

METERED-DOSE INHALERS

USE IN ASTHMA



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Q. What are metered-dose inhalers?

A. These are devices that dispense medicines directly into the lungs, in the form of a mist or aerosol in a specific dosage. In an MDI, the medicine is suspended in a liquid and forced under pressure into a small canister fitted into a plastic case. When the canister is pressed, a measured dose of the medicine is released through the mouth-piece.

Q. What are its different parts?

A. These are shown in the diagram on the front page.

Q. What are the advantages of MDIs over the other modes of drug delivery in asthma patients?

- A. 1. Inhaled drugs are delivered directly into the airways.
2. The drugs operate faster than when given orally.
3. Fewer side-effects occur as the dose is too small.
4. Inhaled drugs alleviate the distress experienced by patients who do not like to receive injections.

Q. What are the steps for using an MDI?

- A. 1. Remove the cap and hold the inhaler upright.
2. Shake the inhaler.

3. Tilt the head slightly and breathe out completely.
4. Position the inhaler in one of the following ways:
 - (A) 2-4 cm away from the mouth,
 - (B) inside the mouth.
5. Press down on inhaler to release medication as you start to breathe in slowly.
6. Breathe in slowly for 3 to 5 seconds.
7. Hold breath for at least 10 seconds to allow medicine to reach deeply into lungs.
8. Repeat puffs as directed. Waiting 1 minute between puffs, would permit the second puff to penetrate the lungs better.

Q. Which technique, the open-mouth or the closed-mouth, is preferable?

- A. Some doctors suggest that the technique of an inhaler held approximately 2 to 4 cm in front of an open mouth, is superior to an MDI held in and activated in a closed-mouth. The theoretical advantage of the open-mouth technique occurs because the particles become significantly smaller as they travel a distance from the activated canister orifice to the mouth. This enhances distal

airway deposition. The disadvantage of the open-mouth technique is the problem of deposition on the lips, face and teeth. Your doctor can help you decide which method would be best for you.

Q. How can the patients be taught to correctly use their MDIs?

- A. Asthma patients usually think they are using their inhalers correctly, but their doctors don't agree with them. In one study, the doctors estimated that, on an average, only about half of their patients, used their inhalers correctly. The patient's biggest challenge is to coordinate the procedure of pressing down on the inhaler and breathing in at the correct moment.

As a rule, patients should have their inhalers with them when they visit their doctor. The doctor can personally supervise its use and, if necessary, retrain the patient.

Q. Why is it so important to use MDI correctly?

- A. MDI must be used correctly since only 10 percent of the inhaled dose penetrates the distal airways, even with optimal techniques.

For better penetration to distal airways, a slow deep inhalation to total lung capacity is desirable. It has been found that the particles are deposited uniformly throughout the lung with slow inhalation. The proportion of inhaled aerosol particles remaining in the lung also increases with the time of breath-holding upto 10 seconds.

Q. Which anti-asthma drugs are available in the form of MDI?

A. Many types of anti-asthma medication are available in the form of MDIs:

Salbutamol, Formoterol, Beclomethesone, Fluticasone, Budesonide, Ciclesonide, etc. to name a few. They come under different brand names. Combinations are also available.

Q. Which asthma patients need MDIs?

A. Patients with any type of asthma symptoms can make use of MDIs advantageously. Patients with mild symptoms may need only the MDI, while patients with moderate and severe symptoms would need it alongwith the help of other modes of drug delivery, such as tablets and / or injections.

Q. When should a salbutamol MDI be used?

A. Salbutamol dilates the airways. Whenever there is a feeling that the airways are constricted, salbutamol MDI can be used. It is better for an asthma patient to fix the time for taking salbutamol MDI, as for example, early morning when one gets up, and when going to bed at night.

Q. How many puffs of salbutamol a patient can take in 24 hours?

A. If the airway constriction is only mild, two puffs in the morning and two in the evening are enough.

If the airway constriction is moderate, the doctor generally prescribes salbutamol MDI along with other oral drugs so that the relief obtained is adequate and spread over all the hours of the day.

In moderate or severe asthma, if the symptoms are not relieved with 6 to 8 puffs of salbutamol in 24 hours, there is clear indication that advice of the doctor be obtained. Using more puffs of salbutamol, not only would not provide adequate relief, but the condition of the patient may deteriorate and prove dangerous.

Q. What should be the interval between the two puffs of salbutamol MDI?

A. An interval of 1 to 2 minutes should be there between the two puffs. The first puff takes that much time to dilate the airways. The second puff after this interval, penetrates the lungs further down and so it is more effective.

Q. If both salbutamol and steroid MDIs are prescribed, which one should be taken first?

A. Salbutamol should be taken first and after about 5 minutes of that, the steroid inhalation.

Salbutamol by dilating the bronchi, allows the steroid to penetrate the most peripheral parts of the lungs; this provides more relief.

Q. What does steroid MDI do when inhaled?

A. In an asthma patient, steroid inhalation relieves the inflammation in the lining of the airways. However, this is a gradual process, not a quick one. The patient feels relief in hours, not in minutes. But it is longer lasting and it prevents the permanent damage and the tendency to constrict the airways.

If a patient has difficulty in breathing and wants quick relief, he needs a bronchodilator like salbutamol and not a steroid.

Q. What complications can occur because of

prolonged or excessive use of inhaled steroids?

- A. Inhaled corticosteroids are generally very safe. In some patients, they can lead to formation of white patches inside the mouth. This is the growth of the fungus called thrush or candida.

Q. How can the above complication be avoided?

- A. By using steroid inhaler after passing it through a spacing device such as Spacehaler.

Rinsing the mouth clean with water, after having taken steroid inhalations, is also very helpful.

Q. How many puffs of steroid inhalation are recommended in 24 hours?

- A. This depends on the severity of the disease and which type of steroid is being taken. But usually 2 puffs of 200 ugm (microgram) twice or thrice a day are recommended.

Q. How to check whether the inhaler is full, half full or empty ?

- A. 1. If the canister is new, it is full.

2. If the canister has been used repeatedly, it might be empty (check product label to see how many inhalations should be in each canister).
3. To check how much medicine is left in the canister, put the canister (not the mouth-piece) in a cup of water. If the canister floats sideways on the surface, it is empty, if it floats vertically, then it is full.

Available Publications

1. Managing Asthma	Rs. 30.00
2. Asthma Attack : It Can be Prevented	Rs. 30.00
3. Asthma : Facts and Fiction	Rs. 20.00
4. Asthma Triggers: How to Avoid Them	Rs. 20.00
5. Asthma Attack : Early Signs	Rs. 20.00
6. Anti-Asthma Drugs : Their Proper Use	Rs. 20.00
7. Metered-Dose Inhalers : Use in Asthma	Rs. 20.00
8. Nebulizers : Use in Asthma	Rs. 20.00
9. Space Inhalers : Use in Asthma	Rs. 20.00
10. Peak-Flow Meter : Use in Asthma	Rs. 20.00
11. House Dust Allergy	Rs. 20.00
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