HMC EM EVIDENCE-BASED CLINICAL ALGORITHM:

Intranasal (IN) Fentanyl in Paediatric Patients

Version date: 24 May 2017
Authors: C Richards (EM), R Hussein (EM), A Elmoheen (EM)

Evidence basis:

-Borland *et al*. RCT comparing IN fentanyl to IV morphine for managing acute pain in children in ED. *Ann Emerg Med* 2005; 49: 335-340.
-Cole *et al*. IN fentanyl in 1-3 years old. *Emergency Medicine Australasia* 2009; 21: 395-400.
-Clinical Practice Guidelines of Royal Children's Hospital, Melbourne, Australia.
-Finn M, *et al*. IN fentanyl for analgesia in the paediatric ED. *EMJ* 2010; 27: 300-301.
-IN fentanyl better than parenteral morphine for managing acute severe pain in children? *EMJ* 2011; 28: 1077-1078.

This EBCA:
- has been endorsed by HMC EM and other consultants for education and assistance with clinical practice in HMC's EDs.
- is intended to complement any related multispecialty Clinical Practice Guideline prepared as per HMC policy.
- is not presented as the binding "standard of care" but is rather a reference tool to inform clinical judgment.

Algorithm aim & applicability:
This algorithm applies to paediatric patients in whom IN fentanyl administered by mucosal atomizer device (MAD) is being considered for treatment of pain for which analgesia stronger than paracetamol or ibuprofen is required (*e.g.* fractures, burns, lacerations, painful procedures). The aim of this EBCA is to facilitate safe and effective pain relief by using an opioid route that does not require IV access.

IN fentanyl: Absolute contraindications:
- Age < 1 year
- Allergy to fentanyl
- Altered mental status
- Haemodynamic instability
- Occluded nostrils bilaterally
- Epistaxis

Does patient have a significantly painful condition for which paracetamol or NSAIDs have either failed or are not indicated?

No → Do not use IN fentanyl (consider ketamine)

Yes → Absolute contraindication to IN fentanyl?

Yes → Do not use IN fentanyl (consider ketamine)

No → Does patient weigh > 50 kg?

Yes → Relative contraindication to IN fentanyl; consider alternative approach

No → **Prepare for administration of initial IN fentanyl dose:**
Discuss plan with patient/family
Position patient: Head up 45 degrees or head-tilt to side
Load MAD with proper IN fentanyl volume (see left)

IN fentanyl dosing: Background information
1) For this EBCA, actual body weight is dosage basis.
2) The IV preparation of fentanyl (**100 mcg in 2 mL**) is used for all volume calculations in this EBCA.
3) MAD dead-space volume is 0.1 mL; thus an additional 0.1 mL (5 mcg) is added to the 1st IN fentanyl dose (but does not reach patient)

1st-dose calculation

Kg	1.5 mcg/kg	Total volume (1.5 mcg/kg + 0.1 mL)
7	10 mcg	.30 mL
10	15 mcg	.40 mL
12	18 mcg	.45 mL
14	20 mcg	.50 mL
16	24 mcg	.60 mL
18	27 mcg	.65 mL
20-24	30 mcg	.70 mL
25-29	37.5 mcg	.85 mL
30-34	45 mcg	1.00 mL
35-39	52.5 mcg	1.15 mL
40-44	60 mcg	1.30 mL
45-49	67.5 mcg	1.45 mL

2nd-dose calculation
1) Dose ranges from half of 1st-dose to repeat of full 1st-dose
2) If using same MAD as used to deliver 1st-dose, subtract 0.1 mL from above 1st-dose table for volume of a 2nd dose of 1.5 mcg/kg

Administer IN fentanyl
Step 1: Insert MAD loosely into one nostril
Step 2: Quickly depress plunger to deliver ½ of initial dose
Step 3: Repeat above in contralateral nostril
Step 4: Commence q5-minute assessment of BP, HR, S_pO_2 (will continue through 10 minutes after last dose of IN fentanyl)

Monitoring, repeat dosing, & discharge criteria:
- Standard opioid concerns, monitoring, & interventions apply
- *If need reversal*, naloxone 0.1 mg/kg IM or IV (max 2 mg)
- May give one additional IN fentanyl dose of 0.75-1.5 mcg/kg if needed, 7-10 minutes after 1st dose (see dosing table, left); use the same MAD for the 2nd dose as used with the 1st dose
- Discharge when mental status and vital signs are at baseline