



Using Your Metered Dose Inhaler (MDI)

A metered dose inhaler (MDI) is a small device that delivers a measured amount of medication to your lungs. You get this medication with each spray (puff) when you breathe in. MDIs use a chemical propellant to produce the spray (puff). This propellant carries the measured amount (dose) of medicine into your lungs. The spray you see from your MDI is both the propellant and the medication. Inhalers that use powders are called *dry powder inhalers* (DPI's) and do not use propellants.

This fact sheet will explain how to use an MDI correctly and how to care for both the device and the spacer you may use with your MDI.

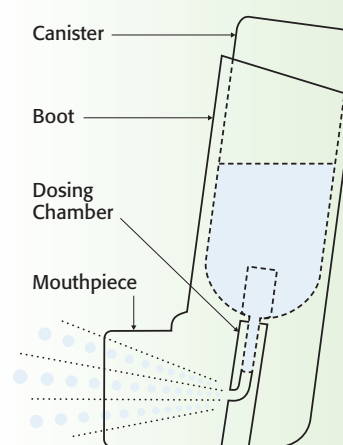
It can be hard to use MDIs correctly. Even when using the best technique, you may only get 25% of what comes out of the MDI into your lungs. This amount is still enough to treat your lung condition. However, most people have such difficulty using an MDI that they get even less than **15%** from each puff. The biggest mistake made in using an MDI is not being able to take a breath into your lungs while at the same time, spraying the medicine. As a result, your health care provider often suggests that you use a spacer (also called a holding chamber or valved holding chamber-VHC).

What is a spacer/chamber?

A spacer/chamber holds the puff from the MDI in a tube or "chamber" for a few seconds, so that you don't have to both breathe in AND spray the MDI at the same time. This helps get more medicine into your lungs and lessens the risk of side effects (such as hoarseness or thrush when inhaling corticosteroids).

Spacers differ in their design and not all of them work with different types of MDIs. Some spacers have a valve (called a valved holding chamber). The valve is important in keeping the medicine from escaping the holding chamber. With the correct use of a spacer, the amount of medicine that gets into your lungs can be as much as 25%. Spacers/chambers are only used with MDI's. They are not used with dry powder inhalers. Make sure you know how to clean your spacer by reading the information sheet that comes with the device. This is important because some spacers develop a static electric charge if not correctly cleaned and stored. Some, but not all spacers, can be washed by placing it on the top shelf of the dishwasher—check the information sheet that comes with your device. Replace your spacer whenever the rubber valve stiffens or becomes brittle.

Some spacers have a built in whistle. The whistling sound is to let you know that you are inhaling too fast or



too strongly. The goal is to breathe slowly enough so that you do not make the spacer whistle when you inhale.

Getting your Metered Dose Inhaler (MDI) ready for use: PRIMING

Priming is needed to make sure the dosing chamber of the MDI fills with the correct amount of medication when you are ready to use the MDI. You will need to prime the MDI the first time you use a new MDI and again if you have not used your inhaler for several days or weeks. To prime your MDI do the following:

- remove the cap of the MDI
- shake the inhaler
- spray it in the air away from you

The number of sprays needed to prime your MDI will depend on the type of medication. The instructions that come with your inhaler tell you when and how many times the MDI must be primed. Read the instruction for each inhaler carefully because each inhaler you have may have different priming instructions.

How to tell when your metered dose inhaler (MDI) is running out of medicine

Many MDIs have a dose counter to let you know how many doses (puffs) of medicine remain. Knowing how many doses you have left in your inhaler is very important. Be sure to read the package insert if you have questions about how to read the dose counter. For MDIs without a dose counter, you will need to count how many puffs you take each day. Then look at the label on your MDI and see how many doses (puffs) are in the canister. Divide the number of puffs you use in one day into the number of puffs in the canister. For example, if you use 8 puffs per day (2 puffs 4 times a day) and the inhaler has 200 puffs, the inhaler will last 25 days. If you take a total of 4 puffs a day, your inhaler will last 50 days. If you do not use your inhaler on a regular basis (for example if it is a rescue inhaler), you will need to keep track of the number of puffs you have taken. Floating the metal canister in water or listening as you shake it, are NOT correct ways to find out how much medicine is left in

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your MDI. Even if you see a spray come out, it does not mean that there is medicine in the MDI as the spray you see may be only the leftover propellant.

Care and cleaning of your Metered Dose Inhaler (MDI) and spacer/chamber

The package insert of your MDI and spacer will describe how and when to clean the MDI. Cleaning your MDI is important because the spray may clog the dosing chamber. Also, check the expiration date on your MDI that is on the label of the metal canister or on the box it came in.

How to use your MDI with and without a spacer/chamber

 Using Your Metered Dose Inhaler WITH a spacer	
1.	Make sure that the metal canister of your MDI is inserted correctly into the plastic "boot" or holder (see drawing).
2.	Remove the cap from the mouthpiece of both the MDI and the spacer.
3.	Insert the MDI mouthpiece in the soft opening of the spacer. The MDI canister needs to be in an upright position.
4.	Shake the MDI with attached spacer several times.
5.	Breathe out, away from the spacer, to the end of your normal breath.
6.	Place the mouthpiece of the spacer into your mouth, past your teeth and above your tongue. Close your lips around the mouthpiece. If you are using a spacer with a mask, place the mask over your nose and mouth. Be sure the mask has a good seal against your cheeks and chin. There should be no space between the mask and your skin.
7.	Press down on the top of the metal canister once, to release the medicine into the spacer.
8.	Breathe in deeply and slowly through your mouth. If the spacer makes a "whistling" sound, you are breathing in too fast. You should NOT hear a whistle.
9.	Hold your breath for 5 to 10 seconds.
10.	Breathe out slowly.
11.	If you are instructed to take more than one puff (spray), wait about 15 to 30 seconds (or as directed by the package insert) before taking the next puff. Then repeat steps 4-10.
12.	Replace the cap on the mouthpiece of the MDI inhaler and spacer after you have finished.
13.	If you are inhaling a steroid, rinse your mouth out with water, swish, gargle and spit.

 Using Your Metered Dose Inhaler WITHOUT a Spacer/Chamber	
1.	Put the metal canister into the "boot" making certain it is seated correctly.
2.	Shake the inhaler several times. This mixes the propellant and medicine.
3.	Remove the cap off from the mouthpiece.
4.	Breathe out to the end of a normal breath.
5.	Hold the inhaler in its upright position (with the mouthpiece at the bottom).
6.	Put the mouthpiece in your mouth, past your teeth and above your tongue. Close your lips around the mouthpiece so that the medication does not go in your eyes (see second Figure).

7.	While breathing in slowly and deeply through your mouth, fully press down once on the top of the metal canister of your inhaler.
8.	Hold your breath for 5 to 10 seconds.
9.	Breathe out slowly.
10.	If you take more than one spray, wait 15 to 30 seconds (or as directed in the package insert) before taking the next puff. Then repeat steps 3-9.
11.	Replace the cap on the mouthpiece after you are finished.
12.	If you are inhaling a steroid, rinse your mouth out with water, swish, gargle and spit.

Partnering with your health providers

It is important that you know whether or not you are using your medicines correctly. Bring your MDI and spacer with you each time you see your health care provider, show them how you use it and ask for feedback. If you are having trouble getting the right method for using the MDI without a spacer, you should use a spacer to make it easier and then use the spacer each time you use your MDI.

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Rx Taking Action

- ✓ If you can, use a spacer/chamber each time you use your MDI.
- ✓ Using a spacer when using your MDI is helpful in some people.
- ✓ Breathe in through your mouth (and not your nose) when using your MDI.
- ✓ Prime your MDI when new and as instructed in the package insert.
- ✓ Keep your MDI boot and spacer clean and dry
- ✓ Get a new spacer/chamber whenever the valve stiffens or becomes brittle.

Doctor's Office Telephone:

For more information contact the following websites:

Not One More Life.org How to Use Inhalers (in multiple languages)

<http://www.notonemorelife.org/noml/asthmatraining.aspx>

American Thoracic Society:

COPD: <http://patients.thoracic.org/information-series/en/resources/medicines-used-to-treat-copd.pdf>

Asthma: http://patients.thoracic.org/wp-content/uploads/2014/02/ATS_Patient_Ed_Asthma_Final.pdf

UpToDate Inc.:

http://www.uptodate.com/contents/inhalers-the-basics?detectLanguage=en&source=search_result&search=inhalers&selectedTitle=1%7E93&provider=noProvider

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