



Mark E. Bubak, M.D. &  
Julie F. Nielsen, PA-C

2200 W. 49th St., Ste. 104  
Sioux Falls, SD 57105

**605-336-6385**  
*YourAllergyRelief.com*

## How to Use a Metered -Dose Inhaler (MDI)

Follow these guidelines to help you use your MDI properly to get the most benefit from your medication. Have a member of your healthcare team watch you use the inhaler to make suggestions on improving your technique and answer any questions you have.

- 1. Shake the inhaler 5 or 6 times immediately before use.**
- 2. Remove the cap from the mouthpiece.** If the cap was not on while you were carrying the inhaler, check the mouthpiece for dirt and foreign objects before use. If the inhaler has not been used for several days, "test spray" it into the air before use.
- 3. Attach a spacer tube to the mouthpiece of the inhaler.** A spacer is a 4 to 8 inch length of tubing. It helps get more of the medication deep into your lungs instead of depositing it in your mouth which can lead to harmful side effects. Some inhalers come with a spacer built into the unit (for example, Azmacort) and with some inhalers you cannot use a spacer (for example, MaxAir Autohaler and Ventolin Rotocaps). You may buy a plastic tube without a prescription at a pharmacy, or use a 4 to 8 inch cardboard or paper tube. There also are spacers available commercially (for example, AeroChamber, InspirEase).
- 4. Hold your head erect and sit up tall or stand. Breathe out normally, not forcefully.**
- 5. Close your mouth around the open end of the spacer tube. Make sure your tongue or teeth are not blocking the opening.** If you do not have your spacer tube, place the mouthpiece of the inhaler unit about 2 inches in front of your open mouth.
- 6. Begin to breathe in very slowly as you squeeze the inhaler once. Do not stop inhaling when you squeeze. Continue to breathe in slowly for 5 to 7 seconds or for as long as comfortable** (diagram 1). This process mixes the medication with the incoming air and pulls it into your lungs very slowly. Remove the spacer tube from your mouth, but do not exhale.
- 7. Hold your breath for as long as comfortable or up to 10 seconds to help the medication settle on the airways.** Breathe out slowly. Wait one minute before taking your next inhalation. Shake the inhaler before each use.
- 8. Rinse your mouth with water or brush your teeth after using a corticosteroid inhaler.** Spit out the water.

When in a cold environment, carry the MDI close to your body. Warm the canister by rolling it between your hands before use. Warming the canister to body temperature results in smaller particles of medication being inhaled and better distribution throughout the lungs.

One way to estimate the amount of medication left in your bronchodilator inhaler is to float the cartridge in a container of water. Compare the position of the cartridge to diagram 2.

When your cartridge is 1/4 full, refill your prescription for the inhaler. *Do not use this method for cromolyn (Intal), triamcinolone (Azmacort), fluticasone (Flovent), nedocromil (Tilade) or pirbuterol (MaxAir Autohaler).* For these medications you can estimate when you will need a refill by checking the number of doses (puffs) that are in each canister (i.e. Azmacort has 240 puffs). This number is noted on most cartridges or on the box in which they come. If you divide the total number of puffs per cartridge by the number of puffs you take per day, you can estimate when your cartridge will be empty. Mark that date on your calendar and make sure to get a refill a week before that date so that you do not run out.

Clean the inhaler system and spacer weekly, if used regularly. Remove the metal cartridge, then wash the plastic case, cap and spacer with soap and water. Rinse the pieces with warm running water. After the case and cap are completely dry, insert the cartridge into the plastic case with a gentle, twisting motion. Always keep the protective cap on the inhaler when not in use.

### Medications in Metered-Dose Inhalers

Several medications are given by metered-dose inhalers. These include bronchodilators, corticosteroids, nedocromil, and cromolyn.



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**Bronchodilators** open up the bronchial tubes (air passages of the lungs). Examples are albuterol (Ventolin, Proventil), metaproterenol (Alupent, Metaprel), terbutaline (Brethaire), isoetharine (Bronkometer), bitolterol (Tornalate), pirbuterol (MaxAir), ipratropium (Atrovent). Albuterol also is available as a powder (Ventolin Rotocaps). Salmeterol (Serevent), a long-acting bronchodilator, also is in an inhaler form.

If your bronchodilator seems to make you a little jumpy or jittery, rinse your mouth with water after each dose and spit it out. You can delay taking your bronchodilator until after meals so you are not jittery while eating or drinking.

Keep your eyes closed when squeezing an ipratropium (Atrovent) inhaler because if any spray gets in your eyes, your vision may be temporarily blurred.

**Preventive Medications**

Corticosteroid medications reduce inflammation and swelling of the lining of the bronchial tubes. When corticosteroids are inhaled, very little of the medication gets into the bloodstream, therefore few side effects occur.

Examples of corticosteroids are beclomethasone (Vanceril, Beclovent), triamcinolone (Azmacort), flunisolide (AeroBid) and fluticasone (Flovent).

Take this medication regularly and do not stop this medication without advise from your physician.

Side effects of inhaled corticosteroids include throat irritation and yeast infections in the mouth. To reduce these problems, use a spacer tube when taking a corticosteroid medication and rinse your mouth with water or brush your teeth. Spit out the water.

Cromolyn (Intal) and nedocromil (Tilade) can prevent the release of substances that narrow airways. These drugs work only to prevent asthma attacks. They are not bronchodilators.

*If you have an acute (sudden) asthma attack use your short-acting bronchodilator to relieve symptoms.*

Discuss side effects of asthma medications with your physician, nurse, pharmacist, or respiratory therapist.

Name of Inhaler	Canister Color	No. of Whiffs Prescribed	Frequency ( <i>how often used</i> )