

OPIOID INTRAVENOUS INFUSIONS - SCH

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- Intravenous opioid infusions must be prescribed by a Medical Officer
- Intravenous opioid infusions must be prescribed on the approved Sydney Children's Hospital Intravenous Opioid Infusion Chart.
- Only those Registered Nurses who have been assessed as competent in Drug Calculation and Intravenous Drug Administration may load syringes and care for patients receiving intravenous opioid infusions.
- Registered Nurses assessed as competent in Intravenous Drug administration may administer bolus doses and intravenous naloxone as per prescribed criteria.
- Naloxone must be available whenever an opioid infusion is in progress.
- Only those Registered Nurses who have been assessed as competent in Drug Calculation and Intravenous Drug Administration may load syringes and care for patients receiving intravenous opioid infusions.
- Registered Nurses assessed as competent in Intravenous Drug administration may administer bolus doses and intravenous naloxone as per prescribed criteria

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	Director, Clinical Governance	
Date Effective:	1 st April 2017	Review Period: 3 years
Team Leader:	Clinical Nurse Consultant	Area/Dept: Pain Management

CHANGE SUMMARY

- Added 4 clauses under Section 2, point 10.
- Removed reference to SCH Opioid Bolus guideline.

READ ACKNOWLEDGEMENT

- Read Acknowledge Only – Clinical Nurses should read and notify local manager that they have read this document.
- Discretionary – Other staff as determined by local manager should read and acknowledge this document.

TABLE OF CONTENTS

Practice Guideline	3
Applicable to all Clinical Areas of SCH	3
<i>Opioid Infusions in SCH</i>	3
1 Introduction	3
2 Specific Guidelines	4
3 Monitoring	5
4 Prescribing	5
4.1 Standard Prescription	5
5 Documentation	6
6 Complications	6
6.1 Associated with IV opioid infusions and their management.....	6
6.1.1 <i>Respiratory Depression</i>	6
6.1.2 <i>Over Sedation</i>	7
6.1.3 <i>Poor Pain Control</i>	7
6.1.4 <i>Nausea and Vomiting</i>	7
6.1.5 <i>Urinary Retention</i>	8
6.1.6 <i>Pruritus</i>	8
6.1.7 <i>Hypotension</i>	8
6.1.8 <i>Myoclonic Jerks</i>	8
7 Bibliography	9

Practice Guideline

Applicable to all Clinical Areas of SCH

Opioid Infusions in SCH

- Intravenous opioid infusions must be prescribed by a Medical Officer
- Intravenous opioid infusions must be prescribed on the approved Sydney Children's Hospital Intravenous Opioid Infusion Chart.
- Only those Registered Nurses who have been assessed as competent in Drug Calculation and Intravenous Drug Administration may load syringes and care for patients receiving intravenous opioid infusions.
- Registered Nurses assessed as competent in Intravenous Drug administration may administer bolus doses and intravenous naloxone as per prescribed criteria.
- Naloxone must be available whenever an opioid infusion is in progress.

Outcome: Intravenous opioid infusions administered in a safe, effective manner by accredited Registered Nurses.

Patient Outcome: Patient achieves an optimal level of analgesia. Pharmacokinetic principles include giving an adequate loading dose to the patient. Following a surgical procedure this would usually occur intra-operatively or in recovery.

1 Introduction

Pain is a very individual and personal experience, a subjective feeling present in both adults and children. The official definition is that of The International Association for the Study of Pain - "An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (Mersky, 1979). However a much easier working definition of pain is: "**Pain is what the patient says hurts**".

For centuries opioids have been used for pain relief and they are the most powerful analgesic agents presently available. An intravenous opioid infusion provides a steady level of analgesia where the rate of infusion may be altered within a prescribed range according to the patient's requirements. Intravenous Opioid Infusions can be used in children of any age, particularly in those patients unsuitable for other forms of parenteral opioid administration such as Patient Controlled Analgesia.

2 Specific Guidelines

1. Neonates and small infants require lower dosages due to potentially higher susceptibility to opioids. (See prescription dosage for limits).
2. Intravenous opioid infusions may be used in patients who are nil by mouth or for those whose pain management may not be optimised with oral preparations.
3. Some patients in special situations may require doses in excess of those normally required e.g. oncology or palliative care patients.
4. Intravenous opioid infusions are administered as a sideline infusion via a syringe pump.
5. **Syringes must be changed every 24 hours.**
6. Do not commence an intravenous opioid infusion if the child has any signs of respiratory depression or is heavily sedated.
7. The syringe **MUST** be clearly labelled with a completed hospital approved **additive label**.
8. The giving line delivering the opioid to the patient must be clearly labelled with an Opioid Infusion Label.
9. Additional bolus doses of the opioid infusion may be prescribed on the Intravenous Opioid Chart.
10. Two bolus doses may be administered five minutes apart and if not effective the medical officer should be notified immediately to review the patient's pain status.
 - i. Two nurses must be present to administer a bolus
 - ii. The bolus must be administered using the "Hands Free" option from within "Guardrails" **DO NOT USE THE PURGE OPTION WHEN CONNECTED TO A PATIENT**
 - iii. The Bolus should be signed for on the Paediatric Observation Record – Acute Pain Service form, and efficacy of the bolus documented in the medical record
 - iv. If the background rate of the infusion is being increased, a bolus dose should be administered at the time of the increase as it may take up to 4 hours to reach steady state of the new infusion rate without a bolus
11. Standard orders as per Intravenous Opioid Infusion Chart are as follows:
 - i. No other parenteral or oral opioids are to be administered whilst receiving an OPIOID INFUSION, without consulting a medical officer.
 - ii. **PCA** administration set with anti-reflux and anti-siphon valve must be used.
 - iii. Oxygen via nasal specs or mask until the morning after surgery as tolerated if prescribed by Anaesthetist.
 - iv. Naloxone must be available and given as required. The criteria for giving Naloxone is outlined below and on the Opioid order sheet.

3 Monitoring

- **Continuous Pulse Oximetry is required for all patients receiving parenteral opioids.**
- Patient monitoring and documentation will be as follows:
 - Respiratory rate
 - Oxygen Saturations
 - Pulse rate
 - Pain score (appropriate for age/cognition)
 - Sedation Score
 - Rate of Infusion/Progressive total
 - Temperature and Blood Pressure 4/24
- *All Observations are to be recorded on appropriate documentation*

Every Hour
for the duration
of the Infusion

4 Prescribing

The prescriber must:

- Place patient identification label on Intravenous Opioid Infusion Chart and sign clearly.
- Document weight and allergies.
- Complete prescription for filling syringes.
- Complete prescription for bolus doses.
- Complete Naloxone prescription on Opioid chart.
- Clearly sign and date prescription and print name.

4.1 Standard Prescription

Dosages for paediatric intravenous opioid infusions are as follows:

Drug	Age Range	Dose	Rate	Starting Rate	Bolus
Morphine	0-3 months	1mg/kg in 50mL 0.9% sodium chloride	0-20 microg/kg/hr	10 microg/kg/hr	10 microg/kg Suggested max= 1bolus every 30min
	≥ 3 months	1mg/kg in 50mL 0.9% sodium chloride Recommended Max 50mg/50mL	0-40 microg/kg/hr	20 microg/kg/hr	20 microg/kg
Fentanyl	0-3 months	20 microg/kg in 50mL 0.9% sodium chloride	0-1.5 microg/kg/hr	0.4 microg/kg/hr	0.4 microg/kg/hr
	≥ 3 months	20 microg/kg in 50mL 0.9% sodium chloride Recommended max	0-2 microg/kg/hr	0.8 microg/kg/hr	0.4 microg/kg/hr

		1000microg/50mL			
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5 Documentation

- All prescription orders and documentation of observations must be recorded on the approved hospital Intravenous Opioid Infusion chart.
- All syringes loaded must be recorded and signed for by two Registered Nurses on the approved hospital Intravenous Opioid Infusion Chart.
- Upon cessation of infusion the volume discarded must be recorded by two Registered Nurses on the approved hospital Intravenous Opioid Infusion Chart.
- Bolus doses must be signed for in the appropriate column on observation record.

6 Complications

6.1 Associated with IV opioid infusions and their management

Follow CERS Escalation Process for all between the flag breaches.

6.1.1 Respiratory Depression

A fall in respiratory rate is a late sign of respiratory depression. Strict hourly monitoring of patient as per protocol is essential to detect this sign of respiratory depression.

Management: determined by respiratory rate.

If respiratory rate in YELLOW Zone

Action:

Follow CERS Escalation Process AND

Stop infusion

Give oxygen

If respiratory rate in RED Zone

Action:

Activate Rapid Response AND

Stop Infusion

Give oxygen

Check vital signs

Consider IV Naloxone 5 microg/ kg to a maximum of 100microg (as per Opioid Chart).

If no response to first dose of Naloxone reassess vital signs, initiate appropriate clinical care, send for help and commence BLS. If required call a Code Blue.

REASSESS and REPEAT Naloxone DOSE EVERY 5 MINUTES UNTIL RESPIRATORY RATE GREATER THAN 10

Increase frequency of Observations to 5 minutely until patient has been medically assessed even if Respiratory rate improves

N.B. Naloxone has a relatively short half-life respiratory rate may drop again even though infusion has been ceased

6.1.2 Over Sedation

Increasing loss of consciousness develops gradually with opioid overdose and may provide earlier warning of impending overdose than the respiratory rate.

SEDATION SCORE should always be ≤ 2

Management:

If sedation score 3;

- Follow CERS Escalation Process **AND**
- Stop infusion
- Check vital signs and increase frequency of observations
- Give oxygen as needed
- Restart infusion at lower rate when sedation score is ≤ 2

If sedation score ≥ 4

- Activate Rapid Response **AND**
- Stop infusion
- Check vital signs and increase frequency of observations
- Give oxygen

6.1.3 Poor Pain Control

Check patency of cannula. Check IV giving set and anti-reflux valve. Check syringe and pump for amount drug infused over previous hour.

Management: If Pain score $> 6/10$

Action: Give bolus dose if ordered and increase infusion rate as prescribed.

If no improvement after 15 minutes, Follow CERS Escalation Process (APS can be contacted in hours for advice)

6.1.4 Nausea and Vomiting

This is a common side effect of opioid made worse when the patient is moving.

Management: If nausea and vomiting occurs

Action: Give antiemetic as ordered on medication chart as required.

If symptoms persistent: Follow CERS Escalation Process (APS can be contacted in hours for advice)

Urinary Retention

Opioids are believed to increase smooth muscle tone; they can cause bladder spasm and increase sphincter tone leading to urinary retention.

Management: If obvious urinary retention occurs

Action: Follow CERS Escalation Process

6.1.5 Pruritus

May be a direct opioid effect or may be secondary to histamine release associated with opioids. Pruritus may not result in redness or a rash.

Management:

1. Naloxone add 10mcg/kg (max 400 mcg) into the 50mL Opioid syringe:
1mL/hr =0.2mcg/kg/hr or
2. Naloxone 0.5mcg/kg/dose, IV hourly PRN x 3
3. Consider Non-Sedating Anti-Histamine
3. Opioid rotation – seek appropriate advice if uncertain about dosing

Action: Follow CERS Escalation Process (APS can be contacted in hours for advice)

6.1.6 Hypotension

Morphine may induce histamine release and when given systemically it can cause peripheral arterial and venous dilation. Orthostatic hypotension may occur and manifest as nausea and dizziness. If the patient is normovolemic and supine, minimal BP changes occur.

If Blood pressure breaches calling criteria

Action:

Follow CERS Escalation Process AND
Stop infusion
Give oxygen

6.1.7 Myoclonic Jerks

Myoclonic jerks can occur as a result of opioid drugs.

Management:

A small dose of Benzodiazepine may be given, e.g. Diazepam
Monitoring with pulse oximetry is essential if the opiate is still being administered.

Action: Follow CERS Escalation Process (APS can be contacted in hours for advice)

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