

Common Inhaled Asthma Medications

To see the full guidelines go to: <http://www.nhlbi.nih.gov/guidelines/asthma/asthmafullrpt.pdf>.

Medication Class

Long-acting Inhaled Beta Agonists (including combinations)

Salmeterol DPI (*Serevent Diskus*)
 Fluticasone/Salmeterol DPI (*Advair Diskus*)
 Formoterol DPI (*Foradil Aerolizer*)

Short-acting Inhaled Beta Agonists

Albuterol MDI (*Proventil, Ventolin*)
 Albuterol HFA MDI (*Proventil, Ventolin*)
 Albuterol Nebulizer Solution (*Proventil, Ventolin, AccuNeb*)
 Levalbuterol Nebulizer Solution (R-albuterol) (*Xopenex*)
 Pirbuterol MDI (*Maxair Autohaler*)

Anticholinergics (including combinations)

Ipratropium MDI (*Atrovent*)
 Ipratropium Nebulizer Solution (*Atrovent*)
 Ipratropium with Albuterol MDI (*Combivent*)
 Ipratropium with Albuterol Nebulizer Solution (*DuoNeb*)
 Tiotropium DPI (*Spiriva*)

Mast Cell Stabilizers

Cromolyn MDI (*Intal*)
 Cromolyn Nebulizer Solution (*Intal*)
 Nedocromil MDI (*Tilade*)

Corticosteroids

Beclomethasone HFA (*QVAR*)
 Budesonide DPI (*Pulmicort Turbuhaler*)
 Budesonide Inhalation Suspension for Nebulization (pediatric dose) (*Pulmicort*)
 Flunisolide MDI (*AeroBid*)
 Fluticasone HFA (*Flovent*)
 Fluticasone DPI (*Flovent Rotadisk*)
 Mometasone Inhalation Powder (*Asmanex Twisthaler*)
 Triamcinolone Acetonide (*Azmacort*)

* Metered Dose Inhaler (MDI), Dry Powder Inhaler (DPI), Chlorofluorocarbon (CFC), Hydrofluoroalkane (HFA)

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Medication Class	Drug, Dosage AWP***	Form,* Adult Dose	Pediatric Dose (≤ 12 years)
Long-acting Inhaled Beta Agonists (including combinations)	Salmeterol MDI (<i>Serevent</i>)	2 puffs q 12 hours	1-2 puffs q 12 hours
	21 mcg/puff (discontinued)		
	Salmeterol DPI (<i>Serevent Diskus</i>)	1 blister q 12 hours	1 blister q 12 hours
	50 mcg/blister, dose \$112.10/60		
	Fluticasone/Salmeterol DPI (<i>Advair Diskus</i>)	1 inhalation BID; dose depends on severity of asthma	1 inhalation BID; dose depends on severity of asthma (not FDA approved for children < 12 years; off-label use in 4 to 11 years of age using 100/50 mcg product)
	100 mcg, \$94.01, 250 mcg, \$116.01, or 500 mcg/50 mcg \$163.95		
	Formoterol DPI (<i>Foradil</i>)	1 capsule q 12 hours	1 capsule q 12 hours

	250 mcg, \$110.91, or 500 mcg/50 mcg \$163.95	approved for children < 12 years; off-label use in 4 to 11 years of age using 100/50 mcg product)
	Formoterol DPI (Foradil Aerolizer) 1 capsule q 12 hours 12 mcg/single-use capsule, \$92.62/60 dose	1 capsule q 12 hours (only for children ≥ 5 years of age)
Short-acting Inhaled Beta Agonists	Albuterol MDI (Proventil, Ventolin) 90 mcg/puff, 200 puffs/canister, \$41.34	2 puffs 5 minutes prior to exercise 2 puffs TID-QID prn (may double usual dose for mild exacerbations)
	Albuterol HFA MDI (Proventil, Ventolin) 90 mcg/puff, 200 puffs/canister, \$37.62 - \$42.20	2 puffs 5 minutes prior to exercise 2 puffs TID-QID prn (may double usual dose for mild exacerbations)
	Albuterol Nebulizer Solution (Proventil, Ventolin, AccuNeb) 1.25-5 mg in 3 mL of saline q 4-8 hours (may double dose for severe exacerbations)	0.05 mg/kg (min 1.25 mg, max 2.5 mg) in 3 mL saline q 4-6 hours (may double dose for severe exacerbations)
	Levalbuterol Nebulizer Solution (R-albuterol) (Xopenex) 0.31 mg/3 mL, \$2.90/unit 0.63 mg/3 mL, \$2.90/unit 1.25 mg/3 mL, \$2.90/unit	0.025 mg/kg (min. 0.63 mg, max. 1.25 mg) q 4-8 hours
	Pirbuterol MDI (Maxair Autohaler) 200 mcg/puff, 400 puffs/canister, \$98.39	2 puffs 5 minutes prior to exercise 2 puffs TID-QID prn (may double usual dose for mild exacerbations)
Anticholinergics (including combinations)	Ipratropium MDI (Atrovent) 18 mcg/puff 200 puffs/canister, \$76.80	2-3 puffs q 6 hours 1-2 puffs q 6 hours
	Ipratropium Nebulizer Solution (Atrovent) 0.25 mg/mL (0.025%), \$2.06/mL	0.125-0.25 mg q 6 hours
	Ipratropium with Albuterol MDI (Combivent) 18 mcg/puff of ipratropium bromide and 90 mcg/puff of albuterol 200 puffs/canister, \$85.00	2-3 puffs q 6 hours 1-2 puffs q 8 hours
	Ipratropium with Albuterol Nebulizer Solution (DuoNeb) 0.5 mg/3 mL ipratropium bromide and 2.5 mg/3 mL albuterol, \$2.36/3mL	3 mL q 4-6 hours 1.5-3 mL q 8 hours
	Tiotropium DPI (Spiriva) 1 capsule q 24 hours 18 mcg/capsule, \$122.98	Safety and efficacy not established in children
Mast Cell Stabilizers	Cromolyn MDI (Intal) 1 mg/puff, \$103.82	2-4 puffs TID-QID 1-2 puffs TID-QID
	Cromolyn Nebulizer Solution (Intal) 20 mg/ampule, \$1.37/ ampule	1 ampule TID-QID
	Nedocromil MDI (Tilade) 1.75 mg/puff, \$81.01	2-4 puffs BID-QID 1-2 puffs BID-QID
	Corticosteroids	Ranges Expressed as Low to Medium Daily Doses
	Beclomethasone HFA (QVAR) 40 mcg/puff, \$61.45	80-480 mcg 80-320 mcg
	Budesonide DPI (Pulmicort) 200-1,200 mcg	200-800 mcg

	Doses	Doses
Beclomethasone HFA (QVAR) 80-480 mcg 40 mcg/puff, \$61.45		80-320 mcg
Budesonide DPI (Pulmicort Turbuhaler) 200-1,200 mcg 200 mcg/inhalation, \$168.02		200-800 mcg
Budesonide Inhalation Suspension for Nebulization (pediatric dose) (Pulmicort) 0.25, 0.5 mg/2 mL ampule, range: \$5.06 to \$5.47/ ampule		0.5-1.0 mg
Flunisolide MDI (AeroBid) 500-2,000 mcg 250 mcg/puff, \$83.59		500-1,250 mcg
Fluticasone HFA (Flovent) 88-660 mcg 44, 110, or 220 mcg/puff, range: \$76.73 to \$159.58		88-440 mcg
Fluticasone DPI (Flovent Rotadisk) 100-600 mcg 50, 100, or 250 mcg/inhalation, range \$76.73 to \$159.58		100-400 mcg
Mometasone Powder (Twisthaler)*** 220 mcg/inhalation, \$155.75	220-440 mcg based on (not FDA approved for children < 12 years) prior asthma therapy	
Triamcinolone Acetonide (Azmacort) 100 mcg/puff, \$105.50	400-2,000 mcg	400-1,200 mcg

* Metered Dose Inhaler (MDI), Dry Powder Inhaler (DPI), Chlorofluorocarbon (CFC), Hydrofluoroalkane (HFA)

** Average Wholesale Price (AWP), Cardinal Health Inc., <http://www.cardinal.com>. (Accessed August 11, 2005).

*** Approved by the FDA in 3/05 - not included in National Asthma Guidelines

Tips for Correct Use of Metered Dose Inhalers (MDIs)

Advantages

- | | |
|--|--|
| ?. <i>Easy-to-use and can be taken with you.</i> | ?. <i>Because your medicine is delivered directly to your lungs</i> |
| ?. <i>Sends your medicine directly into the large and small breathing tubes (bronchial tubes) of your lungs.</i> | ?. <i>it is more effective and causes fewer medicine-related side effects. This is different from a pill or a shot which sends medicine to your entire body.</i> |
| ?. <i>Once inhaled it quickly helps you to breathe better.</i> | |

To get the best results from your inhaler, have your healthcare professional teach you how to correctly use it. Also, follow the simple tips on this sheet; they'll serve as a reminder.

Types of Inhalers

Wet Metered Dose Inhalers	Dry Powder Metered Dose Inhalers
?. Description: small canister attached to a mouthpiece, often "L" shaped, medicine and a pressurized propellant inside.	?. Description: a single "pill" or "tube" shaped device (Diskus, Rotadisk, Turbuhaler), dry medicine is inside. It does not have a propellant inside.
?. Propellant forces medicine into lungs as you breathe in.	?. Does not require priming after activating and loading the inhaler.
?. Requires priming by using 2 to 3 sprays before first use or first dose if not used for several days.	?. Does not require shaking.
?. Shake well before each use.	?. No spacer is needed or should be used.
?. Can be used with a spacer (a tube that attaches to the mouthpiece to help make the medicine go deeper into the lungs and increased effectiveness).	?. Clean the mouthpiece when needed with water and dry immediately. Do not get the unit wet or place in water.
?. Clean the mouthpiece with water and dry.	?. Capsules for inhalation (such as those used in the <i>Foradil Aerolizer</i> or <i>Spiriva HandiHaler</i>) must not be swallowed.

Steps for Use

The exact steps will be taught to you by your healthcare professional and will depend on the type of inhaler you have. The steps below are common to all inhalers:

- Take off the cap and shake the inhaler. If you're using a dry inhaler, just open it.
- Breathe out all the way.
- Hold the inhaler the way you were shown. If you are using a dry powder inhaler, activate it so that the powder is ready to be inhaled.
- As you start breathing in slowly through your mouth, press down on the inhaler. If you have a spacer attached to the inhaler, press down on the inhaler, wait a few seconds, then breathe in. If you use a dry powder inhaler, put the mouthpiece to your lips and breathe in quickly.

ready to be inhaled.

0. As you start breathing in slowly through your mouth, press down on the inhaler. If you have a spacer attached to the inhaler, press down on the inhaler, wait a few seconds, then breathe in. If you use a dry powder inhaler, put the mouthpiece to your lips and breathe in quickly.
0. Hold your breath as you count to 10 slowly, if you can.
0. Breathe out slowly.
0. If your prescription calls for another puff, wait about a minute, shake if you're using a wet inhaler, and repeat.

What to Do If You Have More than One Inhaler Prescription

- ?. One inhaler medicine (a **bronchodilator**) relaxes and opens the breathing tubes.
- ?. Another medicine (an **anti-inflammatory**) decreases swelling and irritation.
- ?. **Always use the inhaler that opens the breathing tubes first (bronchodilator).**
- ?. If your prescription calls for more than one puff, wait about a minute, and shake between puffs if you're using a wet inhaler.
- ?. If your doctor has prescribed another inhaler, wait for 5 minutes before using it.
- ?. Your anti-inflammatory inhaler should be last.
- ?. If you have used an anti-inflammatory inhaler, always rinse your mouth with water and spit it out. Doing this will prevent yeast infections in your mouth.

Don't Run Out of Your Inhalers

Your best breathing depends on using your inhalers as your doctor prescribed. Make sure that you always have enough medicine in your inhalers or you have a fresh refill on hand.

- ?. For inhalers that you use daily:
 - ?. Your pharmacist can tell you how many days' supply is in each inhaler. When you start using a new inhaler write down the date it will be used up. Don't use it after that date, since the correct dose may not be delivered. To know how many puffs you have left in your inhaler, count the puffs you used.
 - ?. For inhalers that you use when they're needed for symptoms:
- ?. Your pharmacist can tell you how many puffs are in each inhaler. Keep track of how many puffs you've used.
 - ?. Some of the newer inhalers have counters on them so you'll always know.
 - ?. Don't put the canister from your inhaler in water (the "float" test) to see if it's empty, that doesn't work.

Storage

Always store your inhalers at room temperature or on your person if you are going out. Don't leave them in a car.