

**STANDARD OPERATING PROCEDURE  
FOR INTRANASAL DIAMORPHINE AND FENTANYL FOR ACUTE PAIN IN  
CHILDREN**

|                       |              |                    |                  |
|-----------------------|--------------|--------------------|------------------|
| <b>Date approved</b>  |              | <b>Review Date</b> | Normally 3 years |
| <b>Effective from</b> | January 2020 | <b>Version:</b>    | One              |

|  |                                   |
|--|-----------------------------------|
| <b>Service</b>                         | Paediatrics, Women's and Children |
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| <b>Approving Committee(s) /Officer</b> |                                   |

|                             |  |
|-----------------------------|--|
| <b>Consultation</b>         | ED team, Anaesthetic Consultants                                       |
| <b>Related policy</b>       |  |
| <b>Standards</b>            |  |
| <b>Superseded documents</b> |  |
| <b>Keywords</b>             | Paediatric, intranasal, fentanyl, diamorphine, acute pain, sickle cell |
| <b>Intranet locations</b>   |  |

| <b>Document Revision Record</b> |                         |                          |                   |
|---------------------------------|-------------------------|--------------------------|-------------------|
| <b>Amendment Date</b>           | <b>Version Replaced</b> | <b>Sections Involved</b> | <b>Amendments</b> |
| Draft 1                         |                         |                          |                   |

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## **Background**

- If severe pain is anticipated, early adequate pre-emptive treatment is better than attempting to control pain after it has started
- The intranasal (IN) route is a proven highly effective option for emergency management of pain in children
- Wherever practical, remember to include non-opioid drugs as per WHO analgesic ladder (please refer to “Guidelines for Treating Acute Pain in Paediatric Inpatients”)

## **Indication**

- Children over 1 year or 10kg. If outside these demographics please discuss with ED consultant, senior paediatrician or pain service
- No IV cannula available or IV cannulation not desirable or required for treatment purposes
- Short-acting pain relief for moderate to severe pain requiring immediate opioid analgesia (e.g. pain from trauma, burns, acute sickle cell disease pain in ED)

## **Contraindication**

- Altered conscious state: GCS < 15, AVPU: response other than “A” (e.g. significant head injury)
- Bilateral occluded nasal passages
- Epistaxis
- Known allergy to diamorphine or fentanyl

## **Adverse Effects**

Adverse effects are uncommon but may include:

- Increased sedation
- Respiratory depression
- Hypotension
- Nausea and vomiting
- Pruritus

## **Observation and Monitoring**

- Obtain baseline observation before and after administering opioid medication: HR, RR, BP, O<sub>2</sub> Sats, sedation and pain scores
- Monitor closely for increase in sedation and other adverse effects
- Monitor oxygen saturation for 20 minutes post administration (RCEM, 2017)
- Monitor the patient in a clinical area for 1 hour post opioid administration. Nurse escorts are required for 1 hour post administration if the patient is to leave the department

## **Treatment of Increased Sedation and Respiratory Depression**

- **Call for help**
- Stimulate patient
- Administer oxygen
- If required support airway and maintain ventilation
- Administer **naloxone 4 micrograms/kg IV or 60 micrograms/kg IM**

## INTRANASAL DIAMORPHINE

### Dose

- **100 micrograms/kg/dose** (over 10 kg or 1 year, max. 6 mg/dose)
- Peak plasma levels at 5 minutes
- Repeat after 10 - 20 minutes, if required
- Multiple IN diamorphine doses may be used as per clinical assessment but consider if longer acting analgesia would be more appropriate
- If further analgesia is required after the second dose consider alternative analgesia

### Preparation and Administration

1. Prescribe **100 micrograms/kg/dose** (max 6 mg/dose)
2. Dilute 10 mg diamorphine powder with the volume of water for injection (WFI) stated in the table below. If the child's weight is not shown then round to the nearest weight category
3. **Draw up 0.2 mL only** using a 1ml syringe
4. Position patient sitting up at 45° or with head to one side
5. Insert syringe into one nostril and aim for the centre of the nasal cavity. Depress the plunger quickly. Hold the one nostril shut for 5 seconds to prevent medication dribbling out of nostril
6. Discard the unused solution

**Intranasal Diamorphine Dose Preparation Table**

| Patient's weight (to nearest kg) | IN diamorphine dose (mg) | Volume (ml) of WFI to add to 10 mg diamorphine ampoule |
|----------------------------------|--------------------------|--|
| 10                               | 1                        | 1.9  |
| 11                               | 1.1                      | 1.8  |
| 12                               | 1.2                      | 1.6  |
| 13                               | 1.3                      | 1.5  |
| 14                               | 1.4                      | 1.4  |
| 15                               | 1.5                      | 1.3  |
| 16                               | 1.6                      | 1.2  |
| 18                               | 1.8                      | 1.1  |
| 20                               | 2                        | 1  |
| 22                               | 2.2                      | 0.9  |
| 25                               | 2.5                      | 0.8  |
| 30                               | 3                        | 0.7  |
| 35                               | 3.5                      | 0.6  |
| 40                               | 4                        | 0.5  |
| 50                               | 5                        | 0.4  |
| 60                               | 6                        | 0.3  |

## INTRANASAL FENTANYL

### Dose

- **1.5 micrograms/kg/dose** (over 10 kg or 1 year, max. 90 micrograms/dose)
- Peak plasma levels at 7 minutes
- Repeat after 10 – 20 minutes, if required
- Multiple IN diamorphine doses may be used as per clinical assessment but consider if longer acting analgesia would be more appropriate
- If further analgesia is required after the second dose consider alternative analgesia

### Preparation and Administration

1. Prescribe **1.5 micrograms/kg/dose** (max. 90 micrograms/dose)
2. **Fentanyl ampoule 50 micrograms/mL**
3. Draw up the calculated dose of fentanyl according to a weight based calculation or per table on the right.  
If the child's weight is not shown then round to the nearest weight category
4. Position patient sitting up at 45° or with head to one side
5. If dose is > 1 mL split between nostrils
6. Insert syringe into one nostril and aim for the centre of the nasal cavity. Depress the plunger quickly. Hold the one nostril shut for 5 seconds to prevent medication dribbling out of nostril.
7. Discard the unused solution

**Intranasal Fentanyl Dose Preparation Table**

| Patient's weight<br>(to nearest kg) | IN fentanyl<br>dose (mcg) | Volume (ml)<br>of IN fentanyl<br>to be given |
|-------------------------------------|---------------------------|--|
| 10                                  | 15                        | 0.3  |
| 15                                  | 22.5                      | 0.5  |
| 20                                  | 30                        | 0.6  |
| 25                                  | 37.5                      | 0.8  |
| 30                                  | 45                        | 0.9  |
| 35                                  | 52.5                      | 1.1  |
| 40                                  | 60                        | 1.2  |
| 45                                  | 67.5                      | 1.4  |
| 50                                  | 75                        | 1.5  |
| 55                                  | 82.5                      | 1.7  |
| 60                                  | 90                        | 1.8  |

## **References**

Leicester Children's Emergency Department (2018) Standard Operating Procedure for Intranasal Analgesia (Fentanyl and Diamorphine) for Children in the Emergency Department

Princess Margaret Hospital Perth, Western Australia (2018) Intranasal Fentanyl. Emergency Department Clinical Guidelines.

The Royal College of Emergency Medicine (2017) Management of pain in children. Best Practice Guideline. Management.

Royal Liverpool Children's NHS Trust (2007) Guidelines for the Use of Intranasal Diamorphine in the Emergency Department.

