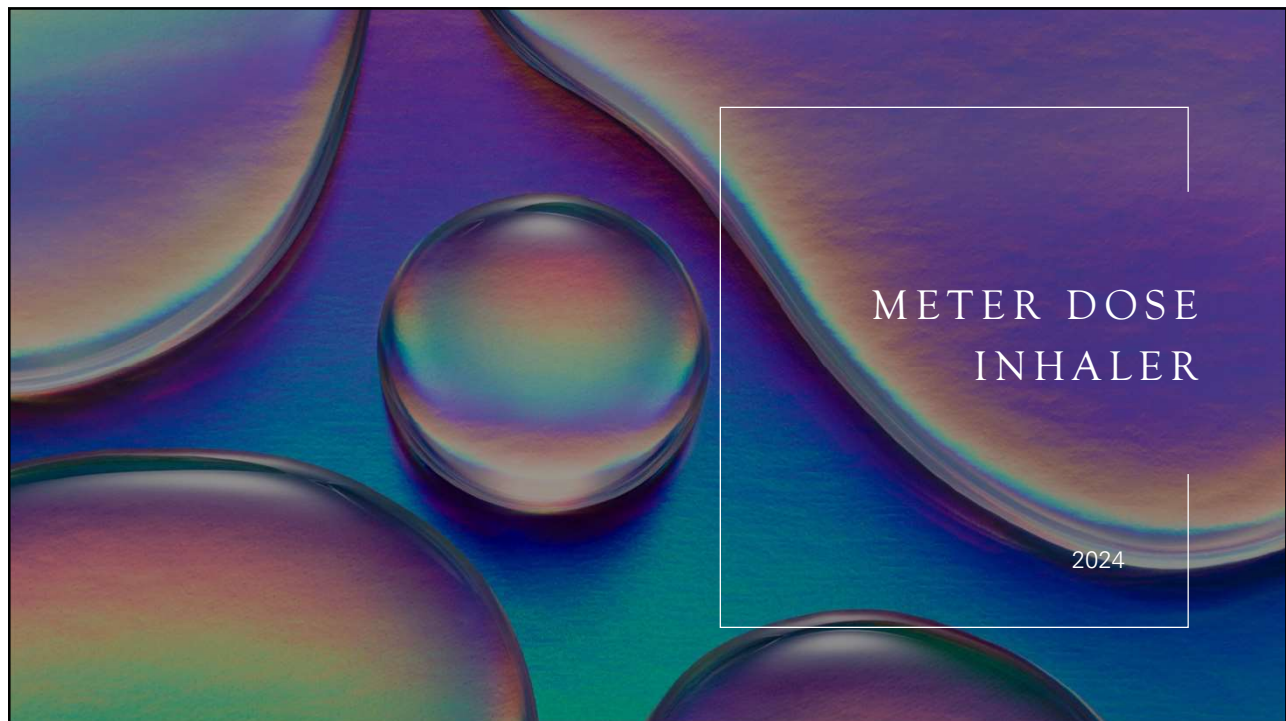


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## OBJECTIVES

History of MDI

Types of MDIs

How to teach MDI

How to reinforce

How to handle kids with MDIs

3

## QUESTIONS

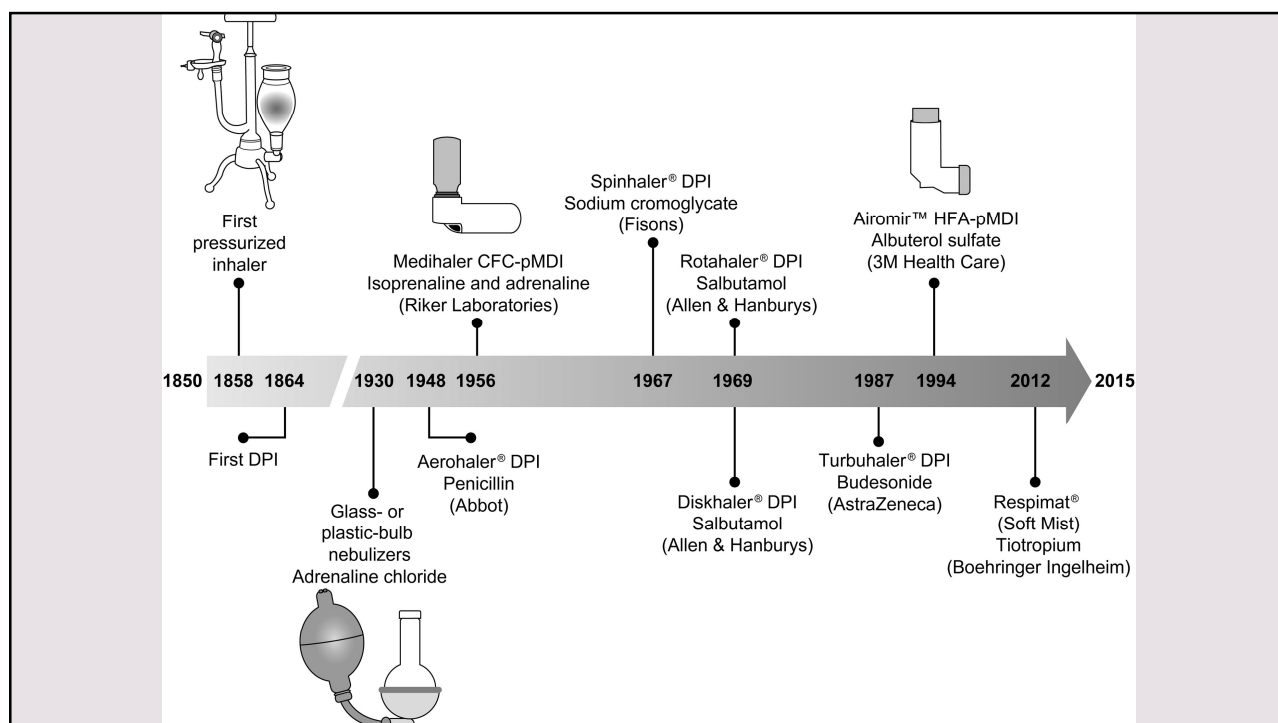
What percentage of adults use an inhaler correctly?

What percentage of children use an inhaler correctly?

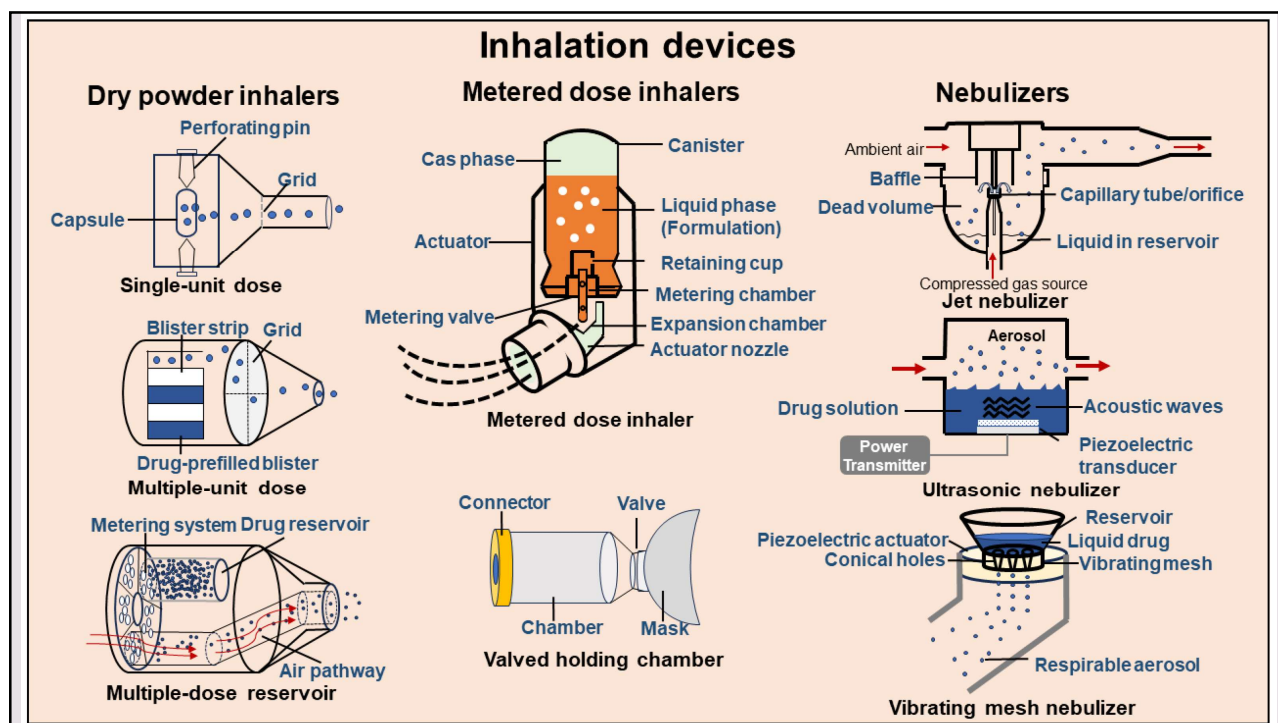
How many adults use a spacer?

How many kids use a spacer?

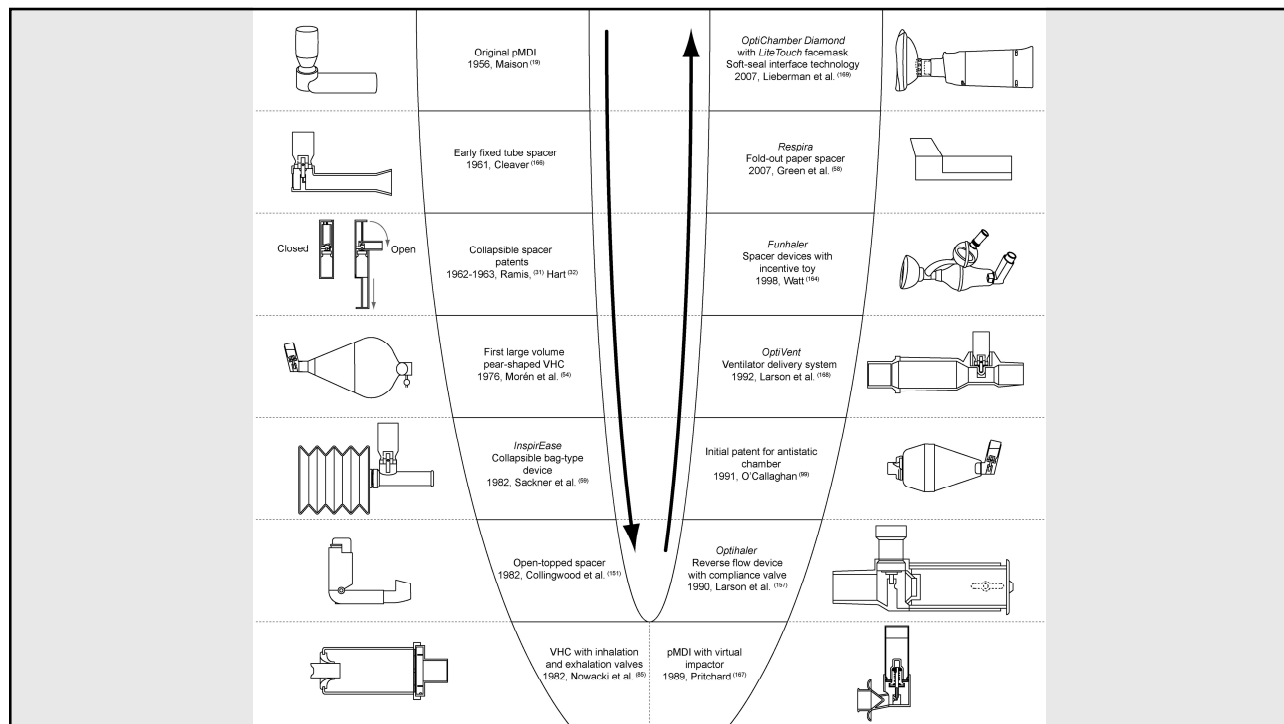
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5



6



7

## HOW TO SELECT A DEVICE

Patient preference  
(past inhaler use) (  
cost/insurance  
reimbursement)

Drug (Disease  
control quality)

Age of patient

Co-morbidities of  
patient

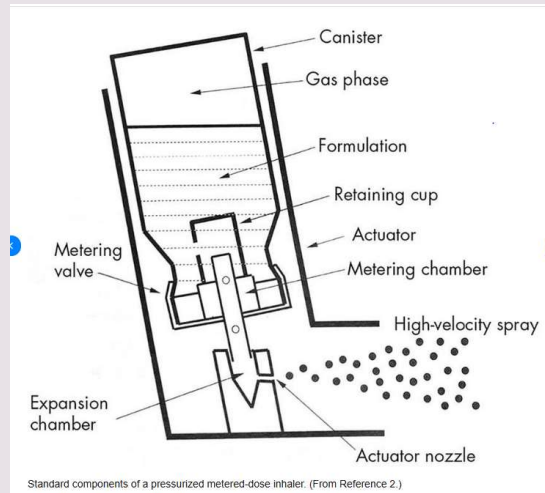
Side effects

Support partners  
for patient

Technique

Flow rate (Short  
fast breath, slow  
breath)

8



9

## HOW TO DO A MDI

Remove the cap of the spacer.

Remove the cap of the puffer. Shake the puffer 5 or 6 times.

Insert the puffer in the hole at the back of the spacer.

Sit up with your back straight, or stand up.

Blow all your breath out until your lungs are empty.

Seal your lips around the spacer mouthpiece.

Press the down once on the puffer's canister – this will spray medication into the spacer.

Slowly breathe in from the spacer until you can't take in any more.

Hold your breath for as long as you can, (5-10 seconds).

Take the spacer mouthpiece out of your mouth, and breathe out normally.

If you need a second puff, wait one minute and repeat these steps.

Rinse your mouth out with water and spit the water out (don't swallow it). Rinsing your mouth can cut down on some side effects, like a white coating on your tongue (a yeast infection called thrush) or a sore throat.

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## HOW TO DO A DPI

**Follow your device instructions to load the medication dose.** Multi-dose inhalers are preloaded with medication, which you typically prepare with a click of the device. Single-dose inhalers use separately packaged capsules that you drop into the chamber.

**Stand or sit up straight and breathe out completely.** Emptying your lungs is one of the most important steps.

**Put the mouthpiece into your mouth, close your lips tightly around it and breathe in quickly and forcefully.**

**Take the DPI out of your mouth, hold your breath for 5-10 seconds, then exhale slowly.**

**If your treatment plan calls for a second dose,** reload and repeat the steps.

**When using a capsule device,** open the chamber and check to see if the powder has been fully inhaled. If you see remaining powder, close the device, exhale fully, close your mouth around the mouthpiece and inhale again. When the capsule is empty, remove and discard it.

**Close the device and store in a dry place.** Do not wash with water; use only a dry cloth to wipe the mouthpiece.

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## DRY POWDER TIPS

Do not open the device until you are ready to use it. • Never open or swallow the capsule – always use it with its matching DPI

Do not shake the DPI.

Do not use a holding chamber or spacer with a DPI.

With most DPIs, the mouthpiece should be pointed up or held horizontal when using in order to not dump the medication after loading.

Rinse your mouth after using, if instructed by your physician.

Multi-dose devices have an indicator to alert you to the number of doses remaining, or when the device is almost empty.

General instructions are that you should not allow your DPI to get wet. The mouthpiece should be wiped regularly with a clean, dry cloth.

Inhaling the dry powder may cause some people to cough; talk with your doctor if this happens.

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## HOW TO USE A DPI CAPSULE

Open cap.	Open mouthpiece.	Peel back foil, remove capsule and put capsule in chamber.	Close mouthpiece until it clicks.	Press green piercing button in once and release. Do not shake.
Breathe out gently (away from inhaler).	Put mouthpiece between teeth (without biting) and close lips to form good seal.	Breathe in slowly and deeply, so capsule vibrates.	Keep breathing in as long as comfortable.	While holding breath, remove inhaler from mouth.
Breathe out gently (away from inhaler).	Repeat steps 7 - 11 to take the full dose.	Open mouthpiece and remove used capsule.	Close mouthpiece.	Close cap.

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## HOW TO USE A REDIHALER

 American Lung Association.

**How to Use a Redihaler**

**Note: Do not use a spacer with this device.**

-  1. Hold the Redihaler upright and do not cover the vent at the top.
-  2. Open the cap to prepare your dose.
-  3. Breathe out away from the device.
-  4. Put the mouthpiece in your mouth and close your lips tightly.
-  5. Breathe in deeply through your mouth.
-  6. Hold your breath for 10 seconds, then breathe out slowly.
-  7. Close the cap after each dose.
-  8. Rinse with water and spit it out.

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## HOW TO USE A SOFT MIST INHALER

### 1. Load the cartridge

If your inhaler is single use, load the capsule as directed. ⓘ

### 2. Prime the inhaler

Point the inhaler toward the floor and press the dose-release button. You should see a mist. If you don't, close the cap, turn the base, open the cap, and try again. ⓘ

### 3. Take a dose

1. Hold the inhaler upright and turn the base until it clicks. ⓘ
2. Open the cap. ⓘ
3. Breathe out slowly and completely. ⓘ
4. Put the mouthpiece in your mouth between your teeth. ⓘ
5. Close your lips around the mouthpiece, but don't cover the air vents. ⓘ
6. Press the button on the side of the inhaler and inhale slowly and deeply. ⓘ
7. Continue to breathe in until your lungs are full. ⓘ
8. Hold your breath for 10 seconds. ⓘ
9. Remove the inhaler from your mouth and breathe out slowly. ⓘ
10. Put the cap back on. ⓘ

### 4. Clean and store

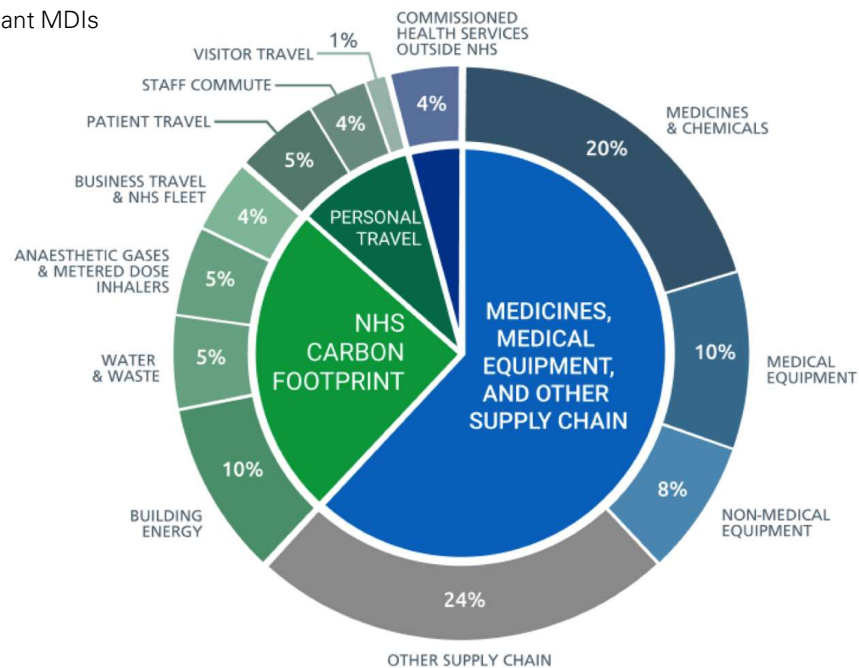
Clean the inhaler once a week with a damp cloth. Store it in a cool, dry place. ⓘ

### 5. Throw away

Throw away the inhaler when the dose counter reaches "0" or the discard date, whichever comes first. ⓘ

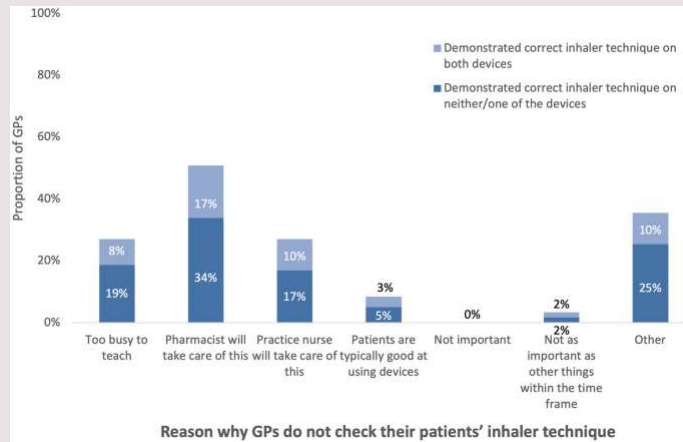
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2036 no propellant MDIs



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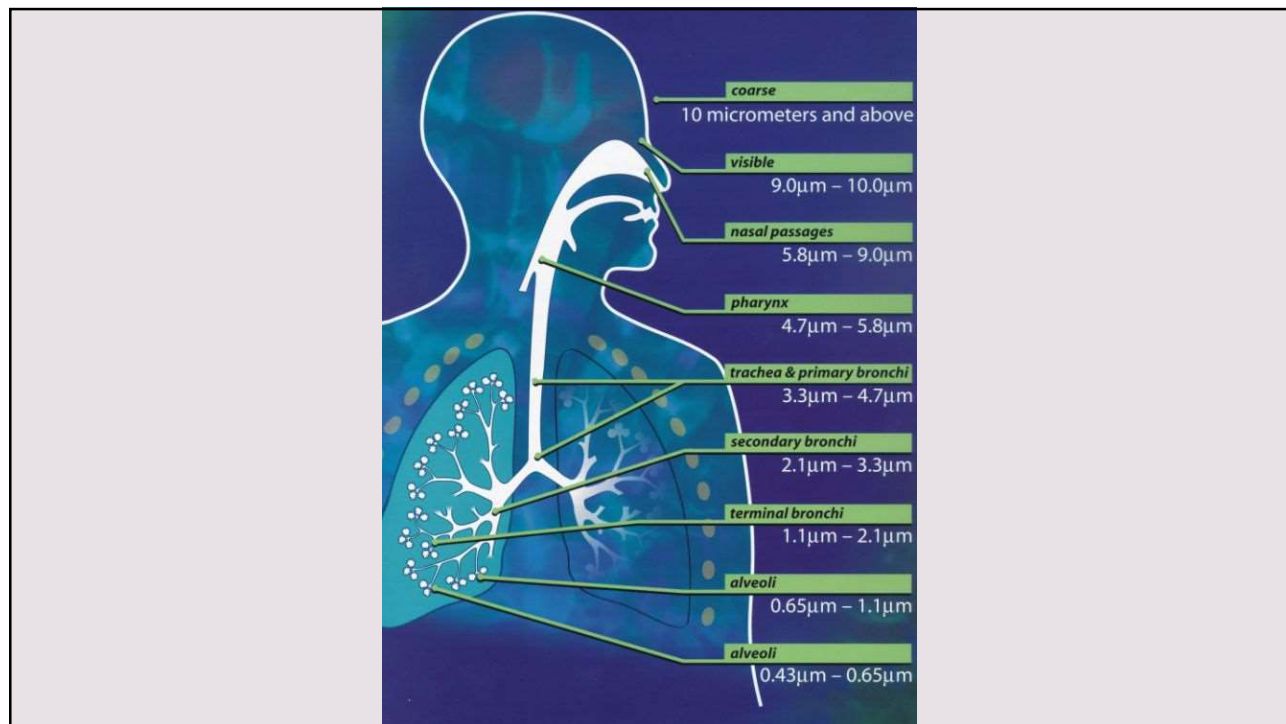


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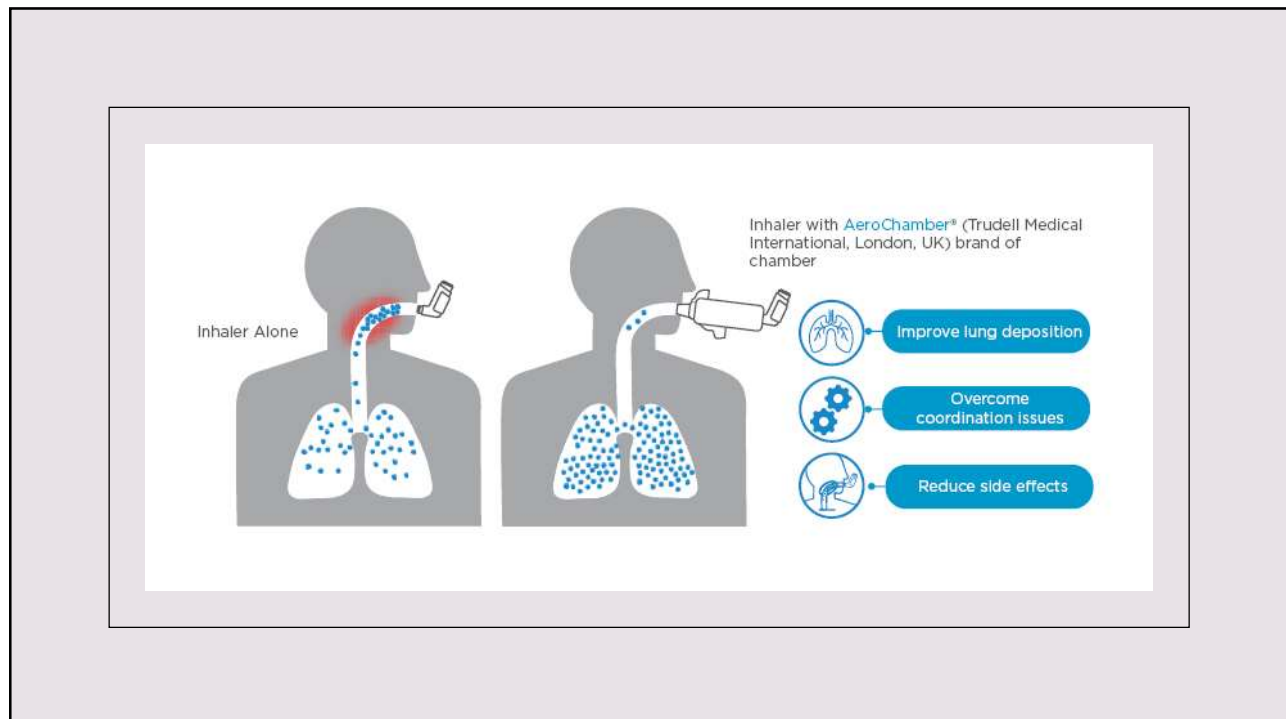
Oral Corticosteroids (OCS)	Inhaled Corticosteroids (ICS)
<b>More severe side effects:</b> <ul style="list-style-type: none"> <li>Increased risk of infections</li> <li>Thinning of bones and bruising</li> <li>Eye Problems</li> <li>Elevated Blood Sugar (Diabetes)</li> <li>High blood pressure</li> <li>Weight gain</li> <li>Hormonal problems</li> <li>Mood changes</li> <li>Insomnia</li> <li>Gastrointestinal symptoms</li> </ul>	<b>Common less severe side effects:</b> <ul style="list-style-type: none"> <li>Oral thrush</li> <li>Cough</li> <li>Headache</li> <li>Sore throat</li> <li>Hoarseness</li> </ul>

[www.allergyasthmanetwork.org](http://www.allergyasthmanetwork.org)

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## The Benefits of using an Spacer Device

A spacer device such as an AeroChamber helps to improve inhaler technique.

**1 Improves drug delivery**

When you use your inhaler, even with perfect technique, only 10-20% of the medicine gets to your lungs. The rest you might swallow without realising it. Using a spacer can increase the amount of medicine that reaches your lungs and help overcome administration challenges (e.g., coordination).

**2 Better control of respiratory symptoms**

Poor inhaler technique can lead to inadequate symptom control. Patients diagnosed with asthma, who use an AeroChamber are 10-12% less likely to have asthma exacerbations.<sup>1</sup>

**3 Can be used in any age**

Spacers come in different mask sizes for patients of all ages.


Small mask: 0-5 years old  
Medium mask: 6-15 years old  
Youth mouthpiece: 16+ years old  
Small/Large Adult: 13+ years old

**4 Reduces side effects**

Spacer devices can prevent particles from collecting in your mouth or on your tongue, lessening side effects such as oral thrush and hoarse voice.

**How to use Spacer Device**

Scan the QR code for a video demonstration!



**Did you know?**

Up to 68% of patients do not use their inhalers well enough to receive the benefit of the medicine.<sup>2</sup>

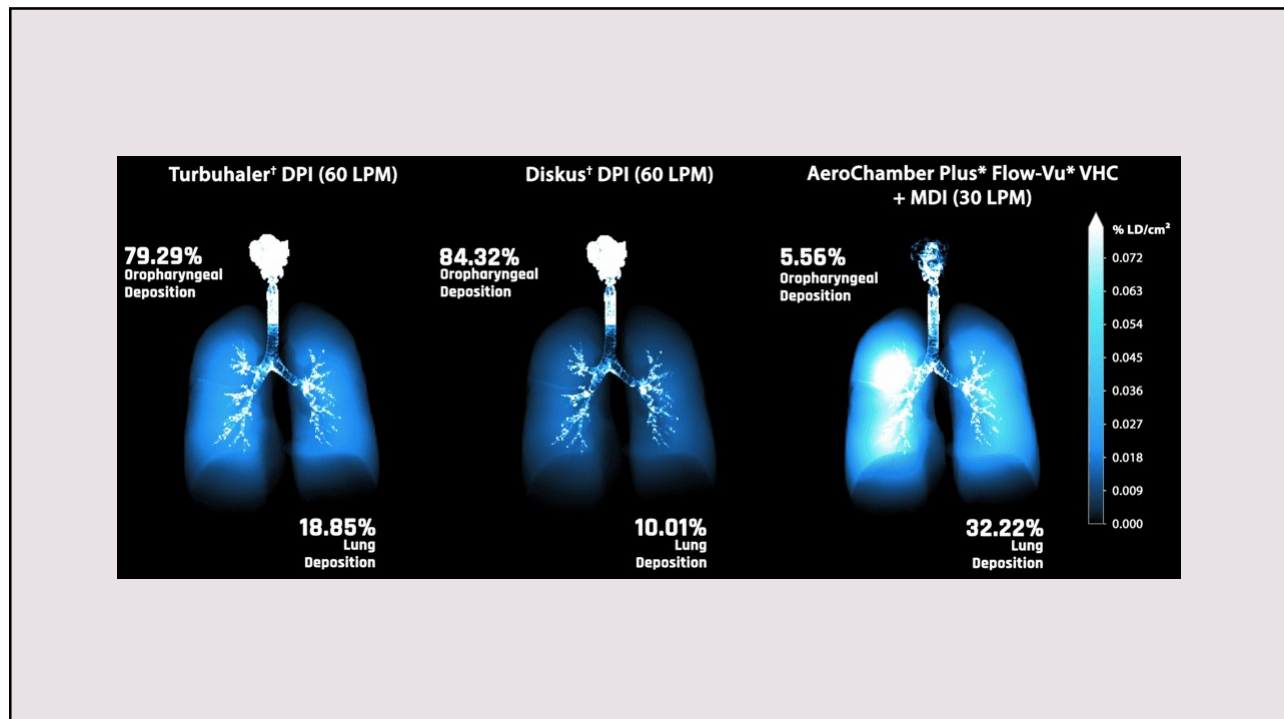
**References**

1. Laine M, D'Souza MS. Improving drug delivery: Part 1: the use of inhaler delivery devices and drug formulation to therapeutic effectiveness of aerosolised medications. *Drugs*. 2015;75(10):1400-1411. doi:10.1007/s00142-015-0888-1

2. Barak O, C. Kuperman V, Glickman D, Spector J. A Prospective Study of the Effectiveness of an AeroChamber Plus for Asthma. *Respiratory Therapy*. 2015;55(1):100-105. doi:10.1016/j.rth.2014.12.001

3. The UK Adult & Paediatric Inhaler Use Audit for Improved Inhaler and Patient Education. *Respir Care*. 2005;50(10):1380-1376.

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## TOP 10 INHALER MISTAKES

Inhaled asthma medicine needs to reach the airways to work. Here are 10 common mistakes made when using a metered-dose inhaler (MDI) and how to correct them.

- 1. SETTING DOWN**  
**FIX IT:** Breathe in and keep the canister in fully while you breathe in, then pause to inhale.
- 2. USING AN EMPTY INHALER**  
**FIX IT:** Shake a full canister. The inhaler is full full as you never run out.
- 3. NOT SHAKING OR PRIMING THE INHALER**  
**FIX IT:** Shake the canister well before use. It is important for medicine to be ready to work. When using a new inhaler, there is a priming dose to test that it works. Then again, it may need for several weeks.
- 4. NOT USING A SPACER WITH AN MDI INHALER**  
**FIX IT:** A spacer holds the medicine in the canister for the entire time of the breath. Leave the canister in the spacer. Shake the canister well before use. Then again, it may need for several weeks.
- 5. HOLDING THE HEAD TOO FAR FORWARD OR BACKWARD**  
**FIX IT:** The head should be in a neutral position. Not too far forward, not too far back, and not too far up or down.
- 6. TONGUE OR TEETH IN THE WAY OF SPACER/INHALER OPENING**  
**FIX IT:** Put the spacer/inhaler in the mouth above the tongue, under the lip line.
- 7. MOUTH NOT TIGHT ENOUGH AROUND SPACER/INHALER**  
**FIX IT:** Close the lips around the spacer so air does not escape.
- 8. DIRECTING SPACER/INHALER AT TONGUE OR ROOF OF MOUTH**  
**FIX IT:** Aim the spacer/inhaler at the back of the throat, so the medicine reaches the lungs.
- 9. SPRAYING SEVERAL PUFFS OF INHALER INTO SPACER**  
**FIX IT:** Spray only one puff of the inhaler at a time into the spacer. Breathe in and hold your breath for 10 seconds. Then repeat for the number of puffs the doctor prescribed. Rinse your mouth.
- 10. INHALING MEDICINE TOO FAST**  
**FIX IT:** Breathe slowly. A faster breath can cause the medicine to be lost.

**REMEMBERS**

- Follow instructions for using your inhaler.
- Shake and test after inhaling a canister.
- Shake your inhaler medicine to your provider.
- Clean the inhaler and spacer according to your asthma plan.

**ASTHMA FACTS**

- 4.5 million children have asthma.
- Leading chronic disease among children.
- 1 out of 10 school-aged children have asthma.
- Top cause of missed school days.

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## FunHaler for children with asthma

**Problem:** Small children with asthma have trouble using common inhalers, their little hands don't reach nor have the strength to push the canister down.

With this inhaler, children can use their thumbs on the lids to firmly push without struggling.

**Motivates toddlers to learn and treat their condition**

**Ergonomics**

*Suited for toddlers' small hands and finger strength*

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Device	Diskus <sup>®</sup>	Image	Smartphone application	Patient reminder available	Inhaler technique check	Measures inspiratory flow (L·min <sup>-1</sup> )
Inhaler Compliance Assessment (NCA) <sup>™</sup> [36]	Diskus <sup>®</sup>		X	X	✓	✓
Propeller Sensor [38]	pMDI Diskus <sup>®</sup> Ellipta <sup>®</sup> Respiromat <sup>®</sup> Breezhaler <sup>®</sup> Turbohaler <sup>®</sup> Easyhaler <sup>®</sup>		✓	✓	X	X
Hallie Sensor <sup>®</sup> [45]	pMDI Diskus <sup>®</sup> Turbohaler <sup>®</sup> Handihaler <sup>®</sup>		✓	✓	✓	X
Turbo <sup>®</sup> [51]	Turbohaler <sup>®</sup>		✓	✓	X	X
CapMedic <sup>®</sup> [53]	pMDI		✓	✓	✓	✓
Respiro <sup>®</sup> [57]	pMDI Ellipta <sup>®</sup> Nexthaler <sup>®</sup> Spiromax <sup>®</sup>		✓	✓	✓	✓
HeroTracker <sup>®</sup> [59]	pMDI Diskus <sup>®</sup>		✓	✓	X	X
DigiHaler <sup>®</sup> [61]	Inbuilt DigiHaler <sup>®</sup>		✓	✓	✓	✓

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### Asthma Self-management Action Plan

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Next asthma check-up date:** \_\_\_\_\_


**Doctor's contact details:** \_\_\_\_\_

**Emergency contact details:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Address:** \_\_\_\_\_



**Doing Well** Peak Flow Reading: **More than 240 L/min**

**Symptoms:**

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- I can do all my usual activities

**Medications:**

Take twice long-acting controller medicines every day  
**Type in list of medications:**

- Symptom Relievers (Short-acting beta2 agonist) SABA: \_\_\_\_\_
- 2 or 3 inhalations AM: PM: \_\_\_\_\_
- The 2 or 3 SABA inhalations before exercises
- Take Symbicort (SABA) 2 inhalations

**Additional comments:**

**Getting Worse** Peak Flow Reading: **180 to 240 L/min**

**Symptoms:**

- Cough, wheeze, chest tightness, or shortness of breath
- I am waking at night due to asthma
- I can do some, but not all, my usual activities

**Medications:**

Take twice long-acting controller medicines every day  
**2 inhalations as needed for symptoms (maximum 16 inhalations/day)**  
**Rescue:** If you get symptoms and your peak flow is not near the GREEN ZONE after 1 hour of the above treatment:

- Continue Symbicort SABA 2 mg
- 2 inhalations as needed for symptoms for 2 days
- ADJ: Prednisone 40 mg per day for 5 days
- CALL your physician (Dr. Dr. Fred and Nurse Maria) at 191-191-1911

**Additional comments:**

**Medical Alert** Peak Flow Reading: **less than 180 L/min**


**Symptoms:**

- Wheeze, chest tightness, or shortness of breath
- Controlled medicines have not helped
- I cannot do usual activities
- Symptoms are the same or worse after 24 hours in the YELLOW ZONE


**Medications:**

- Continue Symbicort SABA 2 mg 2 inhalations
- Prednisone 40 mg and go to the hospital


**Additional comments:**



**Go to the Hospital or call 911 NOW if:** You are still in the RED ZONE after 15 minutes, you are having trouble talking due to shortness of breath or your lips or fingernails turn blue



### Asthma Action Plan



**IMPORTANT INFO**

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Doctor name:** \_\_\_\_\_

**Doctor phone:** \_\_\_\_\_

**Emergency contact:** \_\_\_\_\_

**Emergency phone:** \_\_\_\_\_

**Instructions for an exercise-induced asthma flare-up:**

**Medicine:** \_\_\_\_\_

**How much:** \_\_\_\_\_

**When:** \_\_\_\_\_

**Additional instructions:** \_\_\_\_\_

**TRIGGERS:**

<input type="checkbox"/> pollen	<input type="checkbox"/> mold	<input type="checkbox"/> dust-dirt	<input type="checkbox"/> animal air pollution	<input type="checkbox"/> smoke	<input type="checkbox"/> food
<input type="checkbox"/> exercise	<input type="checkbox"/> cold	<input type="checkbox"/> weather		<input type="checkbox"/> other	

**DOING WELL**

**No Symptoms**

**Use these medicines as listed:**

**Medicine:** \_\_\_\_\_

**How much:** \_\_\_\_\_

**How often / when:** \_\_\_\_\_

**Additional instructions:**

- Breathing is easy
- No cough or wheeze
- No chest tightness
- Can do usual activities
- Can sleep through the night

**CAUTION**

**Any of These Symptoms:**

- Some shortness of breath
- Cough, wheeze, or chest tightness
- Difficulty doing usual activities
- Sleep disturbed by symptoms
- Symptoms of a cold/flu

**Continue with medicines as above, and also take:**

**Medicine:** \_\_\_\_\_

**How much:** \_\_\_\_\_

**How often / when:** \_\_\_\_\_

**Call your doctor if:**

**DANGER**

**Any of These Symptoms:**

- Severe breathing problems
- Cannot do usual activities
- Difficulty waking and talking
- Medicine is not helping

**Take extra medicine and get help now!**


**Medicine:** \_\_\_\_\_

**How much:** \_\_\_\_\_

**How often / when:** \_\_\_\_\_

**If symptoms don't improve, go to the hospital or call 911.**

### ASTHMA ACTION PLAN



**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Doctor's Office & Day:** \_\_\_\_\_

**Emergency Contact:** \_\_\_\_\_

**Doctor's Telephone:** \_\_\_\_\_

**Doctor's Address:** \_\_\_\_\_


**Instructions for an exercise-induced asthma flare-up:**

**Medicine:** \_\_\_\_\_


**How much:** \_\_\_\_\_

**When:** \_\_\_\_\_


**Additional instructions:** \_\_\_\_\_



**GREEN means Go Zone**  
 No symptoms  
 Exercise means Go Zone Zone  
 All can do usual activities  
 All can sleep through the night



**YELLOW means Caution Zone**  
 Some symptoms  
 Use extra medicine  
 Call your doctor



**RED means Danger Zone**  
 Severe symptoms  
 Get help from a doctor

**Personal Best Peak Flow**

**Do:** Use these daily controller medicines

**We have all of these:**

- Breathing is easy
- No cough or wheeze
- No chest tightness
- Can do all my usual activities
- Can sleep through the night

**Peak Flow:** \_\_\_\_\_

**Do:** Add asthma medicine as needed

**Do:** Add asthma medicine as needed

**CAUTION**

**Continue with green zone medicine and add:**

**We have any of these:**

- Some shortness of breath
- Cough, wheeze, or chest tightness
- Difficulty doing usual activities
- Sleep disturbed by symptoms
- Symptoms of a cold/flu

**Peak Flow:** \_\_\_\_\_

**Do:** Add asthma medicine as needed

**Do:** Add asthma medicine as needed

**DANGER**

**Take extra medicine and get help now!**

**We have any of these:**

- Severe breathing problems
- Cannot do usual activities
- Difficulty waking and talking
- Medicine is not helping

**Peak Flow:** \_\_\_\_\_

**Do:** Add asthma medicine as needed

**Do:** Add asthma medicine as needed



