Trust Guideline for the Management of Patient Controlled Analgesia (PCA) or Nurse Controlled Analgesia (NCA) in Children

Clinical Guideline

For Use in:	All clinical areas
By:	Anaesthetists, Nursing staff, Acute Pain Service
For:	Paediatric patients (up to the age of 16) receiving PCA or NCA
Division responsible for document:	Women's and Children's Services
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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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Quick reference guideline/s

Problem	Action
Respiratory Depression *Defined as:* *<1 year – RR<20* *1 to 5 years – RR<15 breaths/minute* *>5 years – RR<10 breaths/minute* *Assess depth of respiration, respiratory effort, level of sedation and oxygen saturation* *naloxone – dilute 400micrograms ampoule up to 10mLs with 0.9% saline and administer 0.5 to 1ml/10kg body weight (=2 to 4 micrograms/kg)*	– **STOP** PCA/NCA infusion. – Give oxygen by face mask at 5L/min. – Monitor oxygen saturation continuously with pulse oximeter. – Inform medical team. – Record respiratory rate every 5 minutes until improvement is seen. – Assess and document respiratory function. – Consider naloxone 2 to 4 micrograms/kg IV. – Contact the Acute Pain Service (APS) on bleep 0571 during 0900-1700 weekdays, or duty anaesthetist (bleep 0900) at other times to review and change pump programming if necessary. – Document findings and action taken. – **IN RESPIRATORY ARREST** – STOP the PCA/ NCA infusion. – Administer Basic Life Support. – Contact Paediatric Arrest Team – ext 2222. – Administer naloxone 4 micrograms/kg (may be repeated). – Contact APS or anaesthetist as above afterwards. – Document and report incident.
Excessive Sedation *Defined as:* *Sedation score of 3 – somnolent and difficult to rouse* *Sedation levels (see Appendix 1)* *0 – alert* *1 – mild, easy to rouse* *2 – easy to rouse, often drowsy* *3 – somnolent, difficult to rouse* *Assess respiratory rate, respiratory effort and oxygen saturation*	– **STOP** PCA/NCA infusion – Give oxygen by face mask at 5L/min. – Monitor oxygen saturation continuously with pulse oximeter. – Inform medical team. – Record respiratory rate every 15 minutes until improvement is seen. – Assess and document respiratory function. – Consider other possible causes of sedation (e.g. hypoglycaemia). – Consider naloxone 2 to 4 micrograms/kg IV. – Contact the APS (bleep 0571) or duty anaesthetist (bleep 0900) to review and change pump programming, if necessary. – Document findings and action taken.

Nausea and Vomiting *Anti-emetics should be prescribed for all patients receiving PCA / NCA infusions* *Ondansetron 0.1mg/kg (max 8mg)* Cyclizine 1mg/kg (max 50mg)	If patient complains of nausea or has been retching or vomiting: – Administer an anti-emetic. – Consider aspirating NGT or PEG (if in situ). – Consider stopping oral intake briefly. – Consider using another anti-emetic if nausea / vomiting has not improved after an hour. – If nausea/vomiting continues contact the APS, who may reprogram the pump (reduce background or slow speed of bolus, if pain control is good).
Pruritus	*If itching is a problem:* – Administer an anti-antihistamine (e.g. chlorphenamine). – Consider naloxone 0.5 micrograms/kg IV. – If pruritis persists, contact the APS, who may reduce or stop the background if pain control is good or consider converting to a fentanyl solution.
Urinary retention *Defined as the inability to empty the bladder volitionally for greater than 12 hours with a volume of urine greater than expected for age ([age in years + 2] x 30 mLs) or a palpably distended bladder*	*If urinary retention is a problem:* - Commence fluid balance chart (if not already). - Perform a bladder scan. - Inform medical team. - Consider intravenous naloxone 0.5 micrograms/kg. - Consider intermittent catheterisation.
Inadequate Pain Relief	- Administer prescribed simple analgesics (e.g. Paracetamol & NSAIDs, if appropriate). - Administer prescribed adjuncts as appropriate, (e.g. anti-spasmodic drugs). - For PCA: encourage the patient to give a bolus and evaluate effect after 10 minutes. - For NCA: administer a bolus and evaluate effect after 10 minutes. - If pain score is equal to/greater than 2 for more than an hour contact the APS on bleep 0571. - The surgical team or the child's physician should be contacted if the pain could be indicative of surgical complications, or another cause.

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Objectives

To facilitate the safe and effective use of PCA / NCA and theoptimal management of complications and side effects. The guideline also details:

This guideline refers to PCA / NCA for the relief of acute pain and not those used in palliative care settings or as part of sedation in intensive care settings.

Rationale

PCA / NCA has been shown to provide a safe and effective technique for the administration of intravenous or subcutaneous opioids for the relief of pain in a wide variety of situations (most commonly post-surgery, but also for non-surgical pain such as sickle cell crisis). However, there are also a number of side effects that may limit its effectiveness and result in significant morbidity.

Well designed case control studies for the management of complications from PCA / NCA are lacking, and there are no randomised control trials in this area. The recent Association of Paediatric Anaesthetist (APA) national audit of paediatric opioid infusions has helped determine the incidence, nature and severity of serious clinical incidents associated with PCA / NCA in patients aged 0 – 18 years. These guidelines are based on review of the literature, consensus from pain specialists and anaesthetists and guidelines from Great Ormond Street Hospital and the APA

The guidelines should also be considered within the context of the Acute Pain Service terms of reference.

Broad recommendations

Background

Patient controlled analgesia (PCA) refers to method of pain control that allows the patient to press a button to self-administer a pre-programmed amount of intravenous analgesic solution (the bolus dose). The bolus dose can only be repeated after a set period of time (the lockout interval). The pump programming may also include a small background infusion.

Nurse controlled analgesia (NCA) refers to a modified morphine infusion using PCA technology which permits more flexibility to manage breakthrough pain than a simple continuous infusion. The nurse caring for the patient may press a button to give a bolus dose on the basis of a request for analgesia, pain severity scoring or in anticipation of pain (e.g. prior to physiotherapy). With NCA, the lockout interval is longer than with PCA.

PCA / NCA requires a specially designed, locked pump which allows for programming of a bolus dose, lockout interval and if required, a continuous background infusion. In addition, the pump used in this trust also requires the programming of a drug concentration and time over which the bolus dose is given.

Patient Selection

Patients selected for PCA / NCA usually have (or are expected to have) severe acute pain for whom the oral route is not appropriate. Prior to setting up the infusion the anaesthetist or acute pain service staff will consider the suitability of PCA / NCA for each individual patient and the anticipated effectiveness of PCA / NCA for the type of surgery / pain.

If a patient is going to use a PCA they must:

- Be able to understand the technique (i.e. comprehend the relationship between experiencing pain and pressing the handset).
- Be willing to use it.
- Be physically able to press the button on the handset.

Contraindications

Absolute contraindications to PCA/NCA are:

- Known allergy to opioids (very rare).
- Lack of safe nursing environment for monitoring.

Extra caution is advised when using a PCA/NCA in patients with certain medical conditions:

- Raised intra-cranial pressure (ICP): Known or suspected raised ICP of any cause represents a relative contraindication to PCA/NCA analgesia, although in exceptional circumstances its use in areas with high nurse/patient ratios may still be appropriate.
- Severe respiratory disease: analgesia should be used with caution in these patients, although PCA delivery may confer decreased risk compared to other routes of delivery.

Some patients should not receive a background infusion, (eg infants under 5kg, patients with renal impairment or sensitivity to morphine) and will require particularly close monitoring for potential complications.

Prescription

A PCA/NCA should be prescribed on a paper Supplementary Children's Drug Chart in the dedicated pre-printed PCA/NCA section AND on EPMA to help avoid the inadvertent prescription of supplementary opiods.

No supplementary opioids (such as codeine or tramadol) should be administered while the patient is receiving PCA/NCA, unless specifically ordered by an anaesthetist or the Acute Pain Service.

The anaesthetist prescribing the PCA/NCA should check that the patient has no other current opioids prescribed to minimise risk of accidental administration and adverse side effects.

Morphine is considered the "gold standard" for intravenous analgesia and is therefore usually the opioid of choice. The use of other opioids e.g. fentanyl, is only considered when morphine is contraindicated. Ketamine may be administered as an adjunct, in combination with an opioid in some circumstances.

Standard drug concentrations and standard pump programming should be used at all times, unless approved by a Consultant Anaesthetist in exceptional circumstances. All out of protocol settings should be clearly marked as such by the prescription.

Standard drug concentrations

Abbreviations: mg = milligrams mL = millilitres kg = kilograms hr = hour

Morphine

Patient weighs <50kg: 1mg/kg in 50mLs 0.9% sodium chloride
(1ml = 20micrograms/kg)

Patient weighs >50kg: 100mg in 100mLs 0.9% sodium chloride
(1ml = 1mg)

Available in ampoules of 1mg/ml, 5mg/ml, 10mg/ml and 30mg/ml, therefore caution is advised that the correct ampoule is selected.

Action: binds with receptors in the brain and spinal cord to block the transmission of impulses along the nerve axon

Fentanyl

Patient weighs <50kg: 20micrograms/kg in 50mLs 0.9% sodium chloride
(1ml = 0.4micrograms/kg)

Patient weighs >50kg: 2000micrograms in 100mLs 0.9% sodium chloride

(1ml = 20micrograms)

Available in ampoules of 50micrograms/ml in 2ml or 10ml ampoules

Action: binds with receptors in the brain and spinal cord to block the transmission of impulses along the nerve axon

Ketamine

Patient weighs <50kg: 0.5mg/kg added to an opioid PCA/NCA solution
(1ml = 10micrograms/kg)

Patient weighs >50kg: 50mg is added to the 100mLs opioid solution

(1ml = 0.5mg)

Available in ampoules of 10mg/ml, 50mg/ml or 100mg/ml

Action: Ketamine is an NMDA receptor antagonist (not an opioid) which is thought to act within the brain and spinal cord to modify transmission of painful messages.

Standard intravenous programming (for all opioids):

For PCA:

Background: **none** or 0.2ml/hr

Bolus dose: 0.5ml or **1ml** (maximum 2ml if patient weighs >50kg)

Lockout : **5** or 10 minutes

For NCA (standard):

Background: none, 0.2ml/hr, **0.5ml/hr** or 1ml/hr

Bolus dose: 0.5ml or **1ml**

Lockout: **20** or 30mins

For NCA (neonates & infants <5kg):

Background: none

Bolus dose: 0.5ml

Lockout: 20mins

Loading dose (PCA / NCA)

To establish initial pain relief when the PCA/NCA is commenced an initial loading dose may be administered.

MORPHINE: 50 - 100 micrograms/kg (2.5 - 5ml standard concentration from pump) OR

FENTANYL: 0.5 – 1 micrograms/kg (1.25 – 2.5 ml standard concentration from pump)

To convert *ml to microgram/kg* or *ml/hr to microgram/kg/hr*, for patients weighing less than 50Kg, multiply by the opioid concentration (20microgram/kg for Morphine and 0.4microgram/kg for Fentanyl)
For example:
For a 20kg child, 20mg Morphine is added to 50mls N/saline for a standard PCA/NCA. A loading dose of 2.5mLs will deliver a dose of 50micrograms/kg (=20micrograms/kg/ml x 2.5mL). A background infusion of 0.5mLs/hr will give a dose of 10micrograms/kg/hr (=20micrograms/kg/ml x 0.5mLs/hr)

Naloxone

- **DOSE = 2 to 4 micrograms / kg**
- Instantly reverses morphine (or other opioid) induced respiratory depression or respiratory arrest.

- It also reverses the other effects of morphine (or other opioids), both desirable and undesirable.
- It has a short half-life (30 minutes), so dose may need repeating.
- It can be given intramuscularly or subcutaneously if the intravenous route is not available.
- Available in ampoules of: 20micrograms/ml and 400micrograms/ml.

Other drugs

Regular supplementary non-opioid analgesia (eg **paracetamol and either diclofenac or ibuprofen**) should be prescribed alongside the PCA/NCA, unless contraindicated. Intravenous administration of paracetamol should be considered for all patients where enteral administration is not possible.

Patients on a PCA / NCA should have an anti-emetic (eg **ondansetron**) prescribed as required. Anti-emetics may be combined.

Equipment

Equipment necessary for the preparation of the PCA / NCA includes:

- A specially designed, lockable pump which allows for programming of a bolus dose, a lockout interval and a background infusion (if required).
- 50ml (or 100ml in patients >50kg) dedicated cassette.
- A dedicated administration set, incorporating an anti-siphon and non-return valve.
- A continuous IV infusion of fluid to flush the line – minimum rate of 20mLs/hr for a PCA and 10mLs/hr for an NCA.

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

Setting up a PCA

The majority of PCA / NCA pumps will be prescribed and set up in theatres after surgery, however contact the Acute Pain Service team if a PCA/NCA is required for a patient on the ward. The Acute Pain Service will request the referring clinician to write a brief summary of the child's condition and need for analgesia in the case notes.

PCA / NCA pumps for children must only be programmed by an anaesthetist, trained recovery staff or member of the Acute Pain Service.

All personnel who care for patients receiving PCA / NCA must be trained and competent to do so.

All pumps should be kept locked while in use and a dedicated line should be used whenever possible for PCA / NCA. The antisiphon line should be connected directly to the patients intravenous access or through a 2 way non-return connector (Octopus2) if additional intravenous access is required.

An anaesthetist or competent nurse will discuss the use of PCA/NCA with the child and family prior to surgery/setting up the infusion.

The child and/or family should be prepared for the PCA / NCA

- Nursing staff should explain the technique to the child and family.
- Parents should be advised in a sensitive manner that they are not permitted to administer a bolus by pressing the button in either technique.
- NCA may be changed to PCA or vice versa at any time if appropriate.
- If the family have any questions that ward staff are unable to answer they should contact the Acute Pain Service on bleep 0571.

Nursing staff should ensure that an age appropriate pain assessment tool and documentation is available. Please refer to trust guideline on the management of pain in neonates, infants, children and adolescents (paediatric patients) for more information.

- Self report is gold standard and should be used wherever possible.
- Explain the assessment tool to be used (eg Wong Baker Faces) to the child.
- The child can practice by scoring any previous painful experiences to determine whether they are able to use the tool.
- For infants, patients who are cognitively impaired and those unable to communicate use an appropriate observational tool and involve carers as much as possible.

All children receiving intravenous opioids must be supervised by a registered nurse, doctor or appropriately trained ODA.

Any child leaving a clinical area while receiving PCA/NCA analgesia must be accompanied by a registered nurse, doctor or appropriately trained ODA.

When a PCA/NCA is set up and commenced, a verbal report should be made to the nurse caring for the patient. This should include:

- Details of intra-operative analgesia (if applicable), loading dose and other drugs given.
- Details of drug concentration and pump programming.

In addition to this, and at any subsequent patient handover between staff, both staff concerned should check that:

- The PCA/NCA prescription chart has been completed correctly.
- The drug being administered corresponds with the prescription chart.
- The pump programming corresponds to the most recent entry in the prescription chart.
- Pump settings are within protocol for the age and weight of the child (unless clearly indicated as out of protocol with rationale for this).
- The patient’s pain is being managed effectively.
- The patient is not excessively sedated.
- Drugs to prevent side effects are prescribed e.g. anti-emetics.

- Ensure the appropriate dose of naloxone is prescribed.
- Other analgesics (such as paracetamol and NSAIDs) are prescribed and administered where appropriate.

Supplementary analgesia eg paracetamol and either diclofenac or ibuprofen where appropriate, should be given regularly if either oral or rectal route is available. Intravenous administration of paracetamol should be considered for all patients where enteral administration is not possible.

No supplementary opioids (such as codeine or tramadol) should be administered while the patient is receiving PCA/NCA, unless specifically ordered by a consultant anaesthetist.

Patient monitoring

All patients with a PCA / NCA should be cared for by nurses competent in the management of patients receiving PCA/NCA.

The following observations should be recorded:

1. Before the child uses the PCA/NCA.
2. **HOURLY** while patients are receiving PCA/NCA.
3. For at least 4 hours after discontinuing a PCA/NCA.

- Pain score (self-reporting should be used whenever possible).
- Sedation score.
- Nausea score.
- Respiratory rate.
- Oxygen saturation.
- Blood pressure.
- Heart rate.

The following patients should be monitored continuously using pulse oximetry:

- Infants under 1 year.
- Patients with known sensitivity to morphine/opioids.
- Patients with respiratory complications or airway difficulties.
- Patients whose sedation score is is repeatedly equal to 2 or more.

Hourly pump readings should also be recorded on the PCA/NCA observation chart. This should include:

- Number of demands (tries).
- Number of successful demands (good tries).
- Amount infused (hourly and running totals).

The pump should never be re-zeroed while in use.

All patients should be reviewed at least once a day by a member of the Acute Pain Service.

If patient is in pain:

- Explore the cause of pain with the patient if possible.
- Involve parents and play specialist (i.e. for distraction, reassurance, comforting etc).
- Administer prescribed simple analgesics (e.g. Paracetamol & NSAIDs, if appropriate).
- Administer prescribed adjuncts as appropriate, (e.g. anti-spasmodic drugs).
- For PCA: encourage the patient to give a bolus and evaluate effect after 10 minutes.
- For NCA: administer a bolus and evaluate effect after 10 minutes.
- If pain score is equal to/greater than 2 for more than an hour contact the Acute Pain Service on bleep 0571.
- The surgical team or the child's physician should be contacted if the pain could be indicative of surgical complications, or another cause.

The background infusion may be increased by the acute pain service or anaesthetist if:

- The patient has pain which has not resolved after frequent boluses.
- Other interventions have been tried and have not been effective (e.g. regular simple analgesics, repositioning, etc).

The background infusion can be reduced if the patient is experiencing opioid induced side-effects, is pain free and requiring minimal boluses.

Side-effects

Common side-effects of a PCA/NCA include nausea, sedation, respiratory depression and pruritus (itching). These are side-effects of analgesia rather than of the PCA/NCA technique of administration.

Sedation

The sedation level of the child must be observed and recorded on the PCA/NCA observation chart at least hourly whilst PCA/NCA is in progress and for 4 hours after it has been discontinued.

The sedation level is scored as follows (see PCA observation chart):

- 0 = Alert
- 1 = Mild, easy to rouse
- 2 = Easy to rouse, often drowsy
- 3 = Somnolent, difficult to rouse

If the patient has a sedation score of 3:

- STOP the infusion.
- Ensure the child is well supervised.
- Monitor oxygen saturation continuously with pulse oximetry.
- Give oxygen by mask at 5 litres/min until improvement in sedation score.
- Inform the admitting paediatric team or after hours the on-call paediatric registrar.
- Monitor respiratory rate every 15 minutes until improvement in sedation score.
- Consider other possible causes of sedation e.g. hypoglycaemia.
- Consider naloxone 2 to 4micrograms/kg intravenously.
- Contact the Acute Pain Service (bleep 0571) or 4th on-call anaesthetist to review and change pump programming if necessary.
- Document findings and action taken.

Respiratory depression

The respiratory rate of the child must be observed and recorded on the PCA/NCA observation chart at least hourly whilst PCA/NCA is in progress and for 4 hours after it has been discontinued.

Respiratory depression shall be defined as:

>5 years – Respiratory rate <10 breaths/minute

1 to 5 years – Respiratory rate <15 breaths/minute

<1 year – Respiratory rate <20 breaths/minute

The definition above is for guidance only and the nurse should also take into account:

- Depth of respiration.
- Respiratory effort.
- Level of sedation.

If respiratory depression occurs:

- STOP the infusion.
- Give oxygen by mask at 5 litres/minute.
- Monitor oxygen saturation continuously with pulse oximeter.
- Inform the admitting paediatric team or after hours the on-call paediatric registrar.
- Monitor respiratory rate every 5 minutes until improvement in respiratory rate.
- Consider naloxone 2 to 4micrograms/kg intravenously.
- Contact the 4th on-call anaesthetist via Switchboard to review and change pump programming if necessary.
- Document findings and action taken.

If respiratory arrest occurs:

- STOP the infusion.

- Administer basic life support.
- Contact the paediatric arrest team on bleep 2222.
- Administer naloxone 4micrograms/kg (this may need to be repeated).
- Contact the Acute Pain Service (bleep 0571) between 8-5 or 4th on-call anaesthetist via switchboard once patient's condition has stabilised to review and change pump programming if necessary.
- Report incident according to hospital policy.

Nausea and vomiting

The patient should be assessed for nausea and vomiting at least hourly while on PCA/NCA, with highest score in the preceding hour recorded on the PCA observation chart.

The scores are:

- 0 = None
- 1 = Mild nausea
- 2 = Nausea and retching
- 3 = Vomiting

If the patient complains of nausea or has been vomiting:

- Administer an anti-emetic (e.g. ondansetron 0.1mg/kg).
- Consider aspirating a nasogastric or gastrostomy tube (if in situ).
- Consider stopping oral intake.
- Consider using another anti-emetic if nausea/vomiting has not improved after an hour.
- If nausea/vomiting continues, contact the Acute Pain Service, who may reprogramme the pump (i.e. reducing background or slowing speed of bolus).
- Consider non-opioid related nausea and vomiting such as intra-abdominal, sepsis, DKA etc.

Pruritus

The patient should be observed for pruritus (itching) at least 4 hourly, if itching is a problem:

- Administer an anti-histamine (e.g. chlorphenamine).
- Consider naloxone 0.5 microgram/kg intravenously.
- If pruritus persists, contact the Acute Pain Service, who may reduce or stop background if pain control is good or consider converting to a fentanyl solution.

Urinary retention

The patient should be observed for urinary retention. This is defined as the inability to empty the bladder volitionally for greater than 12 hours with a volume of urine greater than expected for age ([age in years + 2] x 30 mLs) or a palpably distended bladder

- Commence fluid balance chart (if not already monitored).
- Perform a bladder scan.
- Inform medical team.
- Consider intravenous naloxone 0.5 micrograms/kg.
- Consider intermittent catheterisation.

Technical issues

If the pump alarms:

- Stop the infusion.
- Check the display panel to identify cause of alarm.
- If the line is occluded.
    - Check the cannula site.
    - Check for kinks or closed clamps.
    - Ensure drive mechanism is declutched before releasing clamp to avoid delivery of excessive dosage when obstruction is released.
    - Flush the cannula.
    - Restart the infusion.
- If the syringe is empty a new syringe (as per prescription) should be drawn up and drawn up and started by a nurse who is competent to do so.
- If the alarm is due to a flat battery, plug the pump into the mains.
- If the pump is faulty, it will need to be replace and returned to biomedical engineering with a label describing the fault. Contact Acute Pain Service on bleep 0571.

Any pump which has been dropped or damaged must be taken out of service until checked by biomedical engineering.

Discontinuing PCA / NCA

The PCA/NCA may be discontinued by any member of staff who is competent and prepared to accept responsibility for the change. Consideration should be given to the clinical condition of the patient (and the possibility of withdrawal).

Criteria for stopping PCA/NCA include ALL of the following:

- The patient is able to take analgesia via an alternative route and this is prescribed.
- The background infusion has been reduced to 0.2ml/hr or less or stopped.
- The patient is requiring very few bolus doses.

The PCA/NCA must be stopped by any nurse in the following situations:

- Excessive sedation (sedation score of 3).
- Respiratory depression or respiratory arrest.
- Pump malfunction.

Maintain IV access and observe and record observations for at least 4 hours after discontinuing PCA/NCA.

Clinical audit standards

The following standards should be monitored:

- Management of inadequate analgesia.
- Management of complications of PCA / NCA.
- Completeness of monitoring of PCA / NCA.
- Adequacy of training for care of PCA / NCA.

Any patients with inadequate analgesia should be referred via the online system to the Acute Pain Team or duty anaesthetist. Any patients with suspected complications would also be referred this way. Reason for referral and action taken needs to be filled in for each entry, all data from this can be analysed.

All children with PCA / NCA should also be reviewed every day (except Sundays) by the members of the Acute Pain Service. A welfare form is filled in when patients are seen and includes data on adequacy of analgesia, observations and any complications. The data from these forms is collected on an electronic database, which can be analysed for the above standards. The standard for nurse training is that 70% of staff in areas where PCA / NCA are used should have completed the relevant training.

Summary of development and consultation process undertaken before registration and dissemination

The authors listed above drafted this guideline on behalf of the NNUH department of anaesthesia and pain management who has agreed the final content.

During its development it was has been circulated for comment to:

Members of the Paediatric Pain Group at NNUH (which included representatives from Buxton ward and the Acute Pain Service)
All Paediatric Anaesthetist at NNUH

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

Distribution list/ dissemination method

Theatre recovery
Paediatric wards
Anaesthetic Department
Trust intranet

References/ source documents

www.apagbi.org.uk/professionals/science/audit/archive-completed-audits

www.gosh.nhs.uk/health-professionals/clinical-guidelines/patient-controlled-analgesia

APA Guideline. Good Practice in Postoperative and Procedural Pain Management, 2nd Edition. Pediatric Anesthesia. Volume 22, Issue Supplement s1, pages 1–79, July 2012

Morton NS. Development of a monitoring protocol for safe use of opioids in children. Pediatric Anesthesia. Volume 3, Issue 3, pages 179–184, May 1993

CA2005v4 Trust guideline for the management of children receiving epidural analgesia

Trust guideline for the management of adults receiving patient controlled analgesia

CA2029/B17 v4 Trust guideline for the management of adults receiving epidural analgesia