



Intranasal Medication Administration by Mucosal Atomization Device (MAD®)

PURPOSE:

Intranasal drug delivery offers a non-invasive alternate route for medication administration. MAD® delivers a fine mist of soluble medication particles to achieve efficient and effective drug levels by direct absorption across the nasal mucosal membranes into the bloodstream. Atomization offers superior effect compared to drops or sprays. The absorption rate and plasma concentration of atomization is comparable to intravenous administration (Knoester et al, 2002)

INDICATIONS:

Effective non- oral route for:

- Symptom management, such as opiates for pain management/incident pain or sedatives for restlessness/agitation
- Topical anesthetic application prior to insertion of naso-gastric tube
- Seizure management

INSTRUCTIONS FOR USE:

1. Physician order required.
2. Explain procedure and expected outcome to patient and family.
3. Fill syringe with prescribed amount of medication solution using the most concentrated form of the medication available. **
4. Connect the MAD® (nasal sprayer) to the syringe via luer lock mechanism
5. Inspect the nostril for significant amounts of blood or mucous discharge. Presence of these discharges will limit mucosal absorption. Suction the nasal passage prior to medication delivery or consider alternate administration route. Lean head back slightly or lay flat.
6. Place the tip of the MAD® in the nostril
7. Squirt half of the medication into each nostril. Splitting the dose doubles the available mucosal surface area for drug absorption and increases the rate and amount of absorption.
8. Rinse MAD® with clean, running water, allow to dry between uses (may reuse for same patient).

** The *ideal* volume for intranasal administration is 0.2-0.3ml and the maximum recommended volume per nostril is 1ml. If dose is greater than 0.5ml, apply it in two separate doses allowing 5-10 minutes apart for each dose. The spacing allows the former dose to absorb.

The MAD® atomizer has a dead space of 0.1ml, so particularly for doses less than 0.9ml be sure to take the dead space into account by adding 0.1ml to the final volume (i.e. volume of dose + 0.1ml)





ADDITIONAL INFORMATION:

- Rapid cerebral spinal fluid drug concentrations possible when seeking CNS effects (e.g. sedation or seizure management)
- Numerous factors, such as molecular size of medication particles, complexity and chemical properties, and drug concentration/volume of solution, need to be considered when evaluating which medications are suitable for mucosal atomization..
- Physiological condition of the nasal passages needs to be assessed, as certain conditions will limit drug absorption (e.g. bloody nose, nasal congestion, mucus discharge, or destruction of the nasal mucosa)
- Examples of medications administered via MAD® by WRHA-Palliative Care Program include Fentanyl, Sufentanyl, Scopolamine and Midazolam.

References:

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- Knoester, P.D., Jonker, D.M., Van Der Hoeven, R.T. et al (2002). Pharmacokinetics and pharmacodynamics of midazolam administered as a concentrated intranasal spray. A study in healthy volunteers. *British Journal of Clinical Pharmacology*, 53, 501-507.
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