

Intranasal Medication Administration Guidelines

Background

- Intranasal medication administration is a non-invasive, safe, and convenient route of drug administration.
- When administered intranasally, the onset of CNS active drugs is similar to that of intravenous administration.
- Intranasal administration may be advantageous in pediatric patients when administering medications for pain control or procedural sedation.

General Principles for Optimal Intranasal Administration

- **Minimize Drug Volume:** This can be achieved by using the most highly concentrated solution of the medication available. The maximum volume that should be administered per nostril is **1 mL**.
- **Clear Nostrils of Obstruction:** Each nostril should be visually inspected for any obstruction to the nasal mucosa, including blood or mucus, using suction to remove if needed.
- **Utilize Both Nostrils:** By delivering half of the dose into each nostril, more of the nasal mucosa is exposed to the drug, allowing for greater absorption
- **Atomization Device:** Use of a mucosal atomization device (MAD) will also allow for the delivery of the drug over a larger surface area of the nasal mucosa, therefore improving absorption and bioavailability.
- **Dosing:** Despite optimization of intranasal medication delivery, bioavailability may be reduced compared to that of intravenous administration, therefore dosing of specific medications may be higher than that of the intravenous route (see dosing chart below)
- **Tolerability:** To minimize discomfort associated with midazolam, consider premedication of each nostril with up to 10 mg (1 ml) lidocaine 1%. Lidocaine should not be admixed with any of these agents.

Preparing Medications for Intranasal Delivery

- Due to dead space within the MAD, an extra 0.1 mL of the drug should be drawn up into the syringe to provide the complete dose of the medication.
- Once the medication is in the syringe, the MAD easily luer locks onto the syringe for drug delivery.

Intranasal Medication Details

	Fentanyl (Sublimaze®)	Midazolam (Versed®)	Dexmedetomidine (Precedex®)
Dose	1-2 mcg/kg (max 100 mcg) Repeat ½ to full dose q10-15 minutes PRN pain	0.2-0.5 mg/kg (max 10 mg) Repeat ½ to full dose in 10-15 minutes if needed to achieve goal sedation	2-3 mcg/kg (max 100 mcg)
Concentration	50 mcg/mL	5 mg/mL	100 mcg/mL
Onset of Action	3-5 minutes	4-10 minutes	15-20 minutes (allow up to 30 minutes for deep sedation)
Duration of Action	~30 minutes	20-60 minutes	60-90 minutes
Adverse Effects	Respiratory depression Hypotension Nausea/vomiting Nasal discomfort/irritation	Respiratory depression Hypotension Burning sensation in nostrils (30-45 seconds)	Bradycardia Hypotension
Monitoring	O ₂ Saturation Heart rate Respiratory rate Blood pressure Pain score	O ₂ Saturation Heart rate Blood pressure	O ₂ Saturation Heart rate Blood pressure
Treatment of Overdose	Airway support and oxygen Assist ventilation if needed	Airway support and oxygen Assist ventilation if needed	Supportive care. Treat bradycardia and hypotension as clinically appropriate.

	Consider naloxone IM/IV/IN	Consider flumazenil IV/IN IN dose: 40 mcg/kg	There is no specific treatment for reversal.
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References:

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