	<60kg	60 – 90kg	>90kg
Bolus Dose	20 micrograms	30 micrograms	40 micrograms
Lockout	2 minutes		
Background	No background infusion		

- Use a dedicated IV canula (20G ideal).
- Use a single lumen anti-reflux / anti-syphon extension set (CADD Solis).
- Do not give other drugs or fluids via this line, do not flush.
- The anaesthetist to commence Remifentanil on K2 Guardian via **Actions > Analgesia/Anaesthesia > Add/Modify > Opioids > Remifentanil PCA.**
- Once commenced, the anaesthetist must **sign off the checklist** using the **Remi Review Wizard: Actions > Analgesia/Anaesthesia > Review PCA.** The checklist should be confirmed verbally with the midwife looking after the patient.
- Baseline maternal observations including, systolic blood pressure, diastolic blood pressure, heart rate, respiratory rate, saturations, sedation and nausea scores should be recorded before remifentanil PCA is commenced.
- The drug must be prescribed on Digicare by the anaesthetist and the start time must be signed.
- Ondansetron and chlorphenamine should be prescribed PRN.

NB. Remifentanil is stable for 24 hours at room temperature after reconstitution.

## 2.7 MONITORING

- All baseline observations, along with volume used/remaining, boluses attempted, boluses delivered, should be measured and recorded **every 5 minutes for 20 minutes and then every 15 minutes till stop of medication.**
- The **Remi Review Wizard** should be used by the **midwife** for each **Remifentanil review.**
- SpO2 monitoring must be used **continuously** during remifentanil PCA use.
- Continuous CTG monitoring if viable foetus.
- The Anaesthetist should be **present for the first 5 doses** (including after any increase in bolus dose).
- **The patient should not be left unattended for the first 30 mins of PCA use.**
- **If the midwife leaves the room, the patient must not have access to the PCA.**
- Remifentanil PCA must be discontinued when the baby's head (vertex) is visible.
- When Remifentanil is stopped, this must be documented via **Actions > Analgesia/Anaesthesia > Add/Modify > Stop.**
- On completion of the PCA, remove (don't flush) the canula.

NOTE: Sedation score is recorded on a scale.

A: Alert

V: Drowsy but responds to voice

P: Drowsy but responds to pain

U: Unresponsive

## 2.8 INDICATIONS FOR CONTACTING THE ANAESTHETIST (bleep 301)

- SpO<sub>2</sub> < 90% despite oxygen via nasal specs.
- Sedation score P or U (rousable only by pain or unarousable).
- Respiratory rate < 8 breaths per minute.
- PCA pump troubleshooting.
- Any other concerns.

## 2.9 APNOEA

- **If Apnoea >10 sec or respiratory rate less than 8:**
  - Encourage the patient verbally to breathe.
  - Remove PCA button from the patient.
- **Unresponsive:**
  - Pull emergency buzzer, call 2222.
  - Lay patient flat in full left lateral position.
  - Administer 100% oxygen via a self-inflating bag.
  - If no respiratory effort, then ensure patient's airway is open and attempt ventilation with Ambu bag until arrival of the emergency team (including anaesthetist) to determine optimum airway management.
  - Give naloxone 400 mcg IV.
- If there is the need for verbal encouragement to the patient to breathe on 2 more occasions, then the remifentanil PCA must be withheld until reviewed by the Anaesthetic team with consideration of reduction of dose or alternative pain relief options.

## 2.10 REFERENCES

1. Hinova A, Fernando R. Systemic remifentanil for labor analgesia. *Anesth Analg.* 2009;109(6):1925-9.
2. [http://www.oaaanaes.ac.uk/assets/managed/editor/File/Guidelines/Remifentanil/Remifentanil\\_PCA\\_guideline\[1\]%20-%20Dudley%20-%20Brennan.pdf](http://www.oaaanaes.ac.uk/assets/managed/editor/File/Guidelines/Remifentanil/Remifentanil_PCA_guideline[1]%20-%20Dudley%20-%20Brennan.pdf)

## Appendix A: Training Needs Analysis

Staff Group	Tick if relevant	Frequency	Delivery method e.g. Formal teaching e-learning Handout etc
Executive Directors			
Non-Executive Directors			
Senior Managers			
Consultant Medical Staff	√	Annual Updates	Formal Teaching
Junior Doctors	√	Annual updates	Formal teaching
Nurses	√	Annual Updates	Formal Teaching
Midwives	√	Annual Updates	Formal Teaching
ANP			
Clinical Scientists			
Specialists allied to medicine			
Health Care annuitants			
Ancillary Staff			
Contractors			

## Appendix B: Patient information leaflet

# Remifentanil Patient-Controlled Analgesia (PCA) for Pain Relief in Labour – What You Need to Know

### Key facts

- Puts **YOU** in control.
- You hold a button in your hand. When you feel pain, press it. A small amount of strong painkiller (remifentanil) goes into a drip in your hand.
- Remifentanil is a strong medicine like morphine, pethidine and diamorphine.
- It can be used instead of an epidural. You might choose this, or there may be medical reasons you cannot have an epidural.
- Works fast and wears off quickly.
- Safe for most women and babies.
- Can be used from 36 weeks of pregnancy onwards.

### How well does it work?

- When asking women in labour, they say PCA works better than other injections like pethidine, morphine or diamorphine, but not as well as an epidural.
- Your experience may be different.
- You can also use gas & air (Entonox) alongside it.
- It used to be mainly for women who couldn't have an epidural, but now it is used more widely and has benefits.
- You can stop at any time or change to another pain relief (like an epidural).

**NICE 2023 guidelines say that compared with pethidine, remifentanil PCA users are less likely to need an epidural or assisted birth and more likely to have a natural vaginal birth.**

## How to use it

- A special PCA pump gives you remifentanil through a drip in your arm or hand.
- Press the button **just before or at the start of a contraction (first subjective sign or in anticipation of labour contraction)**.
- It takes 60-90 seconds to reach peak effect, so timing of pressing the button is important.
- It may take a few tries and a little practice to get the timing right. Your midwife and anaesthetist will help.
- Do **not** use the handset in-between contractions.
- Only you must press the button (not your birth partner).
- A safety feature stops extra doses. You can only get one dose every 2 minutes.
- Tell your midwife or doctor immediately if you feel very sleepy or unwell.

## Safety and monitoring

While using remifentanil PCA:

- You will have oxygen to breathe.
- A clip on your finger will check your oxygen levels.
- Your midwife will stay with you at all times.
- An anaesthetist will be available if needed.
- Your baby will also be closely monitored.

## Possible side effects

Some women may:

- Feel sleepy.
- Feel sick.
- Get itchy.
- Have slower breathing or lower oxygen levels (1 in 10 women).

These effects are easy to treat and usually go away quickly. If there are any concerns, the anaesthetic doctor may stop the PCA and discuss other options with you. These medicines have very little effect on your baby.

### **When it cannot be used**

- If you are allergic to morphine-type medicines.
- Within 4 hours of having pethidine or diamorphine.

### **Questions?**

Please ask your midwife, anaesthetist, or obstetric doctor.

We are here to support you and help you choose the best pain relief for your labour.

## Appendix C: Document History and Version Control

Version	Date	Comments	Author/Job Title
1.0	Aug 15	New Guideline	Consultant Anaesthetist
2.1	Mar 16	Updated	Consultant Anaesthetist
3.1	Nov 18	No changes required, updated template, date extended to 3 yearly	Consultant Anaesthetist
3.2	Apr 22	No changes required, updated template, date extended to 3 yearly	Consultant Anaesthetist
4.0	May 25	Major Change <ul style="list-style-type: none"> <li>• Indications of remifentanil</li> <li>• Mandatory training of midwives</li> <li>• Introduction of patient information leaflet</li> <li>• Transition to Electronic Charting for Remifentanil PCA</li> <li>• Adding more safety measures</li> </ul>	Mahmoud Elhefnawy, Consultant Anaesthetist