

CLINICAL POLICY FOR THE USE OF INTRANASAL DIAMORPHINE FOR ANALGESIA IN CHILDREN ATTENDING THE PAEDIATRIC EMERGENCY DEPARTMENT, SASH

Background

Adequate analgesia is a vital aspect of early management of many patients presenting to paediatric emergency departments. Patients with acute severe pain require opiate analgesia. Traditionally, opiate analgesia has been administered intravenously, intramuscularly or orally. However, there are disadvantages associated with all these above methods of administration: The absorption of oramorph (2) is slow and variable and children may reject the medicine. Intramuscular injections are very painful and intravenous administration requires intravenous access.

Diamorphine comes in a highly soluble powder form, diamorphine hydrochloride, and is almost twice as potent as morphine. Being very water soluble allows for the small volumes necessary for intranasal administration, and as it is also lipophilic this makes it ideal for intranasal absorption and rapid transit across the blood brain barrier. Peak plasma concentrations are attained within approximately five minutes (3).

The highly vascularised nasal mucosa and the olfactory tissue in direct contact with the central nervous system allow nasally administered drugs to be rapidly transported into the bloodstream and the brain, with the onset of action approaching that of intravenous therapy. First pass metabolism via the liver is also avoided resulting in high bioavailability of medication.

Two UK based randomised controlled trials have compared intranasal diamorphine to intramuscular morphine (3, 4). The two methods were found to be comparable in terms of safety and efficacy (3, 4). The onset of action of intranasal diamorphine is significantly faster than intramuscular morphine (3). Parents and nursing staff found intranasal administration more acceptable and children found the procedure less distressing than an intramuscular injection (3).

A recent survey looking at the use of the intranasal medication in paediatric emergency departments in England and Wales concluded that intranasal diamorphine is safe and effective in the management of pain in the paediatric emergency setting and its ease of administration makes it ideal for use in a traumatised child (5).

It is recommended that intranasal diamorphine should be used as first line opiate analgesia in the paediatric Emergency department as it is safe, faster in onset of action, inexpensive, easy to administer and more acceptable to children, parents, and staff with minimal training in SASH.(7,8, 10). The clinical effectiveness committee of the College of Emergency Medicine recommends alleviation of moderate to severe pain in children within 20 minutes of arrival in the ED. This is audited annually amongst all hospitals in the UK (Acute Hospital portfolio audit) (9).

AIM

The safe administration of intranasal diamorphine to relieve pain in children with moderate to severe pain attending East Surrey Hospital emergency department.

INDICATIONS

- Over 1 - 15 years of age
- Moderate to severe acute pain due to traumatic injuries
- No need for urgent IV access
- Haemodynamically stable with no signs of shock
- No respiratory compromise (baseline saturations >95% with no respiratory distress)
- Stable airway with a GCS 15/15
- Verbal consent from child, parents or legal guardian with clear documentation.

SUITABLE PATIENTS

- Clinically fractured or dislocated limbs
- Finger tip injuries
- Burns/scalds
- Suturing
- Wound redressing

CONTRAINDICATIONS

- Children under 10kg
- Airway or respiratory problem
- Need for an urgent IV access
- Head injury or Neurological problem
- Signs of circulatory or respiratory compromise
- Reduced level of consciousness
- Blocked nose both sides or epistaxis
- Opiate allergy
- Concomitant use of other opiates or midazolam

PREPARATION

- Get consent from the parent or legal guardian
- Weigh the child and approximate to the nearest 10kgs
- Take baseline pulse, SaO₂, Resp rate, Heart rate & document pain score
- ED doctor to prescribe the correct dose **0.1mg/kg**
- Use the chart provided to determine the amount of dilutant (0.9% normal saline) required into the 10mg ampoule of Diamorphine
- use a 1ml syringe to add the amount of 0.9% normal saline required
- Discard all but 0.2 ml of diamorphine
- All children receive 0.2 ml of the solution regardless of age /size
- Attach the 1ml syringe to a mucosal atomizer device.

DILUTE 10mg DIAMORPHINE POWDER WITH SPECIFIC VOLUME OF NORMAL SALINE AS HIGHLIGHTED BELOW

WEIGHT	Dose of Diamorphine in milligramme after dilution (0.1mg/kg)	Add the respective volume of 0.9% normal saline into a 10mg diamorphine ampoule to achieve required dose in 0.2mls.
10kg	1.0mg	1.9 mls
15kg	1.5mg	1.3 mls
20kg	2.0mg	1.0 mls
25kg	2.5mg	0.8 mls
30kg	3.0mg	0.7 mls
35kg	3.5 mg	0.6 mls
40kg	4.0mg	0.5 mls
50kg	5.0mg	0.4 mls
60kg	6.0mg	0.3 mls

Volume of dilutant = 10/weight (kg)

ADMINISTRATION

- Nasal Diamorphine can be administered by a registered nurse or a doctor.
- Ask the child to gently tip their head back, occluding one nostril gently place the atomizer into one nostril.
- Push the contents of the syringe into the nostril and at the same time ask the child to sniff.
- Once in remove the syringe but not the atomizer, draw air into the syringe and then flush the atomizer with the air
- Not all children may cooperate but this is a quick painless method of pain relief
- Children may sneeze after administration and may have funny taste in their mouth
- The **maximum dose is 10milligramme** only

ADDITIONAL ANALGESIA

- **NO additional opiates or midazolam should be prescribed at the same time.**
- Oral paracetamol and ibuprofen may be given if tolerated.
- If the pain has not improved after 20 minutes, a doctor should review the patient, and repeat dose of opiate given with a maximum number of 6 doses in 24 hours.
- Further opiates can be given intranasally, orally or intravenously
- IV access should be established as soon as the child is comfortable.

MONITORING

- All children should have regular Pulse, Respiratory Rate, Saturations, GCS or AVPU checks with full resuscitation facilities nearby.
- Assess Pain score using age appropriate assessment tools
- 5 to 10 years: Wong and Baker “faces”
- Over 10 years: Numerical rating scales
- Under 5s: lack cognitive maturity to use assessment scales.
Use physiological parameters and distress to assess their pain.
- Please repeat these observations every 15 minutes for 1 hour
- Inform about diamorphine use during ED handover and on admission to the wards.

ADVERSE EVENTS

- Local irritation of nostril
- Nausea
- Vomiting
- Itching
- Respiratory depression (none reported)

USE OF ANTI - EMETICS

Nausea and vomiting are common side effects of opiates and should be treated with antiemetics.

Use Cyclizine first line

- 1mg/kg orally or slow iv bolus
- Maximum single dose: <6 years 25mg, >6 years 50mg.
- Can be given TDS

Use Ondansetron second line

- 100mcg/Kg slow IV bolus
- Maximum single dose 4mg
- Can be repeated every 8-12 hours

USE OF NALOXONE

- Reverses respiratory depression and/or over sedation.
- May reverse the analgesic effects in some children
- Initial dose 10mcg/kg bolus
- Followed by 100mcg/kg if no response (maximum 2mg)
- Naloxone has a very short half life, so repeat the dose to maintain opioid reversal
- Continue to monitor every 15 minutes as above.

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Subject	This policy lays out guidance in relation to the administration of intranasal Diamorphine in children with acute onset pain.
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Related documents	Pain score in children
Documents replaced	New policy