Morphine Infusion - Post-operative Use - Paediatric Full Clinical Guideline (Derby only).

Reference no.: PA MO 01/Dec 19/v004

Post-operative analgesia using continuous intravenous infusions of morphine in spontaneously breathing children

1. Purpose

To ensure that children and young people receive effective post operative analgesia.

2. Aim and Scope

To provide clear guidelines for Dolphin and Theatre staff on the use of continuous Morphine infusions as post operative analgesia for children and young people.

3. Implementing the Policy

- Only to be used on Dolphin & in Theatres.
- The anaesthetist concerned should contact Dolphin to check bed availability and give patient details as far in advance of the admission as is possible.
- Note the analgesia already given in theatre; this must be clearly documented on the pain chart as well as on the anaesthetic record.
- I.V. morphine infusion must be prescribed on the treatment chart as protocol.
- No opiates may be given by any other route whilst the morphine infusion is in the progress.
- **For children weighing less than 50kg draw up morphine 1 mg/kg, add sodium chloride 0.9% to a volume of 50mls (final concentration 20 micrograms/kg/ml).**
- **If the child weighs over 50kg draw up 50mgs morphine, add sodium chloride 0.9% to a volume of 50mls (final concentration 1mg/ml) - ready made 50mg/50ml syringes are available from pharmacy.**
- Observations of heart rate, respiratory rate, sedation score, oxygen saturation and assessment of pain and nausea and vomiting must be performed on admission and recorded hourly for the duration of the infusion.
- Initially the infusion rate should be prescribed at 1 – 3mls/hr. This may need to be adjusted on the basis of persistently high/low pain scores.
- Commence infusion immediately at the initial rate prescribed by the anesthetist, usually at 2mls/hr.
- Ideally, pain score should be 1 or less for the duration of the infusion.

4. **Breakthrough Pain**

- A bolus dose of Morphine must be prescribed on the PRN section of chart.
- If a pain score is 3, a bolus dose is necessary. Give 3mls (60 micrograms/kg for children less than 50kg) from the pump.

Observe: Respiratory rate

Oxygen saturation

Blood pressure

Pulse rate

Every 5 minutes for 20 minutes

Simultaneously increase the infusion rate by 0.5mls/hr.

- Re-assess at 20 minutes
  If the pain score is 3 give a further bolus of 2mls (40micrograms/kg for children less than 50kg).

  If the pain score is 1 or 2 give a bolus of 1ml (20micrograms/kg for children less than 50kg).

  Document observations every 5 minutes for 20 minutes as described previously.

- Re-assess
- If pain score is still 3:

  Call doctor

  Check for disconnection or "tissuing" of I.V. line

  Check for a full bladder

  Check for other sources of discomfort apart from the wound

- If none of the above applies the maximum rate of the morphine infusion will need to be increased by the medical staff.

5. Decreasing and Disconnecting the Infusion

The severity of postoperative pain gradually decreases as the postoperative period passes until strong analgesics are no longer necessary. Depending on the type of surgery performed it should be possible to begin decreasing the morphine infusion rate after 24-36 hours.

If pain scores are consistently low for six consecutive hours reduce the infusion rate by 0.5mls/hr. Re-assess after a further six hours. If pain scores consistently low reduce infusion by a further 0.5mls/hr. Inform Paediatric Registrar after two successive decreases in the infusion rate. Continue in this way until infusion rate is discontinued. Continue hourly observations for a further 4-6 hours and ensure pain management is effective.

Adjuvant Drugs

- The **regular** administration of adjuvant drugs should commence immediately post operatively to provide optimal pain relief and reduce the incidence of morphine related side effects.

- Adjuvant drugs must be given **even if the child is Nil by Mouth - Paracetamol** can be given IV and Diclofenac PR if appropriate.

6. TREATMENT OF RESPIRATORY DEPRESSION

Observation	**Action**
▪ If resp rate <20/min Age 1-5 <12/min Age 6-12 <10/min Age 12-15 ▪ Or saturation <90% ▪ Or sedation score 2 ▪ Or combination of any of these	▪ Stop infusion ▪ Call doctor ▪ Administer 02 4L/min via Hudson Mask ▪ Prepare Naloxone 400micrograms to 10mls with sodium chloride 0.9% (40micrograms/ml) ▪ Give 1micrograms/kg every 2-3 mins until respirations and/or conscious level are within normal parameters

Remember Naloxone reverses analgesia as well as reversing respiratory depression and sedation

A concrete plan must be in place to manage the child's pain effectively if a morphine infusion is no longer an appropriate strategy

7. References:

Twycross a, Dowden S.J, Bruce E (Eds) (2009)

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Wiley Blackwell Oxford

Association of Paediatric Anaesthetists (2009) Good Practice in Postoperative and Procedural Pain 6.3

Howard R.F. (2003)

Current Status of Pain Management in Children

The Journal of the American Medical Association

Vol: 290 (18) p 2464 - 2469

Franck L. (2003)

Nursing Management of Children's Pain: Current Evidence and Future Directions for Research

Nursing Times Research

Vol: No 5 p 330 – 353

BNF for Children, (2012 – 2013)

8. Documentation Controls

Development of Guideline:	Dr J McIntyre
Consultation with:	Derby Hospitals NHS Foundation Trust Paediatric Anaesthetists & Pharmacist. Paediatric Matron and Senior sister – Dolphin.
Approved By:	*Paediatric Business Unit Guidelines Group, Women and Children's Division, December 2019*
Review Date:	December 2022 – Extension till April 2024
Key Contact:	Dr J McIntyre

Appendices

1. Appendix 1: PAEDIATRIC MORPHINE INFUSION PAIN / OBSERVATION CHART

University Hospitals of Derby and Burton
NHS Foundation Trust

PATIENT LABEL

PAEDIATRIC MORPHINE INFUSION PAIN / OBSERVATION CHART

Please record pump maintenance number (yellow sticker)

DATE	TIME																							
Pain score																								
Sedation score																								
Nausea & vomiting score																								
Respiratory rate																								
Oxygen saturation																								
Bolus Dose																								
Infusion Rate																								
Other interventions Please Record Amount: Primed: mls																								
Signature																								

Assess pain after deep breathing, coughing or movement. Score the worst value obtained At all times consider other measures that may help the child's pain/ discomfort; e.g. parental presence, sips of fluid, cuddling, stroking, repositioning, distraction with toys

PAIN SCORE	No Pain	**0**	**SEDATION SCORE**	Fully awake	**0**	**NAUSEA VOMITING SCORE**	No Nausea	**0**
	Hurts a little	**1**		Drowsy easily rousable	**1**		Nauseated	**1**
	Starting to hurt a lot	**2**		Difficult to rouse	**2**		Nausea & Vomiting	**2**
	Hurts a lot	**3**		Asleep	**3**			

GUIDELINES FOR THE USE OF THE MORPHINE INFUSION PAIN CHART

- Check the prescription with pump settings in recovery, on arrival to the ward and on each shift handover
- Monitor oxygen saturations continually
- Observations to be recorded hourly

If respiratory rate = 12 / minute reduce the hourly rate as per prescription

If respiratory rate = 8 / minute or less stop pump and inform the anaesthetist immediately

If Sedation score = 2 & respiratory rate is less than 8 / minute stop pump and inform the anaesthetist immediately