

## **Guideline on the Delivery of Intranasal Fentanyl in Children using a MAD® (Mucosal Atomiser Device) in the Emergency Department**

---

### **Authors:**

Prof. Ronan O'Sullivan, Consultant in PEM  
Elaine O'Farrell, CNF, ED  
Diarmuid Nolan, CNF, ED  
Fiona Ahern, Pharmacist, ED

Issue Date: December 2016

Review Date: January 2019

---

### **Introduction**

Children frequently attend the emergency department with acute pain as a result of an illness or injury that requires rapid treatment. Pain relief should be given quickly to treat pain effectively and reduce stress caused to the child. The intranasal (IN) route of medication administration has shown to be extremely effective in rapidly treating pain in these circumstances. Intranasal medications can be drawn up in a syringe and administered immediately using the MAD® (Mucosal Atomiser Device) into one or two nostrils. IN fentanyl (INF) is an effective analgesic for the treatment of children with acute moderate to severe pain, and its administration appears to cause minimal distress (Murphy, O'Sullivan *et al*, Cochrane Review 2014).

### **Indications**

There are several theoretical and practical advantages of using INF. It is more readily accepted by patients as it is less invasive than IV cannulation or the rectal route. INF is ideal for rapidly treating pain in numerous circumstances, such as:

- Burns and painful wound dressing changes;
- Long bone fractures and other trauma cases.

### **Contraindications**

- Head trauma;
- Chest trauma;
- Abdominal trauma and hypovolaemia;
- Decreased level of consciousness;
- Allergy to fentanyl;
- Precautions should be taken if patient has blocked nose or URTI as there may be unreliable drug delivery. Any such patient should have their nasal cavity gently suctioned prior to administration;
- Epistaxis;
- Children under 1 year of age.

### Guidelines for Equipment (Figure 1)

- 1ml luer lock syringe
- Filter needle to draw up medication
- Mucosal atomiser device (MAD<sup>®</sup>)
- 1.5 micrograms/kg/dose (use 50 microgram/ml solution) of medication



Figure 1

### Procedure for administration of intranasal medication

ACTION	RATIONALE & REFERENCE
<p>Explain to patient/parents what you are going to do.</p> <p>Wash hands and put on disposable gloves.</p> <p>All medications must be administered as per hospital guidelines and individual manufacturer's instructions.</p> <p>Follow the An Bord Altranais guideline for the safe administration of medication: right drug, right route, right time, right dose, and right patient.</p> <p>Draw up the medication as prescribed by the Doctor and attach the syringe to the atomiser device. Draw up dose <b>plus additional amount 0.1ml for dead space</b>.</p>	<p>This ensures cooperation and you can check parents and child's level of understanding (Hockenberry 2008). To reduce transfer of micro-organisms.</p> <p>To ensure safe administration of medications (An Bord Altranais 2007).</p> <p>This allows for priming of the atomiser device. (Please see Table 1 for doses).</p>
<p>Attach the atomiser tip via the Luer lock mechanism, it should twist into place (Figure 2).</p>	<p>This allows the syringe to be kept horizontal (Shepherd 2007).</p>
<p>Check the patient's nostrils for blood or mucus discharge. Suction the nasal passage prior to delivery of medication.</p> <p>The patient should be reclining at a 45-degree angle (Figure 3).</p>	<p>Presence of blood/mucus will limit medication absorption (Wolfe 2010).</p>
<p>Using your free hand to hold the crown of the patient's head stable, place the tip of the atomiser against the nostril snugly and aim for the centre of the nasal cavity.</p> <p>For dosages of 1 ml or more the volume should be halved in each nostril.</p> <p>Briskly compress syringe plunger and spray contents quickly into the nostril - medication will expel like a mist in one rapid dose. Hold atomiser for 5-10 seconds after administration.</p> <p>Document all care given; and evaluate the effectiveness of the fentanyl delivery and record any adverse reactions.</p> <p>Record vital signs after administration of opiate medication delivery. Heart rate, respiratory rate, oxygen saturation, pain score should be recorded <b>5 minutes</b> after administration. If sedated or abnormal vital signs, inform treating doctor and continue observations every <b>5 minutes</b> until return to baseline.</p> <p>A second dose may be given after <b>10 minutes</b>.</p> <p>After the last dose has been given, a further set of observations at <b>10 minutes</b> should be completed then half hourly for one hour.</p>	<p>To ensure maximum absorption and double the available mucosal surface area for medication absorption and increase rate and amount absorbed.</p> <p>To facilitate communication, to provide evidence of delivery of quality care, and to ensure evaluation of this care to ensure safe practice and maintain accountability (An Bord Altranais, 2007).</p> <p>This will allow for the assessment of the rare but possible risk or respiratory depression from an opiate.</p> <p>The half life of fentanyl is 6 minutes, but its clinical duration of effect is up to one hour.</p>

Table 1. Fentanyl (50mcg/ml) Intranasal Dose of for Weight guide

<b>Weight (kgs)</b>	<b>Dosage (1.5mcg/kg)</b>	<b>Volume(ml)</b>
10	15	0.3
11	15	0.3
12	20	0.4
13	20	0.4
14	20	0.4
15	24	0.5
16	24	0.5
17	24	0.5
18-24	30	0.6
25-29	40	0.8
30-34	45	0.9
35-39	55	1.1
40-44	60	1.2
45-49	70	1.4
50-54	75	1.5
55-59	85	1.7
60-64	90	1.8
65-69	100	2