Trust Guideline for the Management of Patient Controlled Analgesia (PCA) in Adults

A clinical guideline recommended for use

For Use in:	In all Clinical Areas
By:	Anaesthetists, Ward Nurses, Recovery Staff Acute Pain Service Staff
For:	Adult patients receiving Patient Controlled Analgesia
Division responsible for document:	Surgical Division
Key words:	PCA, analgesia, adults
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Assessed and approved by the:	Clinical Guidelines Assessment Panel (CGAP) If approved by committee or Governance Lead Chair's Action; tick here ☑
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Ratified by or reported as approved to (if applicable)**:**	Clinical Safety and Effectiveness Sub-Board
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To be reviewed by:	Mrs Katherine Dyer
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Compliance links: *(is there any NICE related to guidance)*	None
If Yes - does the strategy/policy deviate from the recommendations of NICE? If so why?	N/A

This guideline has been approved by the Trust's Clinical Guidelines Assessment Panel as an aid to the diagnosis and management of relevant patients and clinical circumstances. Not every patient or situation fits neatly into a standard guideline scenario and the guideline must be interpreted and applied in practice in the light of prevailing clinical circumstances, the diagnostic and treatment options available and the professional judgement, knowledge and expertise of relevant clinicians. It is advised that the rationale for any departure from relevant guidance should be documented in the patient's case notes.

The Trust's guidelines are made publicly available as part of the collective endeavour to continuously improve the quality of healthcare through sharing medical experience and knowledge. The Trust accepts no responsibility for any misunderstanding or misapplication of this document.

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Version and Document Control:

Version Number	Date of Update	Change Description	Author
7	14/02/2019	Due to a metal component in the cassette mechanism, all patients with a PCA who require an MRI scan will need to be completely disconnected from the PCA pump, cassette and giving set prior to scanning. Added to patient monitoring section.	Mrs Katherine Dyer
7.1	05/05/2021	No clinical changes.	Mrs Katherine Dyer
7.2	07/12/2022	Amendment to contact for APS/Duty Anaesthetist	Debbie O'Hare

This is a Controlled Document

Printed copies of this document may not be up to date. Please check the hospital intranet for the latest version and destroy all previous versions.

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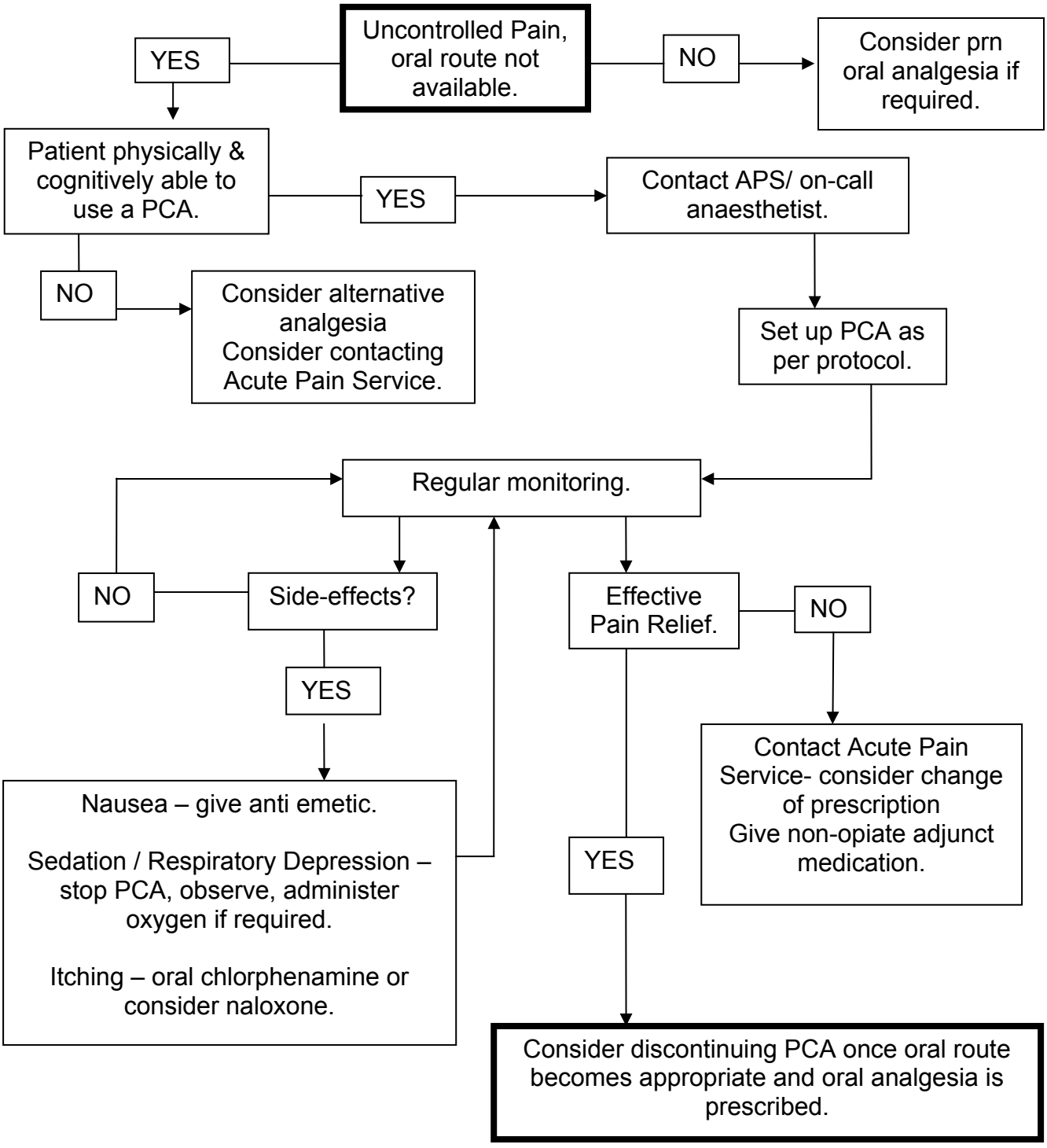
Quick reference guideline/s



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Objective/s

To facilitate the effective and safe use of PCA, outlining optimal management of complications and side effects. The guideline also details:

- Patient selection.
- Contraindications.
- Prescription.
- Equipment.
- Setting up a PCA.
- Patient monitoring.
- Side-effects.
- Discontinuation.
- Use of PCA with other opiates.

Rationale

PCA can provide effective pain relief in a wide variety of situations. However, there are also a number of side effects that may limit its effectiveness and result in morbidity.

Well-designed case control studies for the management of complications from PCA are lacking, and there are no randomised clinical trials in this area. These guidelines are based on a review of the literature and consensus from pain specialists and anaesthetists.

Broad recommendations

Patient Controlled Analgesia (PCA) is a method of self administration of intravenous analgesia. By means of a mechanical “trigger”, patients initiate the delivery of a small dose of intravenous analgesia. Patients are therefore able to titrate their own analgesia within pre-set restrictions.

Patient Selection

Patients selected for PCA usually have severe acute pain for whom the oral or intramuscular route is not appropriate (e.g. post operative pain, abdominal pain). Exceptionally a PCA may be used to supplement analgesia via a different route (epidural or oral).

A PCA may also be appropriate in patients with acute exacerbation of longstanding pain (e.g. pain on movement in cancer patients) or acute onset of pain in chronic conditions (e.g. sickle cell crisis).

Patients should be able to comprehend the relationship between experiencing pain and pressing the handset. Patients should physically able to trigger the pump.

Contraindications

Absolute contraindications to PCA are:

- Patient refusal.
- Known sensitivity/allergy to opiates.
- Lack of safe nursing environment for monitoring.
- Lack of patient understanding or physical capability to press the handset.

A PCA usually contains opiate medication. Certain medical conditions may dictate cautious use of opiates:

Raised intra-cranial pressure (ICP): Known or suspected raised ICP of any cause represents a relative contraindication to PCA analgesia, although in exceptional circumstances its use in areas with high nurse/patient ratios may still be appropriate.

Severe respiratory disease: Opiate analgesia should be used with caution in patients with severe respiratory disease, although PCA delivery may confer decreased risk compared to other routes of opiate delivery.

Gastro-intestinal morbidity: Opiate analgesia is associated with delayed gastric emptying and contributes to post-operative ileus. The route of opiate delivery does not influence this effect significantly. Alternative analgesic strategies should be considered.

Previous or ongoing use of narcotics (prescribed or recreational) is not a contraindication to PCA in appropriate circumstances.

Prescription

A PCA should be prescribed on a standard Adult Drug Chart in the dedicated, pre-printed PCA section.

The standard prescription will be for 100milligrams (mg) of morphine diluted with 100 millilitres (mL) of saline to a concentration of 1 mg/mL.

Each patient demand will trigger the administration of 1 millilitre (equal to 1 milligram morphine). The ‘lock-out’ function on the PCA will preclude further dosing through the PCA for five minutes.

The prescription may be varied only at the discretion of the Acute Pain Service (APS) or supervising anaesthetist.

The use of a continuous background infusion of opiate may be considered by the Acute Pain Service or by Consultant Anaesthetists in exceptional circumstances. These proposals must be discussed with senior nursing staff from the patient’s ward and the APS must be informed.

Recommended alternative regimes may be:

1. For patients who use neuropathic descriptors to describe their pain the addition of ketamine can be considered after discussion with the Acute Pain Service. The standard dose would be 50mgs. This would be added to the usual 100mgs morphine in 100mLs saline with a 1mL bolus and 5 minute lockout.
2. Pethidine 500 milligrams in 50mL (10 milligram/mL) bolus dose 1mL lock out 5 minutes [Pethidine is not recommended for use in opiate tolerant patients as excessive usage may result in the accumulation of significant levels of the metabolite, norpethidine. Consideration should be given to imposing a maximum 4 hourly limit of 200mg. Pethidine is also not recommended in patients with renal failure due to the risk of accumulation of norpethidine].
3. Fentanyl 2000 micrograms in 100mL (20 microgram/mL) bolus dose 1mL lockout 5minutes [Fentanyl may be particularly useful in patients who may accumulate active metabolites of other opiates e.g. renal failure].

Patients with a PCA should have an anti-emetic (e.g. Cyclizine) prescribed, and the prescription of **REGULAR** non-opiate medication (e.g. non-steroidal anti-inflammatory drugs, paracetamol) should be considered.

No other opiates should be given whilst a PCA is in progress, unless directed by the Acute Pain Service a Consultant Anaesthetist.

Use of a PCA with other Oral Opiates

Ordinarily a patient should not be given other oral opiates when a PCA is insitu.

The only exceptions to this are where the patient normally takes high dose opiate medication for a longstanding condition, or where patients are part of an established Substance Misuse programme.

Are these cases the usual opiate doses should be confirmed with the patients GP or the Substance Misuse team. Where possible, the patient should be given their regular medication and a PCA maybe considered to cover any short-term acute pain.

For further advice, the Acute Pain Team or Substance Misuse nurses should be contacted.

Equipment

Equipment necessary for the preparation of the PCA includes:

- Lockable PCA pump (obtained via Main Theatre Recovery NNUH).
- 100ml dedicated cassette.
- Dedicated giving set, incorporating an anti-syphon and non-return valve.

The PCA should be connected to an dedicated intravenous cannula or through a 2 way non-return connector (Octopus2) if additional intravenous access is required.

Once discontinued, the PCA pump should be returned to the Equipment Library for maintenance and cleaning.

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Setting up a PCA

A PCA should only be set up by anaesthetists, members of the Acute Pain Team and trained Recovery/ Critical Care Nurses.

The PCA should be checked and set up as per the Medicines Management Policy (Trustdocs IDs: 10629 and 10630.

A PCA will only work effectively if adequate pain relief is established prior to the commencement of the PCA. The patient may require several bolus or loading doses to gain pain relief. This should be administered through the PCA so that an accurate total can be recorded.

Patient Monitoring

All patients with a PCA should only be nursed on wards within the Norfolk and Norwich University Hospital where specific training has been undertaken and nurses are familiar with the management of patients using the designated PCA equipment.

Monitoring that must be carried out includes:

- Blood pressure, pulse, respiratory rate, sedation, pain and nausea should be recorded hourly for the first eight hours after initiation of a PCA on the pain assessment tool (Appendix A).
- Thereafter, these observations should be repeated two hourly for another 48 hours.
- Subsequently four hourly observations are appropriate until discontinuation of the PCA treatment.

Due to a metal component in the cassette mechanism, all patients with a PCA who require an MRI scan will need to be completely disconnected from the PCA pump, cassette and giving set prior to scanning.

Side-effects

Common side-effects of a PCA include nausea, sedation, respiratory depression and itching. These are side-effects of opiate analgesia rather than of the PCA route of administration.

Problem	Action
Excessive sedation (Sedation score >2/3)	Nursing Staff: – Remove PCA handset. – Monitor oxygen saturation continuously with pulse oximeter. – Record pain and sedation scores on Trust Pain Assessment Chart. – Record blood pressure, pulse and temperature. If no improvement in sedation after 30 minutes contact the patient's

	medical team. Medical Staff: – Consider other possible causes of sedation e.g. hypoglycaemia, hypoxia, cerebrovascular event, sepsis etc. – Ensure adequate non-opiate analgesia prescribed **regularly.** – Please contact the APS via Alertive during core working hours (08.15 - 17.00 Monday to Friday and from 08.15 to 14.00 on Saturdays) Outside these hours, please contact the first on call anaesthetist via Alertive.
Respiratory Depression (Respiratory rate < 8 breaths/min)	Nursing Staff – Give oxygen by mask at 4 litres/min. – Switch off PCA. – Monitor oxygen saturation continuously with pulse oximeter. – Inform medical team. – Record pain and sedation scores on Trust Pain Assessment Chart. – Record blood pressure, pulse and temperature. Medical Staff – Assess and document respiratory function. – Consider Naloxone 200-400 micrograms intravenously. – Consider discussing analgesia with APS via Alertive during core working hours (08.15 - 17.00 Monday to Friday and from 08.15 to 14.00 on Saturdays) Outside these hours, please contact the first on call anaesthetist via Alertive.
Itching	Medical Staff: – Consider Chlorphenamine. 4 milligrams tds orally. – Consider Naloxone 10-20 micrograms intravenously. This is an off-label indication.
Nausea/ Vomiting	Nursing Staff: – Give Cyclizine 50mgs im tds. – Offer reassurance and privacy. – Offer regular mouthcare. – Contact medical team if no improvement.

Discontinuation

There is no specific time limit for the use of a PCA. It is not normally necessary to continue a PCA once the patient is able to take analgesia via the oral route.

Discontinuation of the PCA should only be undertaken if an alternative form of analgesia is prescribed and available.

Clinical audit standards

- Management of complications of PCA.
- Appropriate selection of patients.
- Completeness of monitoring of PCAs.
- Adequacy of training for PCA usage.

Summary of development and consultation process undertaken before registration and dissemination

During its development, the guideline has been circulated for comment to anaesthetists and members of the Acute Pain Service. This version has been endorsed by the Anaesthetic Directorate.

This version has been endorsed by the Clinical Guidelines Assessment Panel.

Distribution list/ dissemination method

Theatre Recovery

All Medical, Surgical and Orthopaedic wards

Anaesthetic department

Trust Intranet

References/ source documents

1) ANZCA (2010) Acute Pain Management: Scientific Evidence 3rd Edn p175-184

2) The Cochrane Collaboration (2012) Patient controlled opioid analgesia versus conventional opioid analgesia for postoperative pain (Review) JohnWiley & Sons, Ltd.

3) MacIntyre PE Safety and efficacy of patient-controlled analgesia *British Journal of Anaesthesia* 2001; **87:**36-46

4) Carstensen M, Moller AM. Adding ketamine to morphine for intravenous patient-controlled analgesia for acute postoperative pain. *British Journal of Anaesthesia* 2010;**104**:401-6

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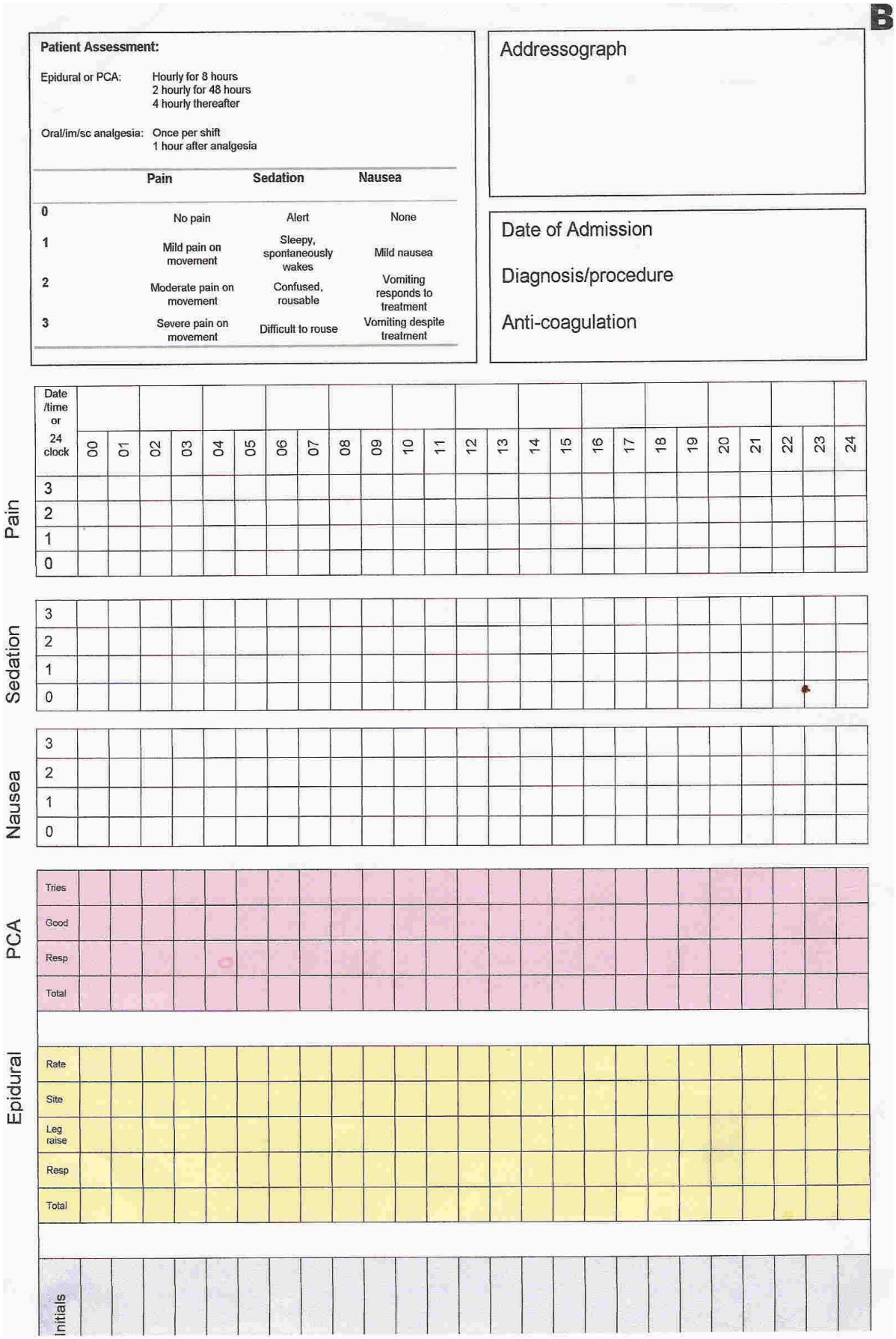
Appendix A



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Patient Assessment:

Epidural or PCA: Hourly for 8 hours
2 hourly for 48 hours
4 hourly thereafter

Oral/im/sc analgesia: Once per shift
1 hour after analgesia

	Pain	Sedation	Nausea
0	No pain	Alert	None
1	Mild pain on movement	Sleepy, spontaneously wakes	Mild nausea
2	Moderate pain on movement	Confused, rousable	Vomiting responds to treatment
3	Severe pain on movement	Difficult to rouse	Vomiting despite treatment

Addressograph

Date of Admission

Diagnosis/procedure

Anti-coagulation

Date /time or 24 clock | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24

Pain: 3 2 1 0

Sedation: 3 2 1 0

Nausea: 3 2 1 0

PCA: Tries, Good, Resp, Total

Epidural: Rate, Site, Leg raise, Resp, Total

Initials