

GUIDELINES FOR NURSE CONTROLLED AND PATIENT CONTROLLED ANALGESIA MORPHINE INFUSION



PATIENT CONTROLLED ANALGESIA MORPHINE

Suggested PCA settings in bold and underlined. Modify according to procedure and patient.

PCA STANDARD INFUSION	Children aged ≥ 7 years, Weight $>5\text{kg}$ to 50kg	Children weight $\geq 50\text{kg}$
Opioid Dilution	1mg/kg Morphine made up to a total of 50 ml in Glucose 5% or Sodium Chloride 0.9%	50mg Morphine made up to a total of 50ml in Glucose 5% or Sodium Chloride 0.9%
Concentration	20 microgram/kg/ml	1mg/ml
Loading Dose (only if no other opioid previously administered)	50 or 100microgram/kg** (2.5 or 5ml)	50 or 100microgram/kg** (max 5mg) (2.5 or 5ml)
Background Infusion	Zero, 0.2, 0.5 , 1ml/hr (Zero, 4, 10 , or 20 microgram/kg/hr)	Zero, 0.2, 0.5 or 1ml/hr (Zero, 0.2mg, 0.5mg or 1mg/hr)
Bolus Dose	0.5 to 1ml 10 or 20 microgram/kg	1 or 2ml (1mg or 2mg)
PCA Bolus time	1-2 minutes	1-2 minutes
Lockout time	5 to 10 minutes	5 to 10 minutes
Maximum 4 hourly Dose	400 microgram/kg (20ml)	20mgs (20ml)

NURSE CONTROLLED ANALGESIA MORPHINE

Suggested NCA settings in bold and underlined. Modify according to procedure and patient.

NCA STANDARD INFUSION	Neonates & Infants $<5\text{KG}^*$	Children $> 5\text{kg}$ to 49kg	Children $>50\text{kg}$
Opioid Dilution	0.5mg/kg Morphine made up to total of 50 ml in Glucose 5% or Sodium chloride 0.9%	1mg/kg Morphine made up to total 50 ml in Glucose 5% or Sodium chloride 0.9%	50mg Morphine made up to total 50ml in Glucose 5% or Sodium chloride 0.9%
Concentration	10microgram/kg/ml	20microgram/kg/ml	1mg/ml
Loading Dose (only if no other opioid received)	20-100microgram/kg** Max dose 100microgram/kg	50 or 100microgram/kg** (2.5 to 5ml)	50 or 100microgram/kg** (max 5mg) (2.5 or 5ml)
Background Infusion	Zero, 0.5 or 1ml/hr (Zero, 5 or 10 microgram/kg/hr)	Zero, 0.2, 0.5 , 1ml/hr (Zero, 4, 10 , or 20 microgram/kg/hr)	Zero, 0.5 or 1ml/hr (Zero, 0.5mg or 1mg/hr)
Bolus Dose	0.5 to 1ml (5 to 10microgram/kg)	0.5 to 1ml (10 or 20 microgram/kg)	1 or 2ml (1 or 2mg)
NCA Bolus time	2 to 5 minutes	2 minutes	2 minutes
Lockout time	15 or 20 minutes	15 or 20 minutes	15 or 20 minutes
Maximum 4 hour dose	200 microgram/kg (20ml)	400 microgram/kg (20ml)	20mg (20ml)

*Babies (birth-12 weeks) undergoing multiple surgeries may require more morphine than their age suggests

** Loading Dose: Administered over 5mins with Respiratory & SaO2 monitoring only if no other opioid received.

NB: This guide is intended for use in children who are opioid naïve. Children who have been on oral or IV opioids including opioid transdermal patch or children with conditions associated with severe pain, (major surgery, sickle cell disease, cancer, and severe burn injury) may have higher opioid requirements.

Infusion rates higher than this guideline is at the discretion of the Pain service, consultant anaesthetist, Consultant PICU.

Antiemetics should also be prescribed.

Regular paracetamol +/- ibuprofen or diclofenac +/- clonidine.

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General Instructions

- No supplementary opiates unless ordered by the Anaesthetist, palliative care or Pain service
- Line for IV opiates should be exclusive or an anti-reflux valve (protect-a-line 2) must be used
- Maintain IV access during pain management.
- Treatment of:
 - **Inadequate analgesia** Call Pain service on bleep 8300 or 8528 out of hours
 - **Nausea and Vomiting** Antiemetic's, Ondansetron as prescribed
 - **Itching** Anti-histamine or low dose naloxone
 - **Over Sedation** ≥ 3 See sedation scale
 - **Respiratory depression** Stimulate child, give oxygen, stop infusion, call medical team /anaesthetist.
Give naloxone 2 microgram/kg IV prn. Repeat every 1-2 minutes (max 5 doses)
 - **Resuscitation:** (minimal respirations, sedation score ≥ 4 , cardiorespiratory arrest):
Naloxone: 10 microgram/kg IV PRN. Repeat every 1-2minutes (maximum 200microgram or 5 doses) **N.B. Naloxone has a relatively short half-life respiratory rate may drop again even though infusion has been stopped.**
 - **Urinary retention** Naloxone low dose > 1month: 1microgram/kg stat (max daily dose 200microgram).
If this fails insert urinary catheter

Sedation AVPU

A: awake, arousable, alert

V: responds to voice only (drowsy and sleepy. Child may be sedated from opioid)

P: responds to pain stimulus only (deeply asleep, arousable only with deep or significant physical or painful stimulus: **Action:** Stop opioid, perform GCS. If opioid related over-sedation, contact anaesthetist on bleep 8528, and/or CNS Acute Pain, bleep 8300. Child may require naloxone.

U: unresponsive. Action: Stop Opioid. Stimulate the child, administer oxygen, Call 2222 , perform GCS. Give naloxone to reverse opioid.

Analgesic Interventions

0:	No Pain	
1-3:	Mild Pain	NCA: Give bolus 10 minutes before activity. PCA: encourage bolus 10 minutes before activity
4-6:	Moderate Pain	NCA: Give Bolus. PCA: encourage bolus
7-10:	Severe Pain	NCA or PCA: Pain uncontrolled with 3 boli/hr & adjunctive analgesia. Contact Pain Service

Nausea and Vomiting

- 0: No vomit
- 1: Nausea
- 2: Vomit
- 3: Vomit more than 3 in last hour

ITCH

- 0: No Itch
- 1: slight
- 2: Moderate
- 3: Severe

Sample prescription

child weight 35kg

PCA Morphine 35mgs made up to total of 50mls in Glucose 5%

1ml=700microgram (20microgram/kg/ml) $35 \times 1000 \div 50 = 700$

PCA: 1ml (20microgram/kg)

Lockout 6 to 12 minutes

Continuous infusion: zero to 1ml/hr. Start at: 0.2ml/hr (4microgram/kg/hr)

Maximum 4 hourly dose: 400microgram/kg 20mls