The Royal Wolverhampton NHS Trust

# PRT05
# Protocol for Fentanyl Patient Controlled Analgesia, In adult patients

**Contents**


| **Sections** | | **Page** |
|---|---|---|
| 1.0 | Procedure Statement | 2 |
| 2.0 | Definitions | 2 |
| 3.0 | Accountability | 2 |
| 4.0 | Procedure details | |
| | 4.1 Patient selection | 3 |
| | 4.2 Contraindications | 3 |
| | 4.3 Summary of Protocol | 3 |
| | 4.4 Scope of Practice | 4 |
| | 4.5 Roles and Responsibilities | 4 |
| | 4.6 Preparing the PCA | 5 |
| | 4.7 Setting up the Pump | 5 |
| | 4.8 Aftercare | 6 |
| | 4.9 Troubleshooting | |
| | 4.9.1 Uncontrolled Pain | 6 |
| | 4.9.2. Pump Problems | 7 |
| | 4.9.3 Side effects | 7 |
| | 4.10 Discontinuing the PCA | 7 |
| 5.0 | Financial Risk Assessment | 7 |
| 6.0 | Equality Impact Assessment | 8 |
| 7.0 | Maintenance | 8 |
| 8.0 | Communication and Training | 8 |
| 9.0 | Audit process | 9 |
| 10.0 | References | 9 |

## 1.0 Procedure Statement

This guidance is the protocol for an analgesic system appropriate for use in patients who are in severe pain and who are nil by mouth. It is an extension of the existing Protocol *"Royal Wolverhampton's NHS Trust; Acute Pain Team; Intravenous Patient Controlled Analgesia for adults, 2015".* This protocol should thus be used in conjunction with the 2015 protocol.

Patient Controlled Analgesia (PCA) is an effective mode of analgesia for patients who are in severe pain and/or patients who are nil by mouth. Post-operative patients, pancreatitis or sickle cell patients may be appropriate candidates for PCA opioids. PCA opioids are slightly more effective than the im or sc routes. Although the patients generally use more opioid, satisfaction levels are much higher with PCA. This is probably due to a combination of increased dose and patients having control of their own analgesia.

This protocol uses fentanyl and is intended for use in patients who have significant renal disease or who are sensitive to morphine. It is not intended as a simple replacement for morphine PCA.

## 2.0 Definitions

| | |
|---|---|
| GFR | Glomerular Filtration Rate |
| im | Intramuscular |
| iv | Intravenous |
| mcg | Micrograms |
| ml | Millilitres |
| NBM | Nil by Mouth |
| ODP | Operating Department Practitioner |
| PCA | Patient controlled analgesia |
| RN | Registered Nurse |
| sc | Sub cutaneous |

## 3.0 Accountability

This protocol has been researched and developed by the Acute Pain Team.

Its use will be initiated by anaesthetists and the Acute Pain Team. Monitoring will be by the ward nursing staff, the anaesthetists and the Acute Pain Team. Follow up will be provided by the Acute Pain Team and the anaesthetists.

Oversight will be provided by pharmacy and the Acute Pain Team.

The Acute Pain team is responsible to the Clinical Director, Anaesthetics.

## 4.0 Procedure Details

### 4.1 Patient Selection

Patients with severe pain. Usually these will be postoperative patients who are nil by mouth however it may include pancreatitis or sickle-cell crisis patients. Other patients will be considered after consultation with the acute pain team. For fentanyl PCA (rather than morphine PCA) the following criteria will also need to be met.

(i) Adult patient

(ii) Patients with known or suspected allergy or intolerance of morphine

(iii) Or patients with reduced renal function CKD>3
(Consider fentanyl if GFR<50. Morphine contraindicated for GFR<30 **[ref 11,12,13,14]**)

(iv) Or patients in whom morphine PCA has been tried but seems less efficacious than expected.

### 4 2 Contraindications

(i) Where there is no contraindication to morphine PCA

(ii) Patient refusal

(iii) Documented or stated allergy to fentanyl

(iv) Patient's inability to operate the PCA due to physical infirmity or lack of comprehension.

(v) Liver failure

(vi) Where a patient is not located in a clinical area with the requisite level of nursing skill, experience and monitoring requirements

### 4. 3 Summary of Protocol

| | |
|---|---|
| Bolus dose | 20mcg (0.4ml) |
| Lock out time | 5 minutes |
| Drug concentration | 50mcg/ml |
| Syringe volume | 50ml |

### 4.4 Scope of Practice

**Staff:** Anaesthetists, ODPs and theatre nursing staff
Ward registered nursing staff
The Acute Pain Team

**Clinical Areas:** Operating Theatres at New Cross Hospital.
New Cross ICCU
Surgical Wards; A5, A6, A9, A12, A14, D7

**Patients:** After initial patient selection (4.1) consideration must be given to the patient's ability to use the PCA; either due to physical problems such as arthritis, or problems relating to their understanding of how to operate the PCA. Caution should be exercised where the patient may have increased sensitivity to opioids. Please ensure that patients also have simple analgesia also prescribed (E.g. paracetamol iv +/- NSAID).

### 4.5 Roles and Responsibilities

4.5.1 The Prescribing Anaesthetist should
Select the patient appropriately.

- The prescriber should also be familiar with the protocol and how the system works, including the pump. Complete the prescription on ePMA, check the pump once it has been set up and "sign" (on ePMA) for the administration of the first dose when connected in recovery.
- The prescriber should make his or herself available, to review the patient on the ward and to review the pump settings; change the fentanyl syringe if required to and generally lend support to the ward. Ward support may include assistance with changing syringes.

4.5.2 The Recovery ODP/RN should

- Be familiar with the protocol and fully trained with the use of the pump system [**Agilia® SP PCA**].
- Set up the fentanyl PCA according to the prescription and ensure that the anaesthetist checks it.
- The recovery team should be responsible for ordering in syringes.
- Monitor the patient and give an adequate hand-over to the ward staff.

4.5.3 The ward RN should

- Be familiar with the protocol.
- Monitor the patient and respond appropriately to any change in their status.
- Change the syringe if required.
- Inform the acute pain team of any problems.

4.5.4 The on-call Anaesthetist should

- Be familiar with the protocol.
- Lend support to the ward in managing a patient with a fentanyl PCA.
- Changing syringes and restarting the PCA if needed.

4.5.5 The Pharmacist should

- Monitor prescribing and administration and inform prescribers and the Acute Pain Team to any problems.

4.5.6 The Acute Pain Team should

- Follow up patients on the acute pain round and review their ongoing pain management; changing syringes if needed.
- Support the ward staff, theatre staff and anaesthetic personnel with training and trouble shooting.
- Engage in on going audit of fentanyl PCA use.

### 4.6 Preparing the fentanyl PCA

Take a pre-prepared ITH Pharma, 50ml syringe of fentanyl, (2500microgram in 50ml = 50mcg/ml). Program the Fresenius Kabi Agilia PCA pump; only if you have received specific pump training.

Bolus is 20mcg = 0.4ml
Lock-out 5 minutes

Prime the giving set (requires anti-siphon valve)
Review program against prescription

### 4.8 Monitoring and Aftercare
**This is in line with what is currently practiced with morphine PCA.**

4.8.1 The following should be monitored.

- Respiratory rate
- Sedation Score
- Blood pressure pulse and temperature
- Pain and nausea/ vomiting

4.8.2 Observations every 5 minutes for 15 minutes

4.8.3 Then, observation every 15 minutes for an hour

4.8.4 Then, observation every hour for 4 hours

4.8.5 Thereafter observation every 4 hours

4.8.6 Oxygen saturation should be maintained between 94-98% or 88-92% for patients with COPD. Supplementary oxygen should be given if necessary. It is not however necessary for the patient to have supplementary oxygen constantly if they are well.

4.8.7 Two trained members of staff should check the PCA device and the program, against the prescription. This should be rechecked on each shift.

4.8.8 Only the patient can press the demand button. This is an essential safety factor.

4.8.9 A member of the acute pain team or the responsible anaesthetist should review the PCA and the patient on the ward, regularly.

4.8.10 The patient should not leave the ward area with a PCA unless accompanied by a nurse.

4.8.11 Press history button on PCA to display infusion data.

## 4.9 Trouble shooting. There are three potential problems

1 **Uncontrolled pain**

2 **Pump alarms**

3 **Side-effects**

### 4.9.1 Uncontrolled Pain

4.9.1.1 Call ward doctors to review.

4.9.1.2 Check pump history and check patient demands vs delivered

4.9.1.3 Check the source of the pain

4.9.1.4 Is the pump working?

4.9.1.5 Check the lines

4.9.1.6 Review other analgesia [Eg NSAIDs]

4.9.1.7 Does the patient know how to work the pump?

4.9.1.8 Discuss with the Acute Pain Team or the on-call anaesthetist

### 4.9.2 For Pump alarms

Consult ref **18** "Fresenius Kabi", Agilia SP PCA, Instructions for Use, 2018 Page 111 Alarms and Safety features. All personal should have completed the specific training program.

### 4.9.3 Side-effects

**Respiratory depression**

Although this side effect is only very rarely encountered it is probably the most important one of which to be aware. Respiratory depression is more likely in the following circumstances:

(i) Very small or elderly patient

(ii) People, other than the patient, triggering the PCA [nurses or visitors].

The most common side effects encountered with PCA are:
Nausea and vomiting
Drowsiness
Inadequate analgesia, which usually occurs because of one or more of the following factors:

(i) Patient does not really understand how the PCA works

(ii) Patient is for some reason unwilling to use the fentanyl in the PCA

(iii) Side-effects of fentanyl are sufficiently unpleasant that the patient would rather have some pain [typically nausea or sedation] in order to use the PCA less.

(iv) The PCA regimen is inadequate, and the patient needs a higher dose. This is *not* the most common reason.

Other side effects seen less often include

- Urinary retention
- Increased risk of ileus
- Hallucinations
- Euphoria or dysphoria
- Pruritis (and potentially any other opioid side-effect)

### 4.10 Discontinuing the PCA

Ensure that alternative analgesia has been prescribed when discontinuing the fentanyl PCA. If the patient is prescribed oral analgesics check that he or she is able to absorb them.

## 5.0 Financial Risk Assessment

| | | |
|---|---|---|
| 1 | Does the implementation of this Procedure require any additional Capital resources | Yes |
| 2 | Does the implementation revenue resources of this Procedure require additional | no |
| 3 | Does the implementation of this Procedure require additional manpower | no |
| 4 | Does the implementation of this Procedure release any manpower costs through a change in practice | no |
| 5 | Are there additional staff training costs associated with implementing this Procedure which cannot be delivered through current training programmes or allocated training times for staff | no |
| | Other comments | Nil |

## 6.0 Equality Impact Assessment

Not applicable

An equality analysis has been carried out and it indicates that:

| Tick | Options |
|---|---|
| **X** | A. There is no impact in relation to Personal Protected Characteristics as defined by the Equality Act 2010. |
| | B. There is some likely impact as identified in the equality analysis. Examples of issues identified, and the proposed actions include: |

## 7.0 Maintenance

Updating will be the responsibility of the Acute Pain Team.

Any significant changes in content will be reviewed by the Anaesthetic Quality Improvement Forum meeting and Medicines Management Group.

## 8.0 Communication and Training

The existence of and contents of this protocol will be communicated to the responsible parties (see section 4.5).

Anaesthetists will be informed at QIF and via face-to-face teaching.

Nursing staff will be informed and educated with ward-based face to face teaching.

Pharmacy will be informed via pharmacy link colleague.

The protocol will be available on the Trust Intranet at “Departments and Services/ Critical Care Services Directorate/ Acute Pain”.

## 9.0 Audit Process

Audit will be conducted through the process of systematic review on the Acute pain ward round. This will be supported by pharmacy review.
Areas of review will include
(i) Patient pain scores and side-effects
(ii) Renal function of patients
(iii) Discrepancy from the protocol set-up
(iv) Nursing and clinician feed-back
The object of audit will be to reduce problems with the introduction of a new service; demonstrate the adequate efficacy of the system; identify areas for improvement in the system and to feedback any discrepancies to the prescribing anaesthetists.

| Criterion | Lead | Monitoring method | Frequency | Committee |
|---|---|---|---|---|
| Significant side-effects Discrepancies in Procedure application | Acute pain team | Routine ward rounds and colleague feed-back | After 6 months and then as needed | *Acute pain team*: Manpreet Singh Nigel Bowater Sara Lawley Bruce Allan |

## 10 References

**1** A review of the use of fentanyl analgesia in the management of acute pain in adults. A Review Article Peng et al. *Anaesthesiology* 1999; **90,**pp576-90

**2** Sherwood Forest Hospitals NHS Foundation Trust
Fentanyl- Procedure for fentanyl intravenous PCA-Adult patients. October 2018

**3** Oxycodone vs Fentanyl PCA after laparoscopic cholecystectomy.
Hwang et al. *International Journal of Medical Science* 2014; **11(7)**pp658-662
(open access, peer reviewed)

**4** Royal Wolverhampton's NHS Trust
Acute Pain Team; Intravenous Patient Controlled Analgesia for adults, 2015

**5** Gloucestershire Hospitals NHS Foundation Trust
Acute Pain Management Guidelines Action Card:2016

**6** Nottingham University Hospitals NHS Trust
Fentanyl PCA prescription, adult patients only. 2019

**7** PCA with Fentanyl for Burn dressing changes
Prakash et al. Anesth Analg 2004**;99:**pp552–5

**8** Australian Clinical Excellence Commission
Clinical Focus report on PCA; 2013

**9** Northern Care Alliance NHS Group (Salford)
Patient Controlled Analgesia (PCA) Using Morphine Sulphate or Fentanyl Citrate for the Management of Acute Pain in Adults; 2019

**10** Acute Pain Management: Scientific Evidence 5th Edition.
Australian and New Zealand College of Anaesthesia and Faculty of Pain Medicine
Schag et al. 2020

**11** Pham PC, Khaing K, Sievers TM, Pham PM, Miller JM, Pham SV, Pham PA, Pham PT. **2017** update on pain management in patients with chronic kidney disease. Clin Kidney J. 2017 Oct;10(5):688-697. doi: 10.1093/ckj/sfx080. Epub 2017 Aug 18. PMID: 28979781; PMCID: PMC5622905.

**12** Phuong-Chi T. Pham, Edgar Toscano, Phuong-Mai T. Pham, Phuong-Anh T. Pham, Son V. Pham, Phuong-Thu T. Pham, Pain management in patients with chronic kidney disease, *NDT Plus*, Volume 2, Issue 2, April 2009, Pages 111-118.

**13** Tawfic QA, Bellingham G. Postoperative pain management in patients with chronic kidney disease. J Anaesthesiol Clin Pharmacol. **2015** Jan-Mar;31(1):6-13. doi: 10.4103/0970-9185.150518. PMID: 25788766; PMCID: PMC4353156.

**14** Coluzzi F, Caputi FF, Billeci D, Pastore AL, Candeletti S, Rocco M, Romualdi P. Safe Use of Opioids in Chronic Kidney Disease and Hemodialysis Patients: Tips and Tricks for Non-Pain Specialists. Ther Clin Risk Manag. **2020** Sep 9;16:821-837

**15 .** 002 MEDICINES MANAGEMENT PROCEDURE; July 2019 v9
MP_01_Procedure2.pdf (xrwh.nhs.uk) (page 10 of 17)#

**16 University Hospital Wishaw Acute Pain Service**; Fentanyl PCA Guidelines - via Fresenius Kabi Agilia PCA syringe pump (June 2022)

**17** The safe use of infusion devices Stephen Keay BA Chris Callander MBChB FRC Continuing Education in Anaesthesia, Critical Care & Pain | Volume 4 Number 3 2004

**18** “Fresenius Kabi”, Agilia SP PCA, Instructions for Use, 2018

**Part A - Document Control**

<table>
<tr><td>Procedure number and Procedure version:<br><br>PRT05</td><td>Procedure Title<br><br>Protocol for Fentanyl Patient Controlled Analgesia,<br>In adult patients</td><td colspan="2">Status:<br><br>Final</td><td>Authors: Dr Bruce Allan<br>Dr Manpreet Singh<br>CNS Nigel Bowater<br>CNS Sara Lawley<br><br>Contributions by<br>Jane Lewis(Pharmacy)<br>Dr Lewis Davies<br><br>Chief Officer Sponsor:<br>Group Chief Medical Officer</td></tr>
<tr><td rowspan="3">Version / Amendment History</td><td>Version</td><td>Date</td><td>Author</td><td>Reason</td></tr>
<tr><td>V 1.0</td><td>Dec. 2025</td><td>As above</td><td>Introduction of new Trust-wide protocol</td></tr>
<tr><td>V1.1</td><td>July 2026</td><td>As above</td><td>Removal of physician bolus from sections 4.3 and 4.9.1.9; amendments to sections 4.4, 4.6 and 8.0</td></tr>
<tr><td colspan="5">Intended Recipients: Anaesthetists, Surgical ward nursing staff, and pharmacists</td></tr>
<tr><td colspan="5">Consultation Group / Role Titles and Date:<br>• MMG Date: 6th May 2025 (version 1.0) and 7th July 2026 (version 1.1)<br>• Division One Date: 30th January 2025<br>• Anaesthetists Group Date: 30th January 2025</td></tr>
<tr><td colspan="2">Name and date of Trust level group where reviewed</td><td colspan="3">Trust Policy Group – December 2025<br>Chief Officer Sponsor approved minor updates to protocol – July 2026 – Version 1.1</td></tr>
<tr><td colspan="2">Name and date of final approval committee</td><td colspan="3">Trust Policy Group – December 2025<br>Chief Officer Sponsor approved minor updates to protocol – July 2026 – Version 1.1</td></tr>
<tr><td colspan="2">Date of Procedure issue</td><td colspan="3">July 2026</td></tr>
<tr><td colspan="2">Review Date and Frequency (standard review frequency is 3 yearly unless otherwise indicated – see section 3.8.1 of Attachment 1)</td><td colspan="3">December 2028 (every 3 years)</td></tr>
<tr><td colspan="5">Training and Dissemination: See section 8.0 above</td></tr>
<tr><td colspan="5">Publishing Requirements: Can this document be published on the Trust's public page:<br><br>Yes<br><br>If yes you must ensure that you have read and have fully considered it meets the requirements outlined in sections 1.9, 3.7 and 3.9 of OP01, Governance of Trust-wide Strategy/Procedure/Procedure/Guidelines and Local Procedure and Guidelines, as well as considering any redactions that will be required prior to publication.</td></tr>
<tr><td colspan="5">To be read in conjunction with: See references section above</td></tr>
</table>

| | |
|---|---|
| **Initial Equality Impact Assessment (all policies): Completed Yes / No Full Equality Impact assessment (as required): Completed Yes / No / NA** If you require this document in an alternative format e.g., larger print please contact Procedure Administrator 8904 | |
| **Monitoring arrangements and Committee** | APPM Directorate Governance Meetings |
| **Document summary/key issues covered.** This guidance is the protocol for an analgesic system appropriate for use in patients who are in severe pain and who are nil by mouth. | |
| **Key words for intranet searching purposes** | Severe pain<br>Fentanyl<br>Patient controlled analgesia |
| **High Risk Procedure?** | **No** |