

Intranasal medications and doses based on published literature

Clinical Scenario	Intranasal Medication and dose	Important reminders
Pain control	Fentanyl 2.0 ug/kg Ketamine 0.5 to 1 mg/kg	<ul style="list-style-type: none"> • Always monitor for respiratory depression • Only use a device that can very accurately deliver an exact dose of medication. • Titration is possible every 15 minutes, consider oral medications at 15-20 minutes to kick in as I.N. wears off
Sedation	Midazolam 0.5 mg/kg Fentanyl 1.5 to 3.0 ug/kg Dexmedetomidine 2-3 ug/kg* (*not currently approved @ TMC)	<ul style="list-style-type: none"> • Always monitor for respiratory depression • Combination therapy probably more effective than single drug therapy but greater respiratory risk so use less of each. • Titration is possible • Midazolam burns for 30 seconds and is only minor sedation • Dexmed does not burn, onset is 20 min, lasts > 1 hour
Seizures	Midazolam 0.2 to 0.3 mg/kg (use 10 mg in teenagers and adults)	<ul style="list-style-type: none"> • ALWAYS use the concentrated form of midazolam: 5 mg/ml • Deliver immediately to allow absorption to occur while you support airway
Opiate overdose	Naloxone 2 mg (2 ml)	<ul style="list-style-type: none"> • ALWAYS use the concentrated form of naloxone: 1 mg/ml • Deliver immediately to allow absorption to occur while you support airway.
Epistaxis	Oxymetazoline 1.0 – 2.0 ml to affected nostril (Add lidocaine 4% if cautery to be done)	<ul style="list-style-type: none"> • Blow nose to remove all clots from nostril prior to delivery of the medication. • Spray 1-2 ml of medication up effected nostril(s) • Soak a cotton swab with oxymetazoline and insert into nose • Pinch nose for 5-10 minutes then re-examine and cauterize, repeat or use thrombin if necessary • Send patient home with oxymetazoline bottle to use TID
Nasal procedures (NG tube, Fiberoptics, NP airway, Nasal intubation)	Lidocaine 4% (plus oxymetazoline in nose)	<ul style="list-style-type: none"> • Spray both the nose (1.5 ml) and the throat (3.0 ml). • Wait 3 minutes for full anesthetic effect before doing the procedure. Repeat half dose if necessary.

Hypoglycemia	Glucagon 2mg	<ul style="list-style-type: none"> • May be beneficial when IM/SQ route not ideal (i.e., reduce risk of needle stick injury with combative patient) • IM/SQ route (1 mg) yields faster results as compared to IN route, although IN route is still effective • Should be reconstituted with a surfactant such as sodium glycocholate to enhance absorption. This is not readily available in the ED. Studies unclear regarding decrease in efficacy when reconstituted with sterile water.
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General Comments:

- Prior to using a nasal medication, inspect the nostril for significant amounts of blood or mucous discharge. Presence of these will limit medication absorption. Suctioning the nasal passage prior to delivery and/or alternated delivery options should be considered.
- Always deliver half the medication dose up each nostril. This doubles the available mucosal surface area (over a single nostril) for drug absorption and increases rate and amount of absorption.
- Always use the MOST concentrated form of the medication available – dilute forms are less effective (example – use midazolam 5 mg per ml, not 1 mg per ml). If you have a compounding pharmacy and can get the concentrations such that the nasal volumes are 0.2 to 0.3 ml per nostril this would be ideal and may require slightly lower dosing.
- Do not use more than ½ to 1 ml of medication per nostril (0.2 to 0.3 is the ideal volume). If a higher volume is required, apply it in two separate doses allowing a few minutes for the former dose to absorb.
- For small volume doses of medication, be aware that most delivery devices have a “dead space” in the applicator tip where some of the medication will remain. Be sure to take that dead space into account when calculating the volume of medication to be administered.
- Titration to effect is probably possible for selected situations where time is not critical. If inadequate clinical effect is present after 5 to 15 minutes, re-administering a second dose may be effective.
- Midazolam burns for 30-45 seconds. It also only causes mild sedation/anxiolysis and lasts about 30 minutes
- Dexmedetomidine sedation is deeper than midazolam, has slower onset (20 min) and longer sedation (not currently approved at TMC).
- Fentanyl pain control effects begin wear off at about 45 minutes to an hour. If the patient is able to tolerate PO intake, administering an oral analgesic approximately 15–20 minutes after an intranasal dose may be indicated in order to allow for a therapeutic overlap. In lieu of oral administration, the intranasal dose may be repeated as indicated.