

Ketofol

Intranasal Route

Push Dose Pressor

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Ketofol (Combo of Ketamine and Propofol)



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Ketofol

- Use
 - Procedural sedation
 - RSI
- There is no standardized mixture
- Conventionally mixing equal parts of ketamine and propofol (1:1 ratio) into the same syringe or **one given after the other subsequently**
- Common Dosing
 - 1 mg/kg of Ketofol. May repeat (ranges: 0.5 - 2 mg/kg)
 - **1 mg/kg of Ketofol = 0.5 mg/kg Ketamine + 0.5 mg/kg Propofol**

Ketofol

Pros

- Reducing unwanted hemodynamic adverse effects while yielding synergistic, dose sparing sedation

Cons

- Safety issue (sterility)
- No standard drug dictionary
- Look-alike/ sound-alike issues with preparing syringes
- Not significant benefit of reduced ADR compared to use of single agent
- Recovery agitation
- Dosing/ preparation error

Ketofol

- When using Ketofol, provide clear preparation/ administration instruction
- ISMP (Institute for Safe Medication Practices) recommendation: prepare and administer the ketamine and propofol in separate syringes in order to avoid any confusion
- Label syringes

Intranasal Route for Drug Delivery

Commercially available (eg., naloxone, midazolam and glucagon)

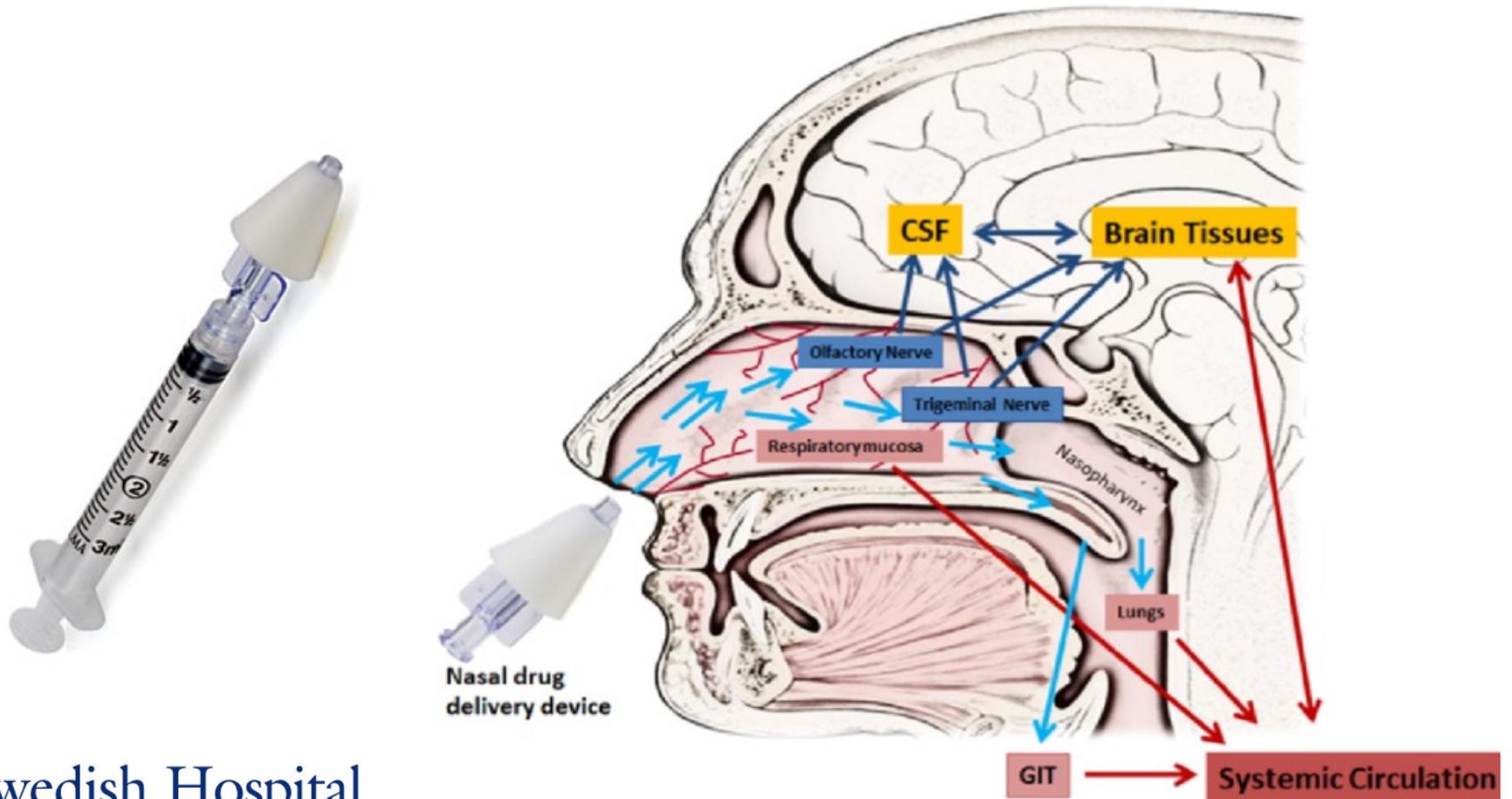


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Intranasal Drug Administration

- Prehospital/ ED setting: Use of Intranasal Atomizer



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Intranasal Using Parenteral Solution

- Benefits:
 - Non-invasiveness: Peds
 - Rapid onset of action and high bioavailability (IV: most rapid and 100% bioavailable)
- Use of concentrated formulation
- Common ADR – irritation of nasal mucosa
- Administration
 - Draw parenteral solution into syringe (dose + 0.1 mL for dead space in syringe).
 - Attach nasal automizer to syringe
 - Divide dose between nares
 - Maximum 1 mL per nostril

Intranasal Drug Delivery

Epic:

Midazolam,
Ketamine
Fentanyl
Lidocaine

The screenshot displays the Epic EMR interface for managing orders. At the top, there are tabs for 'Orders', 'Sidebar Summary', and 'Patient Chart Advisories'. Below these are buttons for 'Manage Orders' and 'Order Sets', along with an 'Options' dropdown. A 'Pharmacy' section is visible, containing a search bar with the text 'Place orders or order sets' and a '+ New' button. Below the search bar is a dropdown menu set to 'Standard' and a 'Next' button with a warning icon. The main content area is titled 'New Orders' and lists four orders:

- Midazolam intranasal solution (ED Use Only)**
4 mg (rounded from 4.2 mg = 0.2 mg/kg × 21 kg), Intranasal, ONCE, 1 dose, today at 1230
Draw ordered dose plus 0.1 ml for dead space into 3ml syringe (max 2 ml per syringe). Attach mucosal atomization device and administer max 1 ml per nostril.
- Lidocaine 4% Intranasal Solution**
1 mL, Intranasal, ONCE, 1 dose, today at 1230
Draw ordered dose plus 0.1 ml for dead space into 3 ml syringe (max 2.1 ml per syringe). Attach mucosal atomization device and administer half dose into each nostril (max 1 ml per nostril).
Protect from light.
- Ketamine intranasal solution (ED Use Only)**
20 mg (rounded from 21 mg = 1 mg/kg × 21 kg), Intranasal, ONCE, 1 dose, today at 1230
Draw ordered dose plus 0.1 ml for dead space into 3 ml syringe (max 2 ml per syringe). Attach mucosal atomization device and administer max 1 ml per nostril.

Protect from light
- FentaNYL Intranasal Solution (ED Use Only)**
40 mcg (rounded from 42 mcg = 2 mcg/kg × 21 kg), Intranasal, ONCE, 1 dose, today at 1200
Draw ordered dose plus 0.1 ml for dead space into 3 ml syringe (max 2 ml per syringe). Attach mucosal atomization device and administer max 1ml per nostril.
Protect from light.

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Intranasal Drug Delivery using parenteral solution

| Drug | Use | Adult Dose | Peds Dose | Concentration | EPIC available |
|-----------------|---------------------|---|---|--|----------------|
| Fentanyl | Pain | 100 mcg | 2-5 mcg/kg | 100 mg/2 mL | Y |
| Ketamine | Pain | 0.5 mg/kg | 0.5 -1 mg/kg | 50 mg/mL (Formulary) 100 mg/mL | Y |
| Midazolam | Sedation Seizure | 0.1 - 0.2 mg/kg (Max 10 mg per dose) | 0.2 - 0.3 mg/kg (Max 10 mg per dose) May repeat in 15 min | 10 mg/2 mL | Y |
| Lidocaine | Headache, Pain | 0.5-2 mL of 4% soln. | 1-2 mL of 2% soln. | 4%, 2% (Ok to use if 4% is not available) | Y |
| Naloxone | Opioid reversal | 2 mg | 2 mg May repeat | 2 m/2mL | Y |
| Dexmedetomidine | Sedation | - | 2 to 3 mcg/kg as a single dose 30 -60 min prior to procedure | 100 mcg/mL | N/A |
| Glucagon | Hypoglycemia | 3 mg | 3 mg (> 4yr old) May repeat | *Baqsimi(Pack- Nasal)3mg/dose: \$~330 | N/A |

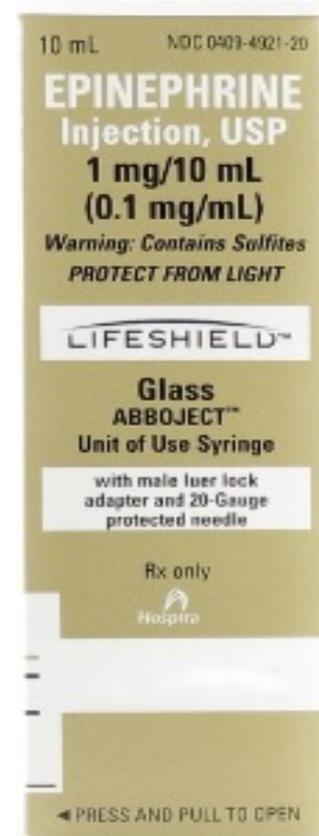
Push Dose Pressor - Phenylephrine

- Pure alpha agonist
- Use: hypotension during peri-intubation
- Availability – premixed syringes (800 mcg/ 10 mL)
 - Intubation Kits
 - ED Pyxis
- Common dosing: 0.5 - 2 mL (40 - 160 mcg) every 2-5 minutes
- ADR – reflex bradycardia
- Good communication with team to avoid error/ pt harm



Push Dose Pressor - Epinephrine

- Alpha/ Beta agonist
- Use: Hypotension and Bradycardia
- **DO NOT GIVE CARDIAC ARREST DOSE 1 mg/10mL (1000 mcg/10 mL) to patient with a pulse**
- Dose: 5-20 mcg (0.5-2 mL of *Push Dose Epi 10 mcg/mL*)
- Availability of Premixed syringes **10 mcg/mL** – NO



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Push Dose Pressor - Epinephrine

- How to make **Push Dose Epinephrine (10 mcg/mL)**
 - Take a 10 ml syringe with 9 ml of NS
 - Into this syringe, draw up 1 mL (100 mcg/mL) of Cardiac Epinephrine (1 mg/10 mL = 100 mcg/mL)
 - Now you have **Push Dose Epi 10 mcg/mL** 10 mL syringe
- Dose: 5 - 20 mcg (0.5 - 2 mL of **Push Dose Epi 10 mcg/mL**)
- CLEAR communication with team to avoid error/ pt harm

1 mL

9 mL

