Doncaster and Bassetlaw Hospitals NHS
NHS Foundation Trust

Patient Controlled Analgesia (PCA)

This procedural document supersedes: PAT/MM 7 v.1 Policy for the Management of Intravenous Patient Controlled Analgesia (IV-PCA)

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Author/reviewer: (this version)	Lorraine Robinson, Lead Pain Nurse, Inpatient Pain Service
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Approved by:	Drug and Therapeutic Committee
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Next review date:	July 2017
Target audience:	**Clinical areas, Trust-wide where patients receive Patient Controlled Analgesia (PCA)**

Amendment Form

Please record brief details of the changes made alongside the next version number. If the procedural document has been reviewed **without change**, this information will still need to be recorded although the version number will remain the same.

Version	Date Issued	Brief Summary of Changes	Author
Version 2	12 August 2014	• New Trust format • References updated • Changes throughout the document, please read in full	Lorraine Robinson
Version 1	August 2011	• This document has been reviewed, without change. • Amendment form added.	Lorraine Robinson
Version 1	December 2008	• This is a new procedural document, please read in full	Lorraine Robinson

Contents

1. INTRODUCTION

Patient Controlled Analgesia (PCA) is a method of pain relief that allows a patient to self-administer small doses of analgesia as required, from a locked programmable pump. PCA is appropriate for patients' who have acute pain which is likely to warrant repeated doses of parenteral opioid.

2. PURPOSE

To promote the safe and effective management of patients receiving a patient controlled analgesia system for the management of acute pain (National Patient Safety Agency (2006) Patient Safety Alert (12) Ensuring Safer Practice with high dose ampoules of Diamorphine and Morphine, also Patient Safety Alert (20) Promoting Safer use of Injectable Medicines (2007a).

It is intended to assist both medical and nursing staff to provide safe and effective PCA therapy and to ensure patients receive continuity of analgesia.

This policy should be read in conjunction with the policy for 'Safe and secure handling of controlled drugs part B'
http://www.dbh.nhs.uk/Library/Patient_Policies/PAT%20MM%201%20B%20v.3%20-%20Controlled%20Drugs%20Part%20B.pdf

3. DUTIES AND RESPONSIBILITIES

3.1 All clinical staff must:

Ensure that they are competent in the setting up/use of the PCA pump

Maintain contemporaneous records pertaining to observations and pump monitoring.

Staff will receive practical instruction on using the equipment from the inpatient pain team and clinical educators. Standard Operating Procedure (SOP) leaflets are available from the inpatient pain team. These act as an aide- memoir and do not replace training. Familiarisation to the operator's manuals (available in the relevant clinical areas/ wards) is essential.

3.2 The senior nurse in charge of the clinical area:

The registered nurse/healthcare professional must demonstrate competency in PCA therapy using the identified equipment in accordance with the Trust policy Medical Equipment Training (CORP/RISK 2).

In collaboration with the matron and other relevant professionals, must investigate all adverse clinical incidents in relation to inadequate analgesia to prevent their future occurrence.

3.3 The Prescriber

It is the responsibility of the prescriber to ensure that PCA is a suitable analgesic route for the patient. This decision will be based upon clinical condition of the patient requiring the need for a

readily available pain relief. The pre-printed prescription label should be used and other strong opioids may be prescribed to ensure good background analgesia is maintained.

4. PROCEDURE - OPIOIDS AND INDIVIDUAL PATIENT FACTORS

4.1 Patient related factors, including concurrent disorders, psychological characteristics, and opioids dependency may have a significant influence on the safety and efficacy of PCA.

Whichever opioid protocol is prescribed e.g. oxycodone, fentanyl the patient management is the same as with morphine PCA in relation to observations/monitoring required to ensure pain is controlled, patient safety and minimal side effects.

4.2 Renal impairment

The clinical effects of opioids are altered by impaired renal function, not only because of altered clearance of the drug, but also the accumulation of toxic or therapeutically active metabolites (Davies et al 1996). This patient group are not excluded from using IV-PCA containing opioids. However, the analgesic drug regimes may require alteration or alternative opioids e.g. Fentanyl may be considered and prescribed (see appendix 1).

4.3 Morbidly obese/obstructive sleep apnoea (OSA)

Morbid obesity is associated with OSA (Young et al 1994). PCA, without a background infusion, is a safe and effective method of analgesic delivery. However, if patients are known to have OSA more intensive monitoring is recommended (Levin et al 1992).

4.4 Opioid tolerant patients

Patients with a history of opioid consumption (patients with cancer pain, chronic non-cancer pain, and those with opioid addiction) have higher opioid requirements (Rapp et al 1995). Therefore, deviation from the 'standard' PCA prescription may be needed in this group of patients.

Morphine is the most commonly used opioid for intravenous PCA. Within this policy other opioids may be used if patients are intolerant or sensitive to Morphine.

4.5 Patient Information leaflets

All patients should be given a copy of the leaflet entitled "Controlling pain after surgery" (WPR 26380) and/or "Patient Controlled Analgesia" (WPR 26350). These are available on the hospital internet under patient and visitor information.
http://www.dbh.nhs.uk/patient-information-leaflets/default.asp

For patients with impaired mental capacity refer to the Trust policy in relation to the Mental Capacity Act (PAT/PA 19). The use of PCA's has major advantages in improved analgesia, reduced post-operative morbidity and increased patient satisfaction (Walder et al 2001, **Level 1**).

5. DOCUMENTATION OF CONTROLLED DRUGS

5.1 This policy must be read in conjunction with the Trust policy for the Safe and Secure Handling of Medicines – Controlled Drugs - PAT/MM 1 B.

5.2

- All syringes must be clearly labelled. The label should not obscure the scale markings.
- The amount of drug remaining in the syringe must be documented on the "controlled drug transfer section" on the drug card when patients are transferred to and between wards.
- Transfer to wards – It is the responsibility of the registered nurse to sign the "controlled drug transfer section" on the drug when patients are transferred to other areas.
- It is the responsibility of the registered nurse, each shift to check the remaining volume of the drug in the syringe and document on the physiological observation chart.
- Syringe changes must be documented in the CD register, on the patient's drug card.

5.3 Persons authorised to administer PCA

Only persons who have demonstrated that they are competent to undertake intravenous medicines administration must do so, this includes attaching the pump/giving set to the patient.

Each registered nurse/practitioner will have the appropriate knowledge and skill to safely manage patients receiving PCA and perform syringe changes*.

The nurse in charge of the clinical is responsible for ensuring that only competent nurses/ODP's undertake PCA administration and undergo regular re-assessment.

*Syringe changing will not apply to maternity wards at Bassetlaw, because the numbers of patients in these areas is insufficient to maintain this skill, the acute pain team (within working hours) and night practitioners will facilitate syringe changes in these areas if necessary.

The PCA which is prepared for administration shall be administered immediately by the person who has prepared the PCA or in their presence (NMC 2007).

6. PATIENT CARE

6.1 Pain assessment

Self-reporting of pain should be used whenever appropriate as pain is an individual and subjective experience. Regular assessment of pain leads to improved acute pain management (Gould et al 1992, Level 3). Best practice requires the documentation of pain assessment scores at rest and on movement by using the verbal descriptive tool none, mild, moderate, severe (0, 1, 2, 3). **NB:** The numbers are for documentation purposes only.

Pain is recognised as the "5th vital sign" (JCAOH 2001) with documentation showing the intensity, action taken and response to intervention. Pain scores must be documented on the Trust Physiological Observations Chart alongside all other observations for the duration of the PCA and twenty-four-hours thereafter. This is to monitor the incidence of delayed respiratory depression.

Observations should include: pulse, blood pressure, respiratory rate, oxygen saturations, conscious level (AVPU), pain score, nausea/vomiting score and be documented on the Trust's

physiological observations chart (Physiological Observations and Prevention of deterioration in the acutely ill adult PAT/T33 V.3.

6.2 Observations

The frequency of the above observations should be:

¼ hourly for the first hour or whilst nursed in recovery
½ hourly for one hour
On return to the ward
1 hourly for 4 hours
4 hourly thereafter

Informed verbal consent must be obtained from the patient to undertake observations. When a patient refuses, give clear explanations of the importance of observations and why they are necessary. Always document refused consent and refer to Trust Mental Capacity Act policy (PAT/PA 19 v4). Repeat attempts to undertake observations at frequencies stipulated in this policy.

6.3 Conscious levels

Increasing sedation may be a sign of impending respiratory depression. If there is concern as to whether the patient asleep or sedated, attempts must be made to rouse the patient.

A – alert
V – responsive to Voice
P - responsive to Pain
U - unresponsive

6.4 Oxygen Therapy

Hypoxaemia occurs in the post-operative period both in the recovery room and after discharge of the patient to the ward. The administration of oxygen is effective in preventing/treating hypoxaemia in the early post-operative period. Oxygen therapy will be prescribed by the anaesthetist and should be administered for the duration of the PCA.

6.5 Respiratory depression

Refer to Naxolone Protocol (see appendix 2).

6.6 Pump observations

This information should be recorded, as a minimum, once per shift and when the syringe is changed.

- Number of demands, number of good demands, total dose used (mg)
- Document the volume of fluid remaining in the syringe on the physiological observations chart.
- Check for leaks from, or obstruction to, the giving set.
- Ensure the correct PCA giving set is being used (to be replaced after 72 hours), with anti-syphon and anti-reflux valve.

6.7 Important points

- When the PCA is commenced recovery nurses, anaesthetists, pain nurses may give an initial loading dose, via the 'clinician override' facility on the Alaris PCAM pump, to establish pain relief this will be recorded on the appropriate monitoring chart e.g. recovery chart/controlled drug administration chart.

- Anti-emetics are prescribed PRN as per acute pain team protocols on the electronic prescribing system (JAC).

- Patients nursed on critical care may need a small background infusion, in addition to the patient bolus facility. This must be prescribed by the anaesthetist and/or the independent non-medical prescriber within the acute pain team.

NB: Background infusions will not be routinely used on the wards. However, for patients who routinely take oral morphine, methadone or unprescribed opioids a background infusion may be considered. The acute pain team should be consulted to ensure a management plan is in place to ensure the safety of the patient.

If a patient needs a background infusion this will be individualised to meet the analgesic requirements of that patient and amendments made should be documented on the pre-printed PCA prescription label on the in-patient drug card. The effects and the need for the infusion must be reviewed on a daily basis by the acute pain team or anaesthetist caring for the patient.

7. TRAINING/ SUPPORT

All newly registered nurses joining the Trust must undertake the preceptorship programme and arrange a training session on setting up and managing PCA pumps.

The Inpatient pain team and the policy author can be consulted and will advise on any issues relating to this policy.

8. MONITORING COMPLIANCE WITH THE PROCEDURAL DOCUMENT

What is being Monitored	Who will carry out the Monitoring	How often	How Reviewed/ Where Reported to
Compliance with the protocols (Appendix 1)	Ward manager	Monthly	Via local clinical governance group
Incidents – via the adverse	Incidents – via the adverse	Incidents – via the adverse	Incidents – via the adverse
Complaints – via the complaints procedure	Ward managers and Matrons	On individual complaint basis	Local clinical governance group

9. DEFINITIONS

9.1 Patient Controlled Analgesia (PCA)

This refers to a method of pain control that allows a patient to self-administer a pre-programmed amount of intravenous drug (bolus dose) after a set period of time. The syringe is contained in a lockable pump to prevent unauthorised access.

9.2 Multi-modal analgesia

Multi-modal (balanced) analgesia refers to the use of various drugs and modalities to achieve balanced analgesia. Slow release opiates can be prescribed regularly for a short duration (2 days) then step analgesia down to either Tramadol or Codeine regular. By taking advantage of the synergistic effects of the drugs with the differing modes of action we avoid the side effects of using opioids excessively.

The lowest rung on the World Health Organisation (WHO 2002) analgesic ladder consists of non-opioid simple analgesics. The main drugs are Paracetamol and Non-Steroidal Anti-inflammatory Drugs (NSAID's) e.g. Ibuprofen/Diclofenac.

Of the NSAID's low dose Ibuprofen (e.g.1200mg daily or less) has low GI toxicity and does not increase the risk of myocardial infarction (McCarthy 1999). This is 1st line drug to use. When these drugs are prescribed and administered regularly they provide multi-modal (balanced) analgesia.

NB: NSAID's should be prescribed at the lowest effective dose, and the shortest duration of treatment necessary to control pain e.g. the time limited prescription for post-operative analgesia is 72 hours then a review by the acute pain team or parent team is needed.

10. EQUALITY IMPACT ASSESSMENT

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified. See Appendix 4.

11. ASSOCIATED TRUST PROCEDURAL DOCUMENTS

- Equality Analysis Policy - CORP/EMP 27
- Fair Treatment for all - CORP/EMP 4
- Medical Equipment Training for Trust Staff – CORP/RISK 2
- Mental Capacity Act 2005 Policy and Guidance, including Deprivation of Liberty Safegaurds (DoLs) – PAT/PA 19
- Physiological Observations and prevention of deterioration in the acutely ill adult - PAT/T 33
- Privacy and Dignity Policy - PAT/PA 28
- Safe and Secure Handling of Medicines – Controlled Drugs – PAT/MM 1 B v.5

12. REFERENCES

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Nursing and Midwifery Council (2007) Standards for medicines management. NMC London.

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Walder B, Schafer M, et al (2001) Efficacy and safety of patient-controlled opioids analgesia for acute postoperative pain. Acta Anaesthesiol Scand 45: 795-804

World Health Organisation (2002) National cancer control programmes: policies and managerial guidelines. World Health Organisation. Geneva

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APPENDIX 1

Patient Controlled Analgesia Protocols

The following protocols are configured into the pumps:

Alaris PCA pump

Protocol A

Drug: Morphine
Concentration: 2mg/ml
Bolus dose: 1mg/0.5ml
'Stat delivery'
Lock out interval: 5 minutes
Background infusion: Nil

Graseby 3300 PCA Pump

Morphine PCA

Drug: Morphine
Background infusion: Nil
Bolus dose: 1mg/0.5ml
'Stat delivery'
Lock out interval: 5 minutes
Background infusion: Nil

Protocol B

Drug: Fentanyl
Concentration: 50mcg/ml
Bolus dose: 25mcg/0.5ml
'Stat delivery'
Lock out interval: 5 minutes
Background infusion: Nil

Protocol C * THIS IS NOT PATIENT CONTROLLED BUT A CONTINOUOUS INFUSION

Drug: Ketamine
Concentration: 2.0mg/ml
Bolus dose: Nil
Lock out interval: Nil
Background infusion: continuous delivery 2mg/hr

Protocol D

Drug: Oxycodone
Concentration: 2mg/ml
Bolus dose: 1mg/0.5ml
'Stat delivery'
Lock out interval: 5 minutes
Background infusion: Nil

APPENDIX 2

Guidelines for Administration of Naloxone (Narcan) for Opioid induced Respiratory Depression

Respiratory rate less than 8 per min + Conscious level A or V

No → Maintain physiological observations as per hospital policy

Yes

- Stop opioid administration and/or remove PCA/PCEA handset from patient.
- Administer 40% oxygen via face mask.
- Monitor and reassess at regular 15 minute intervals until RR > 8.
- Contact pain team.
- Naloxone administration is not warranted at this stage.

Respiratory rate less than 6 per min + Conscious level P or U

Yes

- Stop opioid administration and/or remove the PCA/PCEA handset.
- Administer 40% oxygen via face-mask.
- Attempt to waken patient.
- Administer 100 micrograms naloxone IV immediately.
- Seek urgent assistance from on-call anaesthetist/outreach team/pain team.
- Document in case notes.
- Repeat this dose if no or limited response after 2 minutes.
- Support ventilation by face mask or Ambu-bag if rate declines further or if respiratory depression persists.
- Consider naloxone infusion.
- Be aware that respiratory depression can return as the naloxone may act for a shorter time period than the opioid.

Conscious Level

A – Awake
V – Voice
P – Pain
U – Unresponsive

Preparation & Administration of Naloxone

The ampoules contain 400micrograms/ml of naloxone.

Dilute 1ml of naloxone 400micrograms/ml with 7mls of normal saline to give 8mls of a 50micrograms/ml solution.

Give 2mls (100micrograms) IV of this mixture. If no IV access is available - give IM.

Titrate the dose to reverse respiratory depression without reversing analgesia.

If no response after 2 minutes repeat to a maximum of 400micrograms (8mls).

Preparation for infusion

- Add 2mg of naloxone to 500ml of normal Saline or Dextrose 5% (this gives a final concentration of 4micrograms/ml).
- Usual infusion rate is 25-100ml/hr (100-400micrograms/hr).
- Rate of infusion should be adjusted according to the response, and can be increased up to 200ml/hr (800micrograms/hr).

APPENDIX 3

Discontinuation of the PCA

Points to consider before stopping the PCA

- To ensure continuity of analgesia patients should be taking regular oral analgesia***** balanced analgesia or have been taking oral analgesia approximately 24 hours prior to the PCA being discontinued. Oral analgesia can be given when the patient commences oral fluids – 30ml/hr.
- Before discontinuing therapy, assess the patient's pain and Morphine (or other PCA opioid) usage over the previous 12-24 hours.
- If the patient has used less than 20mg Morphine in the previous 24 hours or 10mg Morphine in 12 hours, discontinue the PCA after discussion with the patient.
- If the patient is still using more than 10mg Morphine in 12 hours discuss with the acute pain team and consider continuing for a further 12-24 hours.
- Aim to discontinue the PCA in the day rather than the evening (this prevents pain problems in the night).

**Ibuprofen 400mg QDS is the first line treatment for NSAIDs and Paracetamol 1g regular is recommended.*

Discontinuation of the PCA

- Ensure the final readings and observations are recorded on the controlled drug administration chart.
- Switch off the PCA machine.
- Detach PCA from the patient

Remove syringe and record surplus opioid, with a witness, in the CD register (see section 10.3 Disposal of Controlled Drugs).

Disposal of controlled drugs

This policy must be read in conjunction with the Trust policy for the Safe and Secure Handling of Medicines – Controlled Drugs - PAT/MM 1 B.

Record the surplus opioid in the CD register with a witness and sign the CD register.
Any surplus opioid remaining after the PCA has been discontinued shall be measured and disposed of by adding directly to an approved **Controlled drug Disposal Kit.** To be returned to pharmacy for disposal with the pharmaceutical waste.

A separate entry shall be made in the ward Controlled Drug Record book under the heading e.g. "Morphine Sulphate 100mg/50ml as PCA syringes waste" or the name of the opioid wasted. The entry shall record:

- Date and time of disposal
- Patients name

- The volume remaining in the syringe which is waste
- The signature of the nurse disposing of the solution
- The signature of the nurse witnessing the disposal

Return the pump complete with patient demand button to recovery. If it cannot be returned immediately, ensure it is plugged in.

All pumps must be handled with care. Any damage incurred will be charged to the ward responsible.

Pain assessment/documentation should be continued regularly (4-hourly) for the next 24 hours then “routine monitoring” can be resumed as per Trust policy (PAT/T 33).

APPENDIX 4 - EQUALITY IMPACT ASSESSMENT PART 1 INITIAL SCREENING

Service/Function/Policy/ Project/Strategy	CSU/Executive Directorate and Department	Assessor (s)	New or Existing Service or Policy?	Date of Assessment
Acute Pain – Patient Controlled Analgesia (PCA)	Anaesthetics	Lorraine Robinson	Existing	09.07.14

1) Who is responsible for this policy? Lorraine Robinson – General Manager

2) Describe the purpose of the service / function / policy / project/ strategy? It is intended to benefit nursing/medical staff to provide safe and effective Patient Controlled Analgesia (PCA) therapy and to ensure continuity of effective analgesia

3) Are there any associated objectives? National Patient Safety Agency, Essence of Care.

4) What factors contribute or detract from achieving intended outcomes? – Staff knowledge and skills in the ability to prescribe, use of the pump.

5) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief? No

- **If yes, please describe current or planned activities to address the impact** [e.g. Monitoring, consultation] –

6) Is there any scope for new measures which would promote equality? [any actions to be taken] No

7) Are any of the following groups adversely affected by the policy?

Protected Characteristics	Affected?	Impact
a) Age	No	
b) Disability	No	
c) Gender	No	
d) Gender Reassignment	No	
e) Marriage/Civil Partnership	No	
f) Maternity/Pregnancy	No	
g) Race	No	
h) Religion/Belief	No	
i) Sexual Orientation	No	

8) Provide the Equality Rating of the service / function /policy / project / strategy – tick outcome box

Outcome 1 ✓	Outcome 2	Outcome 3	Outcome 4

If you have rated the policy as having an outcome of 2, 3 or 4, it is necessary to carry out a detailed assessment and complete a* **Detailed Equality Analysis form in Appendix 4

Date for next review: July 2017

Checked by: Lorraine Robinson **Date: 09/07/2014**