Royal Cornwall Hospitals
NHS Trust

Nurse Controlled Analgesia in Children Clinical Guideline

V5.0

December 2024

1. Aim/Purpose of this Guideline

1.1. The purpose of this guideline is to provide guidance on caring for a child who is receiving an opiate infusion with nurse-controlled boluses.

1.2. This version supersedes any previous versions of this document.

Data Protection Act 2018 (UK General Data Protection Regulation – GDPR) Legislation.

The Trust has a duty under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team.

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2. The Guidance

2.1. A nurse-controlled analgesia (NCA) continuous infusion allows the child to receive from the nurse an immediate pre-determined dose of analgesia prior to painful procedures or episodes rather than waiting for a doctor to administer a bolus dose, or the continuous infusion to be increased slowly over a period of one hour.

Indications for use:

- When analgesia is required for moderate or severe pain for 24 hours or more.
- For children under 6 years of age and over 6 months of age, when patient-controlled analgesia (PCA) is not applicable.
- For children who do not have the cognitive/ physical ability to use a PCA.

Please refer to Paediatric Analgesia Guidelines and Anticipatory Prescribing Guidance for further information on prescribing and pump settings.

2.1.1. If a child requires an NCA they should only be used on Paediatric High Dependency Unit (HDU). Early discussion with senior paediatrician on call required before commencing case.

2.1.2. If HDU unavailable then, after senior paediatrician and senior anaesthetist on call discussions, then consideration can be given to Polkerris central cubicle with 24-hour monitoring. No other locations are acceptable.

2.1.3. A Registered Sick Children Nurse or Registered Nurse (Child) must always be available or allocated to a child receiving an NCA. They must have undergone suitable training in the management of NCA and maintained competence by regular use of skill and attending 3 yearly medical device training and clinical updates.

2.1.4. If the NCA is required post operatively, pre-operative explanation should be given to children/parents by anaesthetist and/or nursing staff. It should be made clear to the parents and child that the button should only be pressed by medical staff to prevent accidental overdose.

2.1.5. NCA must be prescribed on the Electronic Prescribing and Medicines Administration (EPMA) chart with full instructions of lockout time and mg per bolus. Check current pump protocol matches the patient prescription. Check current pump protocol matches the patient prescription.

2.1.6. Naloxone MUST be prescribed in case of respiratory distress.

2.1.7. Syringes must be changed by two registered nurses, one of whom must be Registered Sick Children Nurse, Registered Nurse (Child) or a Doctor. The nurse must be competent in the administration of intravenous drugs and undergone relevant training in the management of NCA. An aseptic non-touch technique must be used. The syringe must be labelled identifying the contents when it was made up and by whom. Delays in renewing syringes should be avoided to achieve constant analgesia.

2.1.8. Ensure only designated syringes are used i.e., BD Plastipak 50 ml luerlock. NCA should be administered via a specifically designed PCA/ NCA giving set with non-return valve or a separate intravenous cannula to prevent the backflow of opiate and accidental overdose. A “Y” connector must not be used.

2.1.9. Before attaching the infusion to the patient, the syringe must be purged by the pump to ensure that the line is fully primed, and the mechanical ‘slack’ has been removed. This should also be carried out at syringe changes.

2.1.10. Keys for NCA machines should be kept together with the controlled drugs keys.

2.1.11. The child should have a pain score of five or less (mild pain) before leaving recovery.

2.1.12. NCA giving sets should be changed every 48-72 hours or according to hospital policy.

2.1.13. Heparin and insulin should not be infused via the NCA giving set.

2.1.14. NCA can be infused via a central line.

2.1.15. NCA infusion pumps should be placed at trunk height to prevent siphoning of contents due to effect of gravity.

2.1.16. No other opioids should be given whilst NCA is running. However, supplementary analgesia, e.g., paracetamol and an NSAID (non-steroidal anti-inflammatory drug) where appropriate, should be given regularly.

2.1.17. When alternative oral analgesia is prescribed and proven to be effective the NCA may be discontinued.

2.1.18. Any opiate left in one syringe must be discarded into a denaturing kit. This should be witnessed by two nurses and documented in the ward's CD (Controlled Drug) wastage book.

2.1.19. On discontinuation, the pump should be cleaned according to decontamination policy and returned to theatres for storage.

2.1.20. If the equipment is faulty, it must be returned to Medical Physics after being cleaned according to decontamination policy.

2.2. Criteria for the nurse to press the button to deliver a bolus dose

- Child in moderate to severe pain, using an appropriate pain scale.
- Prior to painful procedure/ episode.

N.B.:

- Child's respiratory rate should be more than 20 breaths per minute for children less than 5 years of age.
- Child's respiratory rate should be more than 10 breaths per minute for children over 5 years of age.
- Oxygen saturations more than 95% or if baseline less than 95%, 3% below baseline.
- Sedation score 1 (child is fully awake and distressed or complaining of pain).

2.3. Observations (Recorded on EObs)

2.3.1. The frequency of observations is a guideline, if the child's PEWS score indicates the need for closer observation, then this must be followed.

2.3.2. Observations should be recorded every **15 minutes in the recovery ward** and then every **30 minutes until 2 hours post-op in the surgical ward**. Close observation is required to observe for adverse reaction to the opioid.

Parameter.	Frequency.	Comments.
Sedation score.	**Hourly** until the NCA is discontinued.	See paediatric pain assessment chart.
Respiratory rate, heart rate and oxygen saturation.	**Hourly** until the NCA is discontinued.	Continuous pulse oximetry in children **under 6 months** of age.
Blood pressure.	**Hourly** for the first 12 hours, then this may be reduced to four hourly.	
Pain score.	**Hourly.**	See paediatric pain assessment chart.
Nausea/ vomiting/ pruritus assessment.	**Hourly** for the first 12 hours then 4 hourly until the NCA is discontinued.	See paediatric pain assessment.

2.3.3. **If the opioid infusion rate is increased, then observations should be recorded every 30 minutes for a further hour to ensure the patient is in a stable condition.**

2.3.4. If an extra bolus dose has been given (loading or clinician override) the administrator should not leave the ward for 20 minutes so that they may respond promptly to respiratory depression or hypotension.

2.3.5. Record infusion total and demands/good (as recorded on the pump) every hour.

2.3.6. Assess intravenous cannula site as per policy and record on care plan.

2.4. Problems

2.4.1. Sedation/ Respiratory Depression

Morphine can cause sedation and respiratory depression. Assessing level of sedation is the key to early identification and treatment of opioid-induced respiratory depression.

If opioid induced respiratory depression is suspected:

- Stop the infusion or switch the NCA off.
- Stimulate the patient (shake gently, call by name, ask to breathe).
- Administer facial oxygen.
- Contact Paediatric Registrar to review the child.
- Administer naloxone as prescribed, if indicated.

2.4.2. Hypotension

If systolic pressure is more than 20% below pre-op reading then give oxygen, call Paediatric Registrar to diagnose cause of hypotension.

2.4.3. Nausea and Vomiting

Morphine can sometimes cause this, if so, anti-emetics should be given as prescribed. A combination of anti-emetics maybe required to treat effectively or consider very low dose naloxone.

2.4.4. Pruritus

This is occasionally a side effect of morphine and usually settles within 2-3 days of commencing opioids. Can be treated with an antihistamine, e.g., Chlorphenamine, but may cause sedation. Or consider a low dose of naloxone.

2.4.5. Inadequate Analgesia

Has a bolus dose been given? See section 2.2. Criteria for the nurse to press the button to deliver a bolus dose.

Ensure the equipment is functioning correctly and that the line is not occluded. If applicable, call Paediatric Pain Team, Paediatric Registrar or on-call anaesthetist to assess analgesia.

2.4.6. Urinary retention

Urinary retention following surgery may be due to a variety of causes and needs to be investigated fully. Consider:

- Increasing fluid intake.
- Conservative management (e.g., close monitoring, reassurance and manual expression of the bladder).
- Encouragement strategies (e.g., increase privacy, commode by the bed, encourage male children to stand up, or running water).

If the retention is likely to be opioid induced, consider:

- Reducing the rate/ bolus.
- Administering very low dose of naloxone.
- Intermittent catheterisation or indwelling catheter if all the above measures fail.

Any problems should be recorded in the appropriate patient records.

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Adherence to the guideline.
Lead	Acute Paediatric Pain Service.
Tool	The child will be reviewed daily (Monday- Friday) and adherence to this guideline will be recorded in the medical notes. Datix reports will be investigated.
Frequency	The use of PCAs and Datix reports will be audited on a regular basis in combination with the Paediatric Pain audit.
Reporting arrangements	The audit is reported back to Matron for Child Health and to the Children's Audit and Guidelines Group.
Acting on recommendations and Lead(s)	Acute Paediatric Pain Service.
Change in practice and lessons to be shared	Required changes to practice will be identified and be actioned within 1 month. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant parties.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Nurse Controlled Analgesia in Children Clinical Guideline V5.0
This document replaces (exact title of previous version):	Nurse Controlled Analgesia in Children Clinical Guideline V4.0
Date Issued/Approved:	December 2024
Date Valid From:	December 2024
Date Valid To:	December 2027
Directorate / Department responsible (author/owner):	Acute Paediatric Pain Service
Contact details:	01872 252648
Brief summary of contents:	Guidance for nursing staff caring for children receiving an opiate infusion with nurse-controlled boluses.
Suggested Keywords:	Nurse controlled analgesia, children, pain control.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Child Health Audit and Guidelines Group
Manager confirming approval processes:	Caroline Chappell
Name of Governance Lead confirming consultation and ratification:	Tamara Thirlby
Links to key external standards:	Association of Paediatric Anaesthetists of Great Britain and Ireland (2012) Good Practice in Postoperative and Procedural Pain Management, 2nd edition. Blackwell Publishing Ltd Royal Marsden Hospital. (2020) Manual of Clinical Nursing Procedures, Tenth edition. Online at http://www.rmmonline.co.uk/

Information Category	Detailed Information
	Twycross, A., Dowden, S.J. and Stinson, J. (2014) Managing Pain in Children: a clinical guide. West Sussex: Whiley-Blackwell.
Related Documents:	Paediatric Analgesia Guidelines and Anticipatory Prescribing Guidance
Training Need Identified?	Yes. Registered Nurse competent in administering intravenous medications. Staff Need to complete Clinical Skills module on Paediatric PCA/Morphine infusions and initial Pump Training provided by the Pain Team. Attendance to Child Health Pain Management study morning. 3 yearly update for medical devices.
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical/ Paediatrics/ Pain

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
August 2012	V1.0	Initial Issue.	Sarah Fox, Paediatric Pain Specialist Nurse.
August 2015	V2.0	Updated.	Sarah Fox, Paediatric Pain Specialist Nurse.
July 2018	V3.0	Full review with change to include E-obs. Minor names change to meet Policy Review Group requirements.	Sarah Fox, Paediatric Pain Specialist Nurse.
July 2021	V4.0	Updated, minor format changes. 2.1.5 Added ‘naloxone must be prescribed’ as it is to do with prescribing opioids. 2.3.4 Additional boluses/ clinician override bolus clarified.	Sarah Fox, Paediatric Pain Specialist Nurse.

Date	Version Number	Summary of Changes	Changes Made by
October 2024	V5.0	Full review, minimal changes made: 2.1.1 Should only be used on paediatric HDU. Early discussion with senior paediatrician on call required before commencing case. 2.1.2 If PHDU unavailable then, after senior paediatrician and senior anaesthetist on call discussions, then consideration can be given to Polkerris central cubicle with 24-hour monitoring. No other locations are acceptable. Removed- 2.4.21 Prior to the patient leaving recovery the asset number of NCA machine should be recorded on the recovery sheet and paediatric pain service yellow database form. Theory training is now provided through Clinical Skills.	Acute Paediatric Pain Service

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Nurse Controlled Analgesia in Children Clinical Guideline V5.0
Directorate and service area:	Paediatrics
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Child Health Audit and Guidelines Group
Contact details:	01872 252648

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	Guidance for nursing staff on caring for a child who is receiving an opiate infusion with nurse-controlled boluses
2. Policy Objectives	All nursing staff understand their responsibilities when caring for a child with an NCA.
3. Policy Intended Outcomes	• Safe management of Children requiring an NCA. • Side effects are identified and dealt with safely. • Requirements for training are identified.
4. How will you measure each outcome?	• Audit and follow up by the Paediatric Pain Team. • Monitor Datix/ medication errors.
5. Who is intended to benefit from the policy?	• Paediatric patients. • Practitioners.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/ visitors: No • Local groups/ system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:** Child Health Audit and Guidelines Group.
6c. What was the outcome of the consultation?	Approved.
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:** No.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	Any information provided should be in an accessible format for the parent/ carer/ patient's needs- i.e., available in different languages if required/ access to an interpreter if required.

Protected Characteristic	(Yes or No)	Rationale
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	Those parent/ carer/ patients with any identified additional needs will be referred for additional support as appropriate- i.e., to the Liaison Team or for specialised equipment. Written information will be provided in a format to meet the family's needs e.g., easy read, audio etc.
Religion or belief	No	All staff should be aware of any beliefs that may impact on the decision to treat and should respond accordingly.
Marriage and civil partnership	No	No areas indicated.
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Child Health Audit and Guidelines Group.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis