Intranasal Fentanyl for procedural pain

Comfort Kids Program 2016
IN fentanyl

- What
- Why
- How
- Resources
What

• Analgesic opioid
• Rapid onset of effect 2-5 minutes
• Duration of effect 30-60 minutes
• If opioid or sedation agent administered within 2 hours, assess UMSS & undertake consultation
Why

• Intranasal more effective than oral route
  • Enhanced absorption and avoidance of 1st pass effects
  • Theoretically direct nasal to CNS delivery allows lower dosing with less delivery to none targeted organs
• Rapid onset
• Titrated
• Short acting
Indications

• Age > 6 months (corrected age)
• Minor painful procedures of short duration
• Limited IV access
• Potent & rapid onset of analgesia required
• Single procedural analgesic agent
• Adjunct to N20 (undertake risk assessment)
Indications

- Paediatric minor painful injuries or procedures:
  - Orthopaedic trauma not requiring an IV (or prior to IV)
  - Pain control is needed but oral medication is too slow
  - Burn dressing changes
  - Re-packing wounds such as abscesses
  - IM shot for pain control (IN works as well or better with faster onset and no pain on delivery)
Contraindications

- < 6 months (corrected age)
- UMSS ≥2
- Bilateral occluded nasal passage
- Epistaxis
**Intranasal Fentanyl**

**Indications**
- Analgesic opioid
- If opioid or sedation agent administered within 2 hours, assess RUMS & undertake consultation

<table>
<thead>
<tr>
<th>Indications</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt; 6 months (corrected age)</td>
<td>&lt; 6 months (corrected age)</td>
</tr>
<tr>
<td>Minor painful procedures of short duration</td>
<td>UMGS 52</td>
</tr>
<tr>
<td>Limited IV access</td>
<td>Bilateral occluded nasal passage</td>
</tr>
<tr>
<td>Potent &amp; rapid onset of analgesia required</td>
<td>Eosinophilia</td>
</tr>
<tr>
<td>Single procedural analgesic agent</td>
<td>Adjunct to N2O (undertake risk assessment)</td>
</tr>
</tbody>
</table>

**Onset of action**
- Rapid onset of effect (2-3 minutes)

**Duration of effect**
- 30-60 minutes

**Initial Dose**
- Second dose (if UMGS <= we may administer after 10 minutes)

**1.5 micrograms/kg**
- 0.75 - 1.5 micrograms/kg

**Dosing schedule per the Intranasal Fentanyl CPG**
- Use 100 micrograms/ml strength fentanyl solution for intravenous use
- Volumes have been rounded to the nearest 0.05ml

<table>
<thead>
<tr>
<th>Weight estimate (kg)</th>
<th>Initial dose (1.5 micrograms/kg)</th>
<th>Volume</th>
<th>Initial dose (mL)</th>
<th>Top-up dose (0.75 - 1.5 micrograms/kg)</th>
<th>Volume</th>
<th>Top up dose (mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>10 mcg</td>
<td>0.2 mL</td>
<td>5 mcg (limited)</td>
<td>0.1 mL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>15 mcg</td>
<td>0.3 mL</td>
<td>7.5 - 15 mcg</td>
<td>0.15 - 0.8 mL</td>
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<td></td>
</tr>
<tr>
<td>12</td>
<td>18 mcg</td>
<td>0.5 mL</td>
<td>9 - 18 mcg</td>
<td>0.2 - 0.35 mL</td>
<td></td>
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<tr>
<td>14</td>
<td>20 mcg</td>
<td>0.4 mL</td>
<td>10 - 20 mcg</td>
<td>0.2 - 0.4 mL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>24 mcg</td>
<td>0.5 mL</td>
<td>12 - 24 mcg</td>
<td>0.25 - 0.5 mL</td>
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</tr>
<tr>
<td>18</td>
<td>27 mcg</td>
<td>0.55 mL</td>
<td>13.5 - 27 mcg</td>
<td>0.25 - 0.55 mL</td>
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<tr>
<td>20 - 24</td>
<td>30 mcg</td>
<td>0.6 mL</td>
<td>15 - 30 mcg</td>
<td>0.3 - 0.6 mL</td>
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<td></td>
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<tr>
<td>25 - 29</td>
<td>37.5 mcg</td>
<td>0.75 mL</td>
<td>18.75 - 37.5 mcg</td>
<td>0.35 - 0.75 mL</td>
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<td></td>
</tr>
<tr>
<td>30 - 34</td>
<td>45 mcg</td>
<td>0.9 mL</td>
<td>22.5 - 45 mcg</td>
<td>0.45 - 0.9 mL</td>
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<tr>
<td>35 - 39</td>
<td>52.5 mcg</td>
<td>1.05 mL</td>
<td>26.5 - 52.5 mcg</td>
<td>0.5 - 1.05 mL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 - 44</td>
<td>60 mcg</td>
<td>1.1 mL</td>
<td>30 - 60 mcg</td>
<td>0.6 - 1.1 mL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 - 49</td>
<td>67.5 mcg</td>
<td>1.35 mL</td>
<td>33.75 - 67.5 mcg</td>
<td>0.65 - 1.35 mL</td>
<td></td>
<td></td>
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<tr>
<td>&gt; 50</td>
<td>75 mcg</td>
<td>1.5 mL</td>
<td>37.5 - 75 mcg</td>
<td>0.75 - 1.5 mL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IN Fentanyl order
IP Procedural Sedation Order set

Order set
- IN Fentanyl
- Adjuncts
  - Topical LA’s (Emla, AnGEL)
  - Sucrose
- Procedural Support
  - List of agents
  - EPT Referral
  - Links to PSWA Procedure & CPG’s
- Activates Nursing order
  - Sedation Narrator
  - Observations & Weight
IP Procedural Sedation order set

Order Sets = Select from L panel
Go to order sets = Select from R panel
Search order sets = IP Procedural Sedation
Favourites = R click to add
Open Order sets = centre panel
Select Medication & Sign
Documentation: Sedation Narrator

Record of Sedation now SN EMR Checklists

Locate in More – click to add to side bar - Open & Resize

Accept Sedation Documentation Start

Don’t file END until summary complete

Start & End Bookend the Sedation Narrator
Sedation Narrator

Views Event Log, Patient Summary and Orders

- **Event Log** = Checklists & Observations
- **View Orders** = IP Procedural Sedation Order Set
- **Patient Summary** = IP Summary
Sedation Narrator - Pre-Sedation

Checklists appear in Left panel of SN as Active Alerts Mandatory to complete Pre-Sedation Checklist prior

Show Row Info for PSWA Procedure tips for: Exclusion Criteria, Risk Assessment, Consultation, Fasting, Staffing, Equipment, Consent & Preparation of Child
Sedation Narrator Intra-Sedation Checklists

Intra-Sedation Checklist  Time out/ Pt Identification & Continuous monitoring Observations/
UMSS captured in QuickBar & File
Document if UMSS 2 – 5 minutely & use Notes to add N20 % / comments Talking
Document 5 minutely UMSS & Observations if UMSS > 1
Use Notes to make comments

UMSS 2 N20 @ 60% weaned to 40% or Patient vomit FM02

Don’t forget to File your data
Use Intra-Sedation Buttons for additional information – Right panel.
Sedation Narrator Post-Sedation Checklists

Post-Sedation Checklist: Line of sight provided / 02 given/ Return to Baseline

Is Patient Safe to Discharge/ Transfer?
**Procedural Sedation Summary** – was this a Successful event or Not - AE's

- Procedure attempts
- Sedation agent
- Analgesia (includes LA)
- Adjuncts (sucrose, lip smacker)

**Non Pharmacological Procedural Support** (EPT CF CKP & Coping Strategy)

**FILE End** Bookend the event & SN complete
Go to IP Summary Left panel

Sedation Timeline review previous Sedation events

Add to IP Summary toolbar using Right top right
Administration

• Draw up appropriate dose for weight (CPG)
• plus 0.1ml extra to the first dose (dead space)
• Attach Mucosal Atomiser Device (MAD300) on to the end of the syringe
• Sit the child at approximately 45 degrees or with head to one side
• Directed MAD at 45 degrees to spray the turbinates
• Do not direct MAD horizontally along the nasal floor
• Avoid dose running into pharynx & swallowed (reduce bioavailability & efficacy)
• Insert the device loosely into the nostril
• Press the plunger quickly
• Doses are to be divided between nostrils (1/3 to ½ ml per nostril is ideal)
• If NGT. Can push up to 1 ml per nostril though some will run off (titrate)
• Do NOT draw up 0.1ml extra for second dose when re-using the delivery device (MAD)
**Administration**

**Intranasal Fentanyl**

**Delivery via Mucosal Atomiser Device (MAD300) per the Intranasal Fentanyl CPS**

- Draw up appropriate dose for weight (see above table) plus 0.1ml extra to the first dose (to account for the dead space in the device)
- Attach Mucosal Atomiser Device (MAD300) on to the end of the syringe
- Sit the child at approximately 45 degrees or with head to one side
- The MAD is directed at 45 degrees to spray the turbinates, rather than along the nasal floor
- If directed horizontally the dose runs into pharynx & is swallowed (reducing bioavailability and efficacy)
- Insert the device loosely into the nostril and press the plunger quickly
- Dose are to be divided between nostrils

*Note: Do NOT draw up 0.1ml extra for second dose when re-using the delivery device (MAD)*

**Intranasal Fentanyl CPS**

**Intranasal Midazolam fact sheet**

**Adverse effects**

- Respiratory depression
- Hypotension
- Nausea and vomiting: increase risk of vomiting when combined with N,O
- Chest wall rigidity (only reported with large IV doses)
- Pruritus

**Monitoring**

- Hr, RR, SpO₂, UHMVS monitored continuously

**Reversal agent**

- Naloxone

Naloxone boks 0.1mg/kg IM or IV, maximum 2mg
Mucosal Administration Device

Using the LMA® MAD Nasal™ Intranasal Mucosal Atomization Device

**MATERIALS**
- LMA® MAD Nasal™ Device with valve adapter and 1 mL or 3 mL syringe
- Medication of appropriate concentration for intranasal mucosal delivery

**PROCEDURE**
1. Remove and discard the green valve adapter cap.
2. Firmly insert the medication vial with the syringe valve adapter.
3. Align and apply the proper volume of medication required to treat the patient via each 0.1 mL of medication should be drawn up to account for the dead space in the device.
4. Remove the syringe from the valve adapter.
5. Firmly compress the syringe plunger to deliver half of the medication into the nasal mucosa.
6. Move the device over to the opposite nostril and repeating steps 4 and 5, administer the remaining medication into the nasal mucosal.

**TIPS TO IMPROVE SUCCESS**
- Use a properly sized, flexible bevel needle
- Avoid using the device in any patient with a history of nasal trauma or infection
- Ensure the medication is compatible with the device
- Use a properly sized and flexible bevel needle

For use with drugs approved for intranasal delivery.

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Teleflex

M medicinal.

Mucosal Administration Device
A&P of the nose

- Nasal mucosal surface area (150-180cm$^2$)
- High blood flow
- pH 5.5-6.5 maintains glycoproteins to which drugs attach
- Nasal drug absorption depends on
- Direct connection to CNS via the olfactory route
IN fentanyl – child

Intranasal fentanyl delivery procedure:

**Materials:**
1. 1 ml or 3 ml syringe
2. Needle to draw up the fentanyl
3. Atomizer
4. Vial of fentanyl

**Procedure:**
1. Aspirate the proper volume of fentanyl per weight-based dosing protocol of the study.
2. Twist off/ remove the syringe from the needle/ injector device.
3. Attach the atomizer tip via Luer lock mechanism – it twists into place.
4. Using your free hand to hold the crown of the head stable, place the tip of the atomizer snugly against the nasal opening slightly up and outward (towards the top of the ipsilateral ear).
5. briskly compress the syringe plunger to deliver approximately half of the medication into the nostril.
6. Move the device over to the opposite nostril and briskly administer the remaining half of the medication into that nostril.
7. Consider using a pulse oximeter for 45-60 minutes following medication delivery due to the rare but possible risk of respiratory depression from opiate.
Adverse Effects

• Respiratory depression
• Hypotension
• Nausea and vomiting- increase risk of vomiting when combined with N20
• Chest wall rigidity (only reported with large IV doses)
• Pruritus
Monitoring & Reversal

- HR, RR, SpO2, UMMS monitored continuously
- Naloxone bolus 0.1mg/kg IM or IV, maximum 2mg
- **Naloxone** is effective, **intranasal** if you need a reversal agent
- Remember extra volume into the syringe to account for the dead space that will remain.
- Don’t use same MAD due "dead space"
Considerations

• NGT
• Bleeding
• Opioid effect IN fentanyl
  • Patient require additional analgesia, consider timing the procedure with the patient’s baseline analgesia
• N20
IN fentanyl N20

• The maximum percentage of N20 which can be delivered is 70%, with a minimum O2 30%
• Additional opioid or sedation agents may have synergistic effect producing excess sedation
• Assess before commencing N20
  • If UMSS ≤ 1 N20 must be titrated to maintain UMSS ≤ 2
  • If UMSS is ≥ 2 do not administer N20 seek consultation
Recap

• Assessment
  • UMSS
  • Sedation narrator
  • Procedure
  • Pain
  • Dual agents
  • Consultation

• Dosing
  • CPG / Procedure

• Technique
RCH R&R

- Procedural Sedation- ward & ambulatory areas - at RCH
- Intranasal Fentanyl CPG
- Intranasal Midazolam fact sheet
- Prommer, , 2011
- Buck, 2013