



CLINICAL GUIDELINE

Patient controlled Analgesia (PCA), Queen Elizabeth University Hospital

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.


Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Approval Group:	South Sector Clinical Governance Group

Important Note:

The Intranet version of this document is the only version that is maintained. Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

	NHS GREATER GLASGOW & CLYDE POLICY QUEEN ELIZABETH UNIVERSITY HOSPITAL	Pages	
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	Patient Controlled Analgesia (PCA)	Review Date	January 2026
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Patient Controlled Analgesia (PCA)

PCA is a device used for the self-administration of analgesia. The patient is able to administer a pre-determined dose of analgesia at frequent intervals.

PCA opioids produces modest improvements in pain relief compared to the same opioids given conventionally. The advantages of this method of analgesia are:

- Gives the patient autonomy over their pain control
- Minimises delays in analgesia administration
- Reduces nursing time involved in analgesia administration
- Minimises the side effects of the opioids which are related to higher drug concentrations
- Patients report more satisfaction than those having conventional analgesia.

Patient Selection

Patients **SHOULD** be considered for PCA:

- After major surgery or for treatment of severe acute pain
- If they are unable to absorb oral analgesia
- If they need frequent subcutaneous injections to control acute pain (e.g. 3 injections within 6 hours)
- If they are mentally alert and understand how to use the PCA pump

In the following patients **CAUTION** should be exercised before prescribing PCA:

- Patients with renal impairment
- Patients with hepatic impairment
- Patients with head injury

The following patients are **NOT SUITABLE** for PCA

- Patients in medical wards
- Physically unable to use PCA handset
- For the management of chronic pain
- Confused
- Unable to understand how to use PCA pump
- Unwilling to use PCA

The safety of PCA depends on an adequate understanding of the technique by the patient. Unauthorised persons should never press the PCA button.

Oversedation with PCA has followed the patient mistaking the PCA handset for the nurse call button, and family or unauthorised nurse-activated demands.

Equipment

The IVAC PCAM is currently used at the QEUH. Instruction booklets on all devices are kept in the ward areas.

Consumables

A 50ml B.Braun Omnifix Luer Lock syringe

A dedicated anti-reflux and anti-syphon valve (Vygon II Protect-a-line) **must** be used. The anti-syphon valve will prevent syphoning (emptying by gravity) of the drug if it is above the level of the patient and incorrectly placed in the machine, or if there is an air leak in the drug reservoir (e.g. a crack in the syringe).

An anti-reflux valve is present to prevent opioid backing up the primary IV line if the IV cannula has occluded. This prevents a large bolus dose of opioid being inadvertently given to the patient once the line is unblocked. Please ensure a vadsite bung has been placed on the anti-reflux valve.

The PCA Prescription/Preparation

PCA must be prescribed on the Medicine Kardex (HEPMA) and the PCA chart, which includes a prescription for Naloxone.

The pump settings that need to be considered are:

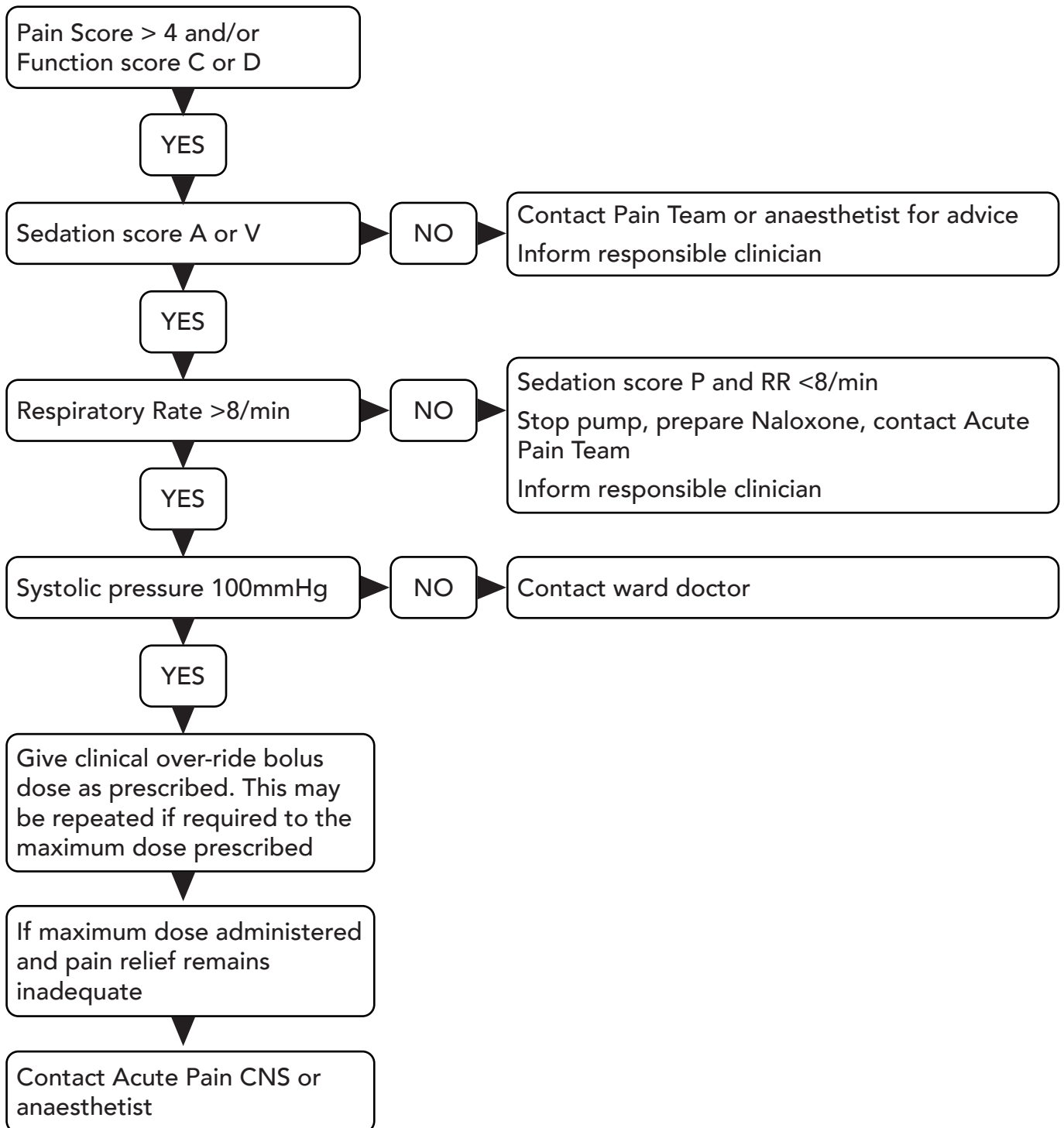
- Patient Bolus Dose
- Lockout interval. This is a predetermined period during which the patient cannot initiate doses and plays a key part in increasing the safety of PCA
- **** Continuous (background) infusion** this should only be used after consultation with the anaesthetist or the acute pain team. The addition of a continuous infusion may increase the risk of side effects and reduce the safety of the PCA technique. **If a continuous infusion is being used, the patient must be nursed in critical care. ****

ALARIS PCA pumps have three standard prescriptions:

Protocol	Drug Concentration	PCA Bolus/ Lockout Time	Continuous Infusion	Syringes must be changed
A	Morphine 1mg/ml 50mg/50mls	1mg/5 minutes	None	72 hours
B	Fentanyl 20mcgs/ ml 1000mcg/50mls	20mcg/5 minutes	None	24 hours
C	Oxycodone 1mg/ ml 50mg/50mls	1mg/5 minutes	None	24 hours

ADMINISTERING A CLINICIAN OVER-RIDE BOLUS DOSE

Must only be undertaken by trained staff competent with IV drug administration who have undergone PCAM device training



Initiating PCA

Recovery staff

- Titrate IV analgesia until patient comfortable prior to commencing PCA
- Educate patient in the use of PCA handset
- When transferring a patient to a different clinical area, both members of staff should check the pump settings against the prescription chart and document the volume remaining and sign the transfer section of the PCA chart.

Requirements for the safe management of PCA

- Trained nursing and medical staff
- All areas must have Naloxone immediately available
- All patients should receive supplementary oxygen for the duration of the infusion
- Anti-emetics must be prescribed, consider laxatives (after discussion with medical staff)
- Blood products or antibiotics should not be administered through the same line
- If the patient requires IV fluids they should be administered through the anti-reflux valve on the administration set. IV fluids are not required to maintain the patency of the cannula
- Be cautious with the administration of drugs with sedating properties, as a combination of this type of medication may cause over sedation through their cumulative effects
- Patients receiving modified release opioids prior to admission should continue these whilst on PCA. If oral route is not available seek advice from Acute Pain Service.

Monitoring and documentation requirements

- Two qualified staff must verify the PCA programme and the drug label against the prescription at: the commencement of the infusion, hand-over, every shift change, and after alteration to the infusion
- The frequency of patient observations will depend upon the patient's condition
- The PCA device readings should be recorded every hour
- Competence will be maintained by using PCA regularly. If competence is not maintained it is the individual nurse's responsibility to seek further training from the appropriate device manager/link nurse.

Step-down analgesia

Step down analgesia should always be prescribed and administered prior to discontinuing PCA.

Consider analgesics such as paracetamol, +/- NSAID (if not contraindicated), +/- codeine/dihydrocodeine.).

Oramorph is usually the opioid of choice for breakthrough pain. However, if patients are intolerant of oramorph or have impaired renal function, then immediate-release oxycodone, 'Shortec' could be used for breakthrough pain as an alternative.

If PCA must be discontinued before oral fluids are tolerated, subcutaneous morphine/oxycodone should be prescribed.

Analgesic prescriptions should be reviewed on a daily basis.

Troubleshooting PCA

Nausea/vomiting	<p>Administer anti-emetics routinely and/or prn</p> <p>If nausea appears to be related to PCA bolus, reduce bolus dose (if requirements are low)</p> <p>Consider other possible causes e.g. ileus</p> <p>If nausea persists despite the above consider changing to an alternative opioid e.g. Oxycodone or Fentanyl</p>
Pruritus (itch)	<p>If mild and patient able to tolerate, continue but consider reducing bolus if PCA use is minimal</p> <p>If severe, consider ondansetron 4mg oral or IV consider change to an alternative opioid</p> <p>Administer antihistamine, however, this may not be effective and may increase the risk of sedation</p>
Sedation/respiratory depression	<p>Check if any other reason for sedation e.g. administration of a sedative</p> <p>Ensure patient receiving oxygen</p> <p>Sedation score = P, respiratory rate >8/min: halve the bolus dose</p> <p>Sedation score = P, respiratory rate <8/min: remove the handset, consider administration of naloxone 200mcg IV and repeat in 100mcg increments if required. Think about reducing the bolus dose or prescribe alternative analgesia</p> <p>Sedation score = U (regardless of respiratory rate) give naloxone 200mcg IV and repeat in 100mcg increments as required, stop PCA</p>
Urinary retention	Catheterise
Confusion	<p>Consider other causes e.g. hypoxia, sepsis, alcohol or benzodiazepine withdrawal</p> <p>PCA may need to be discontinued due to patient inability to understand the concept. Prescribe alternative analgesia</p>
Decreased bowel motility/colicky pain	<p>Discourage use of PCA for discomfort from resumption of peristalsis.</p> <p>If treatment is needed consider peppermint water/capsules</p> <p>If pain becomes severe request surgical review.</p>
Hypotension	<p>Look for other causes of hypotension, e.g. hypovolaemia, cardiac complications</p>
Inadequate analgesia	<p>Check line connections and that venflon is patent. Can the patient understand and use the PCA</p> <p>Consider other causes for new or increasing pain e.g. development of a complication that might require medical review</p> <p>If the patient is receiving 2 PCA bolus doses or less an hour, re-educate and encourage more frequent use</p> <p>Treat opioid related side effects which may cause reluctance to use PCA</p> <p>Check that multi-modal analgesia has been prescribed and administered</p> <p>Consider administering a clinician override bolus dose as prescribed on PCA chart</p> <p>Contact Acute Pain Service if adequate analgesia has not been achieved</p>

