 <b>COLLINGWOOD G&amp;M HOSPITAL</b>	Document: <b>Policy and Procedure</b>	Primary Manual: <b>Emergency</b>	Folder:
	Title: <b>Intranasal Drug Delivery Via Atomizer</b>		
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Key Words: Intranasal, Atomizer			
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**Purpose:**

The nasal mucosa offers numerous benefits as a target tissue for drug delivery, a wide variety of medication may be administered intranasally for topical, systemic and central nervous system action. This document outlines the procedure for delivering medication via this route using an atomizer device.

**Policy Statement:**

RNs in the emergency department who have been educated on how to administer intranasal fentanyl and midazolam may administer as per policy and procedure.

**Guiding Principles:**

**Place patient on cardiac monitor for continuous monitoring.**

**Pre-administration:** monitor and record vital signs (HR, RR, BP, SP0<sup>2</sup>) and pain score using developmentally appropriate pains scale.

**Post- administration:** monitor and record vital signs, pain score and arousal score (modified aldrete score located on order set) every 5 minutes x 4 then after 30 minutes and PRN. Monitor for any allergic reactions (e.g. hives, urticaria).

Maximum volume per nostril is 1mL

**Definitions:**


**Independent Double Check:** An independent double check is one in which a colleague, with no prior knowledge of the previous calculation results, goes through he same preparatory steps and arrives at his/her calculation. The final calculations of each are compared, and any discrepancies are addressed before the medication is prepared/administered.

**Equipment:**

- Medication vial
- 1 or 3 mL syringe and blunt needle
- Atomizer device
- Chlorhexidine/alcohol swab
- Medication added label
- Gloves

**Procedure:**

PROCEDURE	Rationale
<p>1. <b>REVIEW</b> drug reference information:</p> <p>a. Action, indication</p> <p>b. Side effects</p> <p>c. Normal dosage</p> <p>d. Approved route</p> <p>e. Time of peak onset</p>	<p><i>Prevents medication error</i></p>
<p>2. <b>CALCULATE</b> dose based on patient's body weight (e.g. micrograms/kilogram or milligrams/kilogram) and ensure amount is in safe range for patient.</p>	
<p>3. <b>2nd RN or physician</b> required to <b>PERFORM</b> an <b>independent double check</b> of calculations for high risk medications and co-sign entry on MAR .</p>	
<p>4. <b>PERFORM</b> hand hygiene and prepare medication aseptically.</p>	<p><i>Standard/routine precautions</i></p>
<p>5. <b>PREPARE</b> ordered dose of medication:</p> <p>a. Draw up ordered dose in 1 or 3 mL syringe</p> <p>b. Attach atomizer</p> <p>c. Draw up 0.1mL air into syringe and move air bubble to plunger end</p> <p>d. Prime atomizer with medication</p> <p>e. Attach medication label</p>	<p><i>Facilitates completion of task in timely manner. Air is used to flush drug through atomizer and compensate for atomizer dead space. Ensures full dose is administered.</i></p> <p><i>Note: Dead space volume varies with atomizer brand.</i></p>
<p>6. <b>IDENTIFY</b> patient using 2 unique identifiers and <b>EXPLAIN</b> procedure.</p>	<p><i>Ensures identification mechanism is present to prevent treatments, medication, and procedures to wrong patient.</i></p>
<p>7. <b>MEASURE</b> and <b>RECORD</b> any pre-medication deliver assessments as needed.</p>	<p><i>Provides baseline assessment parameters.</i></p>

<p><b>8. POSITION</b> patient reclining at 45 degrees or sitting up with head tilted back to 45 degrees or supine if patient not able to recline at 45 degrees or sit up.</p>	<p><i>Facilitates administration of medication intranasally.</i></p>
<p>9. Using your free hand to hold the crown of the head stable, PLACE the tip of the atomizer snugly against the nostril aiming slightly up and outward (towards the top of the ear on the same side).</p>	<p><i>Ensures delivery of drug to appropriate mucosal surface in the nostril.</i></p>
	
<p>10. Briskly <b>DEPRESS</b> the syringe plunger to deliver approximately <u>half</u> of the medication into the nostril. Then, <b>MOVE</b> the device over to the opposite nostril and briskly administer the remaining half of the medication into the nostril. <b>Maximum volume per nostril is 1 mL</b></p>	<p><i>Splitting the dose doubles the available mucosal surface area (over a single nostril) for drug absorption and increases rate and amount of absorption.</i></p>
<p>11. <b>DISPOSE</b> used supplies and equipment, including atomizer, in appropriate container.</p>	<p><i>Standard/routine precautions. Atomizer is one time use product and must be disposed of following use.</i></p>
<p>12. <b>MEASURE</b> and <b>RECORD</b> post medication delivery assessments as needed.</p>	<p><i>Provides an ongoing record which helps to detect any changes in the patient's condition.</i></p>

**Documentation**

Document on appropriate record:

- Date and time of administration
- Dose administered
- Baseline assessments as required based on medication administered
- Post drug delivery assessments and observations
- Effectiveness of medication
- Patient tolerance to procedure and medication

## **GUIDELINES FOR THE ADMINISTRATION OF INTRANASAL FENTANYL**

### **Background**

The intranasal route for delivery of fentanyl has been shown to be an effective and safe alternative to intravenous opioids for the management of moderate to severe pain in infants and children.

### **Indications for Use**

Initial analgesic for children aged 1 month and older, in moderate to severe pain with:

- Fractures and dislocations
- Burns
- Major lacerations

### **Contraindications**

- Hypersensitivity or intolerance to fentanyl or its compounds

**The intranasal route is contraindicated in the following:**

- Bilateral occluded nasal passages or epistaxis (may cause unreliable drug delivery)
- Weight above 70 kg (volume of medication would exceed 2 mL total)

### **Precautions**

**Use with caution in the following:**

- Age less than 1 month
- Renal or hepatic impairment or biliary disease
- Hypotension
- Pulmonary or cardiovascular impairment
- Difficult airways
- Obstructive sleep apnea
- Head injury
- Seizure disorder
- Increased Intracranial Pressure (ICP)
- Altered mental status
- GI obstruction
- Inflammatory bowel disease
- MAO inhibitor antidepressants within the last 14 days
- Prior dosing with narcotic (may produce drug accumulations)
- Co-administered sedative/CNS depressants/Respiratory depressants and co-morbid medical conditions may enhance respiratory and circulatory depression and may require modification to dose.

### **Dose**

1.5 micrograms/kg

Use a 100 microgram/2mL vial

**NOTE:** An independent double check of drug calculation and preparation must be done prior to administration.

### **Side Effects**

Uncommon: nausea, vomiting, sedation

Rare (not described with IN use): respiratory depression, muscle rigidity (including chest wall)

### **Administration Technique**

Administer using a 1-3 mL syringe and atomizer. Refer to the Intranasal via Atomizer policy and procedure.

## **GUIDELINES FOR THE ADMINISTRATION OF INTRANASAL MIDAZOLAM**

### **Background**

The intranasal route for delivery of midazolam is a safe and effective means to achieve seizure control and to provide sedation/anxiolytics. Its rapid onset of action, social acceptability, ease of use and efficacy make it an ideal therapy for treatment of prolonged seizures when the buccal route is not appropriate or IV access is not immediately available. It is also effective treatment option for sedation in the emergency department when alternate routes are not available or practical.

### **Indications for Use**

- Rescue medication for prolonged seizures (seizures lasting longer than 5 minutes or a cluster of seizures with no return to baseline) in patients meeting at least one of the following criteria.
  - Patients with excessive oral secretions in whom buccal midazolam may not be adequately absorbed.
  - Patients who have been using this route in community prior to admission/arrival
  - Patients in whom the buccal route has been ineffective in the past.
- Children requiring sedation in the emergency department
  - Patients who do not have an IV access
  - Other routes are not available or practical (eg. Onset of action too slow)

### **Contraindications**

Hypersensitivity or intolerance to midazolam or its compounds

The intranasal route is contraindications in the following:

- Epistaxis
- Nasal blockage or trauma
- Dose greater than 1 mL in each nostril

**Precautions**

Use with caution in patients with significant nasal congestion or discharge (may cause unreliable drug delivery)

**Dose**

Seizures: midazolam 0.2 milligram/kg intranasal

Sedation in the emergency department: midazolam 0.1-0.2 milligram/kg intranasal

Maximum 10 mg/dose, 5 mg (1mL)/nostril

**NOTE:** An independent double check of drug calculation and preparation must be done prior to administration.

**Side Effects**

**CNS:** drowsiness, sedation, confusion

**HEENT:** bitter taste, nasal irritation and/or pain, headache, coughing

**RESP:** respiratory depression

**GI:** nausea, vomiting

**Administration Technique**

Administer using a 1-3 mL syringe and atomizer. Refer to the Intranasal via Atomizer policy and procedure.

**References:**

Wolfe, T.R. & Braude, D.A. (2010). Intranasal medication delivery for children: a brief review and update. *Pediatrics*, 126(3):532-7.

Therapeutic Intranasal Drug Delivery: Needleless treatment options for medical problems. Retrieved September 28, 2015 from <http://intranasal.net/>.

**Related Resources:**

BC Children’s Hospital. Intranasal Drug Delivery via Atomizer Procedure. 2012

**Data Charts**

Documents and tracks the progress of policy approval, revision, and archiving.

<b>PATH</b>	<b>COMMITTEE</b>	<b>DATE</b>	<b>PURPOSE</b>	<b>STATUS</b>
<b>Originating Committee</b>	Nurse Educator	08/09/2015	<b>DRAFT Agreement</b>	X completed
<b>Reviewing Committee</b>	Emergency Department Physicians	12/ 2015	<b>Review &amp; Agreement</b>	X completed
<b>Approving Committee</b>	Emergency Department Care Team	21/01/2016	<b>FINAL Approval</b>	X completed

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