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Watch Our Video Intranasal Midazolam Instructions



gillettechildrens.org/DIS086

LMA MAD Nasal Demonstration



youtube.com/watch?v=7sJMaSOoH88

Midazolam Use by Intranasal Administration

(mid-aye-zole-lam)

patient education
DIS086

Children use midazolam as part of their treatment plan to manage seizures. This handout explains how midazolam works and how to give the medicine by way of the nose — a method called intranasal administration.

Since every child's needs are different, it's important that you follow the advice from your child's own doctor, nurse and/or pharmacist. Speak to them if you have any questions about this medicine.

What is midazolam?

Midazolam is a medicine that works on the central nervous system to relax and control seizure activity.

Why use midazolam?

Children often use midazolam (also known as Versed) to treat prolonged seizures. Midazolam is also used when successive seizures prevent a child from regaining full consciousness.

How does intranasal midazolam work?

The medicine enters the child's nose and coats the lining of the nasal cavity, which is called the nasal mucosa. The body absorbs the medicine through the nasal membranes. The child does NOT need to sniff it into the lungs.

How do I give my child midazolam?

Supplies you'll need:

- Midazolam 5 mg/mL
- Vial access device (single-use)
- Luer-lock syringe (1 mL or 3 mL, reusable)
- MAD (mucosal atomization device, reusable for up to 30 days)
- Alcohol wipe (single-use)

Instructions

Before giving your child midazolam, check the nose. If there's a lot of nasal drainage, clear your child's nose with a tissue. Then follow these instructions:

1. Remove the cap from the top of the midazolam vial to expose a rubber seal.
2. Remove the vial access device from its packaging.
3. Attach the vial access device to the syringe, then remove the cover of the vial access device.
4. Firmly insert the tip of the vial access device through the center of the rubber seal on the midazolam vial.
5. Turn the vial upside down while keeping a firm hold on the syringe. Hold the vial with your nondominant hand. (If you're right-handed, hold it with your left hand.) Then grasp the end of the syringe and the plunger with your dominant hand.
6. Pull back on the syringe plunger to remove from the vial the amount of medicine required to treat your child—**plus an extra 0.1 ml of medicine** to account for the empty space in the MAD. Keep the tip of the vial access device in the medicine while withdrawing medicine from the vial.
7. When the desired amount of medicine is in the syringe, gently tap the side of the syringe with your finger to dislodge any air bubbles. Eject any air remaining at the top of the syringe into the vial.
8. Remove the syringe from the vial. The blue tip of the vial access device will stay in the midazolam vial.

Continued on next page.

9. Twist to remove the vial access device from the syringe.
10. Attach the MAD to the midazolam syringe. Clean the outside of the MAD with an alcohol wipe if this is a repeat use.
11. Hold your child's head stable and place the tip of the MAD in one nostril until it's snug.
12. **Aim the syringe up and out.** (The top of the MAD should point toward the top of the ear on the same side of the head as that nostril.)
13. **Rapidly push the plunger** and deliver **half** of the medicine in the syringe. If you don't push the plunger fast enough, the medicine will **NOT** aerosolize. This will likely cause your child to swallow the medicine.
14. Deliver the remaining medicine into the other nostril using the same technique.

More Instructions

For additional assistance, see **Using the LMA MAD Nasal Mucosal Atomization Device**, an illustrated page at the end of this handout.

Important to Note

- The vial adaptor shown on that page is not exactly the same as the vial access device we describe, but the device and process shown are similar.

What are the side effects?

Children appear to tolerate intranasal administration of midazolam well. The most common side effects include:

- Nasal irritation
- Bad taste
- Cooling/burning sensation in nose or throat

Other side effects might include drowsiness, dizziness, unsteady gait and confusion. Sleepiness could be a side effect from the medicine or an after-effect of the seizure. On occasion, children might have slow or shallow breathing after taking midazolam.

Call 911 if:

- Seizure activity continues after giving midazolam.
- The child doesn't respond or regain consciousness after a seizure stops.
- You're alarmed by the child's color or breathing.
- You're alarmed by the high frequency or severity of the seizures.
- The child has signs of an allergic reaction, such as rash, hives or wheezing.
- Other: _____

What special instructions should I follow?

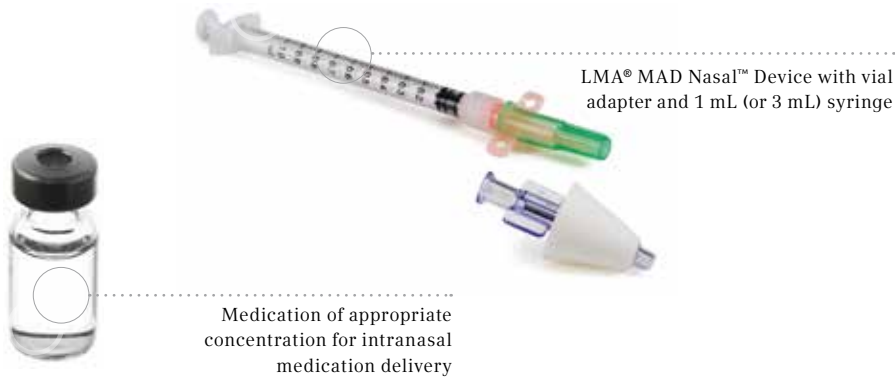
- Before giving midazolam, ask your doctor if you should give repeat doses if the medicine leaks from the nostrils after you give it.
- Check the color, clarity and expiration date of midazolam before using it. Midazolam should be clear with no particles floating in the syringe. Do not use it beyond its expiration date.
- Draw up the dose **immediately** before you use it. After giving it, **discard any unused medicine** in the syringe or the vial.
- You may reuse the syringe. After each use, clean it with warm water and soap. Allow it to air dry.
- You may reuse the MAD atomizer within 30 days of its first use.
 - **After giving midazolam:** With the syringe you used to dispense the medicine, draw up 1 mL tap water and flush the MAD atomizer. Clean the outside of the atomizer with an alcohol wipe. Allow the MAD to air dry.
 - **Before reusing the MAD to give midazolam:** Clean the outside of the atomizer with an alcohol wipe. Draw up the midazolam as directed and give it to the child.
 - When 30 days have passed after your first use of the MAD, discard it and begin using a new one.
- Document your use of midazolam in the seizure diary you received from your Neurology team.

Where can I get more atomizers?

Gillette provides you with two MAD atomizers. To obtain more, contact your home pharmacy. If your home pharmacy cannot provide or obtain MAD atomizers, you can buy them online from [Amazon.com](https://www.amazon.com) and Mountainside Medical. (At [mountainside-medical.com](https://www.mountainside-medical.com), go to Shop By Category and select Injection & IV.)

Using the LMA[®] MAD Nasal[™] Intranasal Mucosal Atomization Device

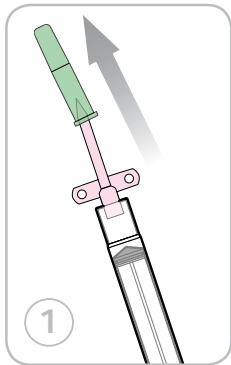
MATERIALS



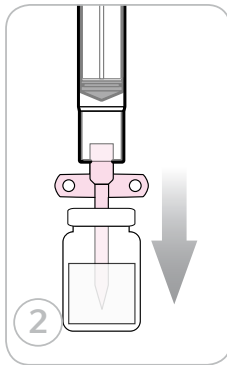
TIPS TO IMPROVE SUCCESS

- ① Minimize volume, maximize concentration
 - 1/3 mL per nostril is ideal, 1 mL is maximum
 - Use the appropriately concentrated drug
- ② Maximize total mucosal absorptive surface area
 - Atomize the drug (rather than drip it in) to cover broad surface area
 - Use BOTH nostrils to double the absorptive surface area
 - Aim slightly up and outwards to cover the turbinates and olfactory mucosa
- ③ Beware of abnormal mucosal characteristics
 - Mucous, blood and vasoconstrictors reduce absorption
 - Suction nostrils or consider alternate drug delivery method in these situations

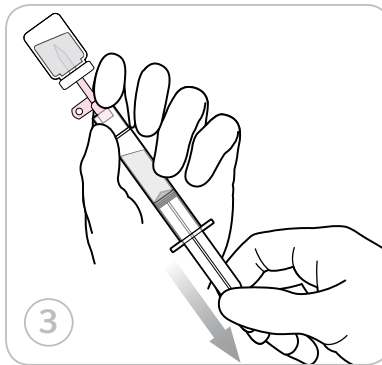
PROCEDURE



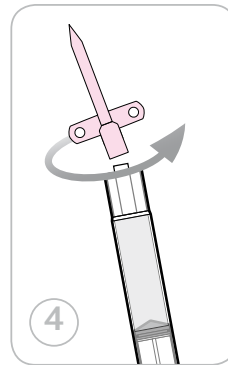
STEP 1: Remove and discard the green vial adapter cap.



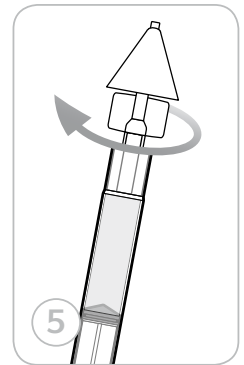
STEP 2: Pierce the medication vial with the syringe vial adapter.



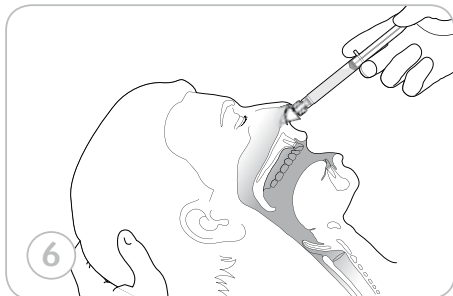
STEP 3: Aspirate the proper volume of medication required to treat the patient (an extra 0.1 mL of medication should be drawn up to account for the dead space in the device).



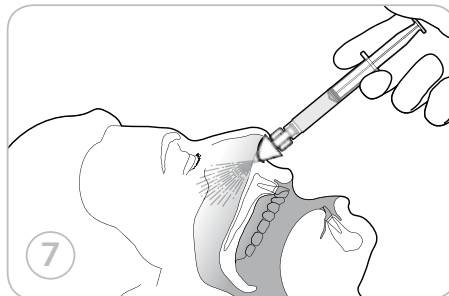
STEP 4: Remove (twist off) the syringe from the vial adapter.



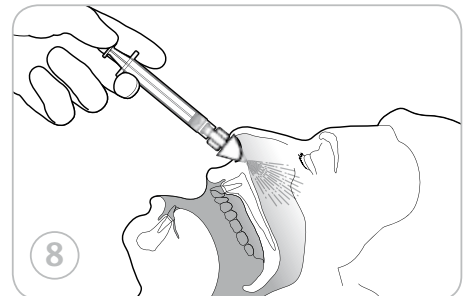
STEP 5: Attach the MAD Nasal[™] Device to the syringe via the luer lock connector.



STEP 6: Using the free hand to hold the occiput of the head stable, place the tip of the MAD Nasal[™] Device snugly against the nostril aiming slightly up and outward (toward the top of the ear).



STEP 7: Briskly compress the syringe plunger to deliver half of the medication into the nostril.



STEP 8: Move the device over to the opposite nostril and, repeating steps 6 and 7, administer the remaining medication into the nostril if indicated.

For use with drugs approved for intranasal delivery.

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