



# Initial Outpatient Evaluation and Ongoing Management of Asthma

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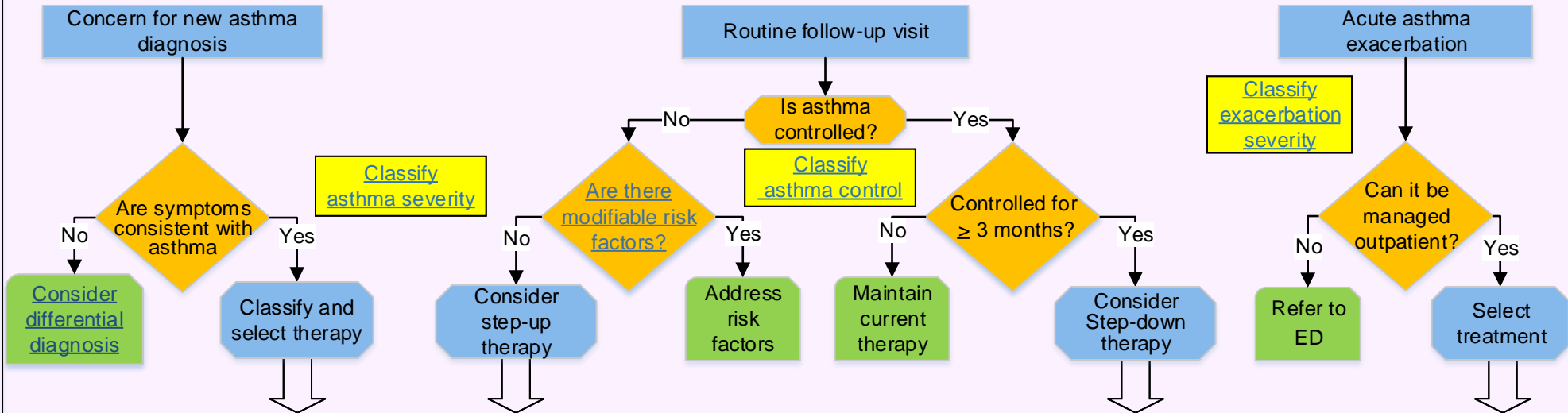
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# Initial Outpatient Evaluation and Ongoing Management of Asthma

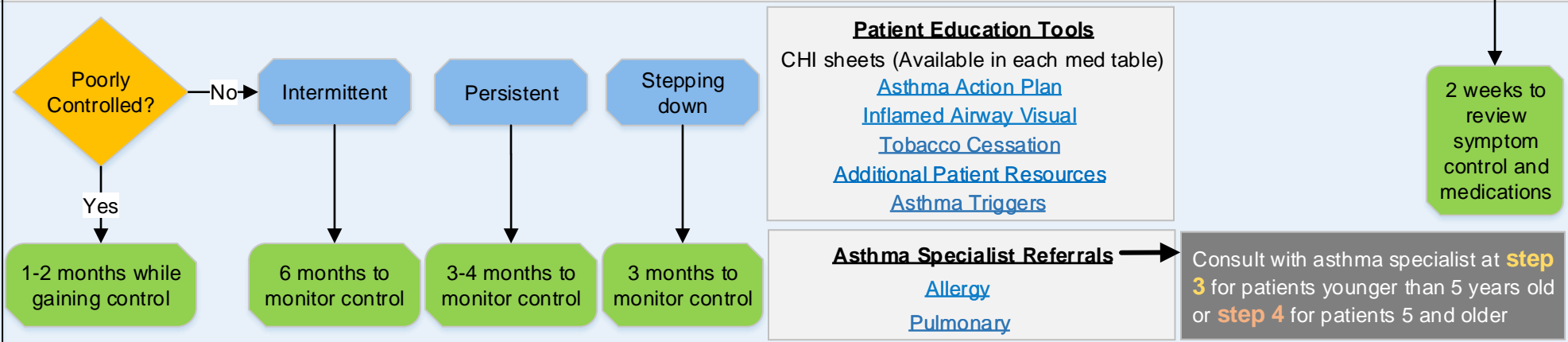
Diagnosis



Treatment

Age	Step 1 ↔ Step 2 ↔ <div>Consult with asthma specialist</div> Step 3 ↔ Step 4 ↔ Step 5 ↔ Step 6						
	Intermittent	Mild Persistent	Moderate Persistent	Severe Persistent			Exacerbation
Age: 0-4	SABA PRN and short course daily ICS at start of RTI	Daily low-dose ICS and prn SABA	Daily medium-dose ICS and prn SABA	Daily medium-dose ICS-LABA and prn SABA	Daily high-dose ICS-LABA and prn SABA	Daily high-dose ICS-LABA + OCS and prn SABA	Treatment for acute exacerbation
Age: 5-11	SABA PRN	Daily low-dose ICS and prn SABA	Daily and prn low-dose ICS-formoterol #	Daily and prn medium-dose ICS-formoterol #	Daily high-dose ICS-LABA and prn SABA	Daily high-dose ICS-LABA + OCS and prn SABA	
Age: 12+	SABA PRN	Daily low-dose ICS and prn SABA or prn ICS and SABA	Daily and prn low-dose ICS-formoterol	Daily and prn medium-dose ICS-formoterol	Daily medium or high-dose ICS-LABA + LAMA and prn SABA	Daily high-dose ICS-LABA + OCS and prn SABA	
# 4 year olds can also be treated with this approach			Select a box above to see treatment options, or select categories to right for medication tables		SABA: Short-Acting Beta Agonist	ICS: Inhaled Corticosteroids	Follow-up
Modified from 2020 NHLBI Asthma Focused Updates. For alternative treatment options click here.					OCS: Oral Corticosteroids	LABA: Long-Acting Beta Agonist	

Education/Follow-up



# Differential Diagnosis Considerations for Asthma

## **Upper airway disease**

- Allergic rhinitis and sinusitis

## **Obstruction involving large airways**

- Foreign body in trachea or bronchus
- Vocal cord dysfunction
- Vascular ring or laryngeal web
- Laryngotracheomalacia, tracheal stenosis, or bronchostenosis
- Enlarged lymph nodes or tumor

## **Obstruction involving small airways**

- Viral bronchiolitis or obliterative bronchiolitis
- Cystic fibrosis
- Bronchopulmonary dysplasia
- Heart disease

## **Other Causes**

- Recurrent cough not due to asthma
- Aspiration from swallowing mechanism dysfunction or gastroesophageal reflux

## Classification of Asthma Severity: Clinical Features before Treatment

(Modeled after NHLBI Guidelines)

	Intermittent	Mild Persistent	Moderate Persistent	Severe Persistent
<b>Daytime symptoms</b>	$\leq 2$ days/week	$> 2$ days/week	Daily	Throughout the day
<b>Nighttime symptoms*</b>	$\leq 2$ times/month	3 – 4 times/month	$> 1$ time/week	Nightly
<b>Rescue inhaler use</b>	$\leq 2$ days/week	$> 2$ days/week	Daily	Several times a day
<b>Exercise or Physical Activity Limitation</b>	None	Minor	Some	Extremely
<b>FEV1</b>	$>80\%$	$>80\%$	60 – 80%	$<60\%$
<b>FEV1/FVC</b>	$>85\%$	$>80\%$	75 – 80%	$<75\%$
<b>“Risk”</b>	0 – 1 oral steroids/year	$> 2$ oral steroids per year		

\*Frequency of nighttime symptoms for **0-4 year olds** are classified differently compared to older patients:

Intermittent: 0/month | Mild Persistent: 1-2/month | Moderate Persistent: 3-4/month | Severe Persistent:  $>1$ x/week

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# Modifiable Risk Factors to Assess

## **Medication self-management barriers**

- Poor controller adherence
- Lack of understanding of inhaler technique
- Poor understanding of asthma action plan
- Unable to access medication at the pharmacy
- Unable to obtain spacer

[Click here to view asthma triggers and avoidance techniques](#)

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# asthma triggers

Asthma triggers are things outside the body that cause an asthma attack. What triggers an asthma episode for one person may not bother another person with asthma. Therefore, the first step to preventing an asthma attack is knowing your asthma triggers and finding ways to avoid them.

## smoke & e-cigarettes



- Do not let anyone smoke in your home.
- Never smoke in the car with your child or in the car your child rides in.
- Avoid homes and other places where people smoke.
- If other people care for your child, make sure they do not smoke.
- Wash your hands and face after smoking, since smoke stays on your skin.
- Wear a covering over your clothing ("smoking jacket") when you smoke outside, since smoke sticks to clothes. Leave the covering outside before going indoors.
- Make every effort to stop smoking, even if you could not stop before. Keep trying!

## dust mites



- Keep mattresses, box springs, and all pillows in dust mite-proof covers.
- Wash your sheets, even brightly colored children's sheets and blankets, weekly in hot water.
- Remove stuffed toys from the bedroom or wash them weekly in hot water.
- Stay out of rooms that are being vacuumed or dusted.
- If possible, take rugs or carpets out of the bedroom.
- Use a dehumidifier for humid environments.

## pets



- Do not have pets with fur or feathers in your home. If unavoidable, keep them out of your bedroom.

## pests



- Kill all the pests in the entire building (do not re-enter until all fumes and smells are completely gone).
- Keep food and garbage sealed.
- Don't keep food in the bedrooms.
- Use roach traps to control roaches.
- Use traps to control mice and rats.

## mold



- Fix leaky faucets and pipes.
- Clean moldy surfaces with bleach in water (1-part bleach to 10-parts water).
- Clean shower curtains.
- Reduce humidity by using a dehumidifier.
- Use exhaust fans in kitchen, bathrooms and laundry.
- Consider consulting a professional.

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## indoor/outdoor pollutants and irritants



- Use your nose to detect strong odors that may be an irritant.
- Read labels—avoid products marked “danger” or “poison”; reduce use of products marked “caution” or “warning”.
- Avoid perfume, talcum powder, hair spray, and scented cleaning and laundry products.
- Avoid incense, scented candles, fireplaces, wood burning stoves, kerosene heaters, and outdoor fire pits.
- Know the air quality for the day, and plan accordingly. On days when air quality is poor, run the air conditioning and limit time outside. Plan any outdoor activities for early in the day — when air quality tends to be better — and avoid spending time in areas with a lot of traffic.

## weather



- On cold days, cover your nose and mouth with a scarf or wear a turtleneck.
- On hot, humid days, stay inside in the air conditioning, especially during the afternoon hours. Plan any outdoor activities in the morning.

## pollen



- Stay inside and keep windows closed when pollen levels are high.
- Pollen Wise and The Weather Channel are apps that can be used to monitor pollen counts.
- Remove clothing after spending time outdoors.
- Bathe and wash your hair before going to bed.
- Be sure to take your allergy medicine every day.
- Be aware of your symptoms on air quality alert days.



## exercise



- Exercise is important for everyone, even those with asthma. Asthma should NOT keep you from playing sports or being active.
- Ask your primary care provider about taking asthma medicine before play or exercise.
- Always take rescue medicine with you while exercising and use it right away if symptoms develop.
- Make sure to warm up before doing exercise and cool down after.

## stress



- Stay calm and breathe slowly.
- Focus on things that keep you happy.

## colds, flu, infections



- Avoid people with colds or flu.
- Get a flu shot every year.
- Wash hands frequently.
- Take controller medicine, as directed, every day even if feeling well.
- Do not use aspirin products.



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Components of control			Classification of Asthma Control (Modified from 2007 NHLBI guidelines)			
			Age (yr)	Well-Controlled	Not Well-Controlled	Very Poorly Controlled
Impairment	Symptoms		All	≤ 2 days/week*	> 2 days per week#	Throughout the day
	Nighttime awakenings		0-4	≤ 1x/month	> 1x/month	>1x/week
			5 to 11	≤ 1x/month	≥ 2x/month	≥ 2x/week
			≥ 12	≤ 2x/month	1-3x/week	≥ 4x/week
	Interference with normal activity		All	None	Some limitation	Extremely limited
	Short-acting beta2-agonist use for symptom control (not prevention of EIB)		All	≤ 2 days/week	> 2 days per week	Several times per day
	FEV1 or peak flow		≥ 5	> 80% predicted/ personal best	60-80% predicted/ personal best	< 60% predicted/ personal best
	FEV1/FVC		≥ 5	> 80%	75-80%	< 75%
	Validated Questionnaires		ACT	≥ 4	≥ 20	16-19
ATAQ			≥ 12	0	1-2	3-4
ACQ			≥ 12	≤ 0.75	≥ 1.5	N/A
Risk	Exacerbations requiring oral systemic corticosteroids¥		All	0-1/year	2-3/year	> 3/year
Recommended Action for Treatment			All	Maintain current step or consider step-down if well controlled for at least 3 months. Schedule regular follow-up in 1-6 months.	Step-up (1 step) and re-evaluate in 2-6 weeks. Age 0-4: If no clear benefit from stepping-up in 4-6 weeks, consider alternative diagnoses or adjust therapy.	Consider short course of oral systemic steroids, step-up (1-2 steps) and re-evaluate in 2 weeks Age 0-4: If no clear benefit from stepping-up in 4-6 weeks, consider alternative diagnoses or adjust therapy
* For 5-11 yos: < 2 days/week but not more than once on each day # For 5-11 yos: > 2 days/ week or multiple times on < 2 days/week ¥ Consider severity and interval since last exacerbation					Before stepping-up therapy, review adherence to medications, inhaler technique and environmental control.	

#### Suggestion for stepping down therapy:

The dose of ICS may be reduced about 25–50 percent every 3 months to the lowest dose possible required to maintain control

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## CLASSIFYING SEVERITY OF ASTHMA EXACERBATIONS IN THE URGENT OR EMERGENCY CARE SETTING

**Note:** Patients are instructed to use quick-relief medications if symptoms occur or if PEF drops below 80 percent predicted or personal best. If PEF is 50–79 percent, the patient should monitor response to quick-relief medication carefully and consider contacting a clinician. If PEF is below 50 percent, immediate medical care is usually required. In the urgent or emergency care setting, the following parameters describe the severity and likely clinical course of an exacerbation.

	Symptoms and Signs	Initial PEF (or FEV <sub>1</sub> )	Clinical Course
<b>Mild</b>	Dyspnea only with activity (assess tachypnea in young children)	PEF ≥70 percent predicted or personal best	<ul style="list-style-type: none"> <li>Usually cared for at home</li> <li>Prompt relief with inhaled SABA</li> <li>Possible short course of oral systemic corticosteroids</li> </ul>
<b>Moderate</b>	Dyspnea interferes with or limits usual activity	PEF 40-69 percent predicted or personal best	<ul style="list-style-type: none"> <li>Usually requires office or ED visit</li> <li>Relief from frequent inhaled SABA</li> <li>Oral systemic corticosteroids; some symptoms last for 1-2 days after treatment is begun</li> </ul>
<b>Severe</b>	Dyspnea at rest; interferes with conversation	PEF <40 percent predicted or personal best	<ul style="list-style-type: none"> <li>Usually requires ED visit and likely hospitalization</li> <li>Partial relief from frequent inhaled SABA</li> <li>Oral systemic corticosteroids; some symptoms last for &gt;3days after treatment is begun</li> <li>Adjunctive therapies are helpful</li> </ul>
<b>Subset: Life-Threatening</b>	Too dyspneic to speak; perspiring	PEF <25 percent predicted or personal best	<ul style="list-style-type: none"> <li>Requires ED/hospitalization; possible ICU</li> <li>Minimal or no relief from frequent inhaled SABA</li> <li>Intravenous corticosteroids</li> <li>Adjunctive therapies are helpful</li> </ul>

Key: ED, emergency department; FEV<sub>1</sub>, forced expiratory volume in 1 second; ICU, intensive care unit; PEF, peak expiratory flow; SABA, short-acting beta<sub>2</sub>-agonist

FORMAL EVALUATION OF ASTHMA EXACERBATION SEVERITY IN THE URGENT OR EMERGENCY CARE SETTING				
	Mild	Moderate	Severe	Subset: Respiratory Arrest Imminent
<b>Symptoms</b>				
Breathlessness	While walking Can lie down	While at rest (infant—softer, shorter cry, difficulty feeding) Prefers sitting	While at rest (infant—stops feeding) Sits upright	
Talks in	Sentences	Phrases	Words	
Alertness	May be agitated	Usually agitated	Usually agitated	Drowsy or confused
<b>Signs</b>				
Respiratory Rate	Increased	Increased Guide to rates of breathing in awake children: <i>Age</i> <2 months 2-12 months 1-5 years 6-8 years	Often >30/minute <i>Normal Rate</i> <60/minute <50/minute <40/minute <30/minute	
Use of accessory muscles; suprasternal reactions	Usually not	Commonly	Usually	Paradoxical thoracoabdominal movement
Wheeze	Moderate, often only end expiratory	Loud; throughout exhalation	Usually loud; throughout inhalation and exhalation	Absence of wheeze
Pulse/minute	<100	100-120 Guide to normal pulse rates in children <i>Age</i> 2-12 months 1-2 years 2-8 years	>120 <i>Normal rate</i> <160/minute <120/minute <110/minute	Bradycardia
Pulsus paradoxus	Absent <10 mmHg	May be present 10-25 mmHg	Often present >25 mmHg (adult) 20-40 mmHg (child)	Absence suggests respiratory muscle fatigue
<b>Functional Assessment</b>				
PEF Percent predicted or percent personal best	≥70 percent	Approx. 40–69 percent or response lasts <2 hours	<40 percent	<25 percent Note: PEF testing may not be needed in very severe attacks
PaO <sub>2</sub> (on air)	Normal (test not usually necessary)	≥60 mmHg (test not usually necessary)	<60 mmHg: possible cyanosis	
And/or PCO <sub>2</sub>	<42 mmHg (test not usually necessary)	<42 mmHg (test not usually necessary)	≥42 mmHg: possible respiratory failure	
SaO <sub>2</sub> percent (on air) at sea level	>95 percent (test not usually necessary)	90–95 percent (test not usually necessary)	<90 percent	
Hypercapnia (hypoventilation) develops more readily in young children than in adults and adolescents.				
Key: PaO <sub>2</sub> , arterial oxygen pressure; PCO <sub>2</sub> , partial pressure of carbon dioxide; PEF, peak expiratory flow; SaO <sub>2</sub> , oxygen saturation <b>Notes:</b> <ul style="list-style-type: none"> <li>The presence of several parameters, but not necessarily all, indicates the general classification of the exacerbation.</li> <li>Many of these parameters have not been systematically studied, especially as they correlate with each other. Thus, they serve only as general guides (Cham et al. 2002; Chey et al. 1999; Gorelick et al. 2004b; Karras et al. 2000; Kelly et al. 2002b and 2004; Keogh et al. 2001; McCarren et al. 2000; Rodrigo and Rodrigo 1998b; Rodrigo et al. 2004; Smith et al. 2002).</li> <li>The emotional impact of asthma symptoms on the patient and family is variable but must be recognized and addressed and can affect approaches to treatment and followup (Ritz et al. 2000; Strunk and Mrazek 1986; von Leupoldt and Dahme 2005).</li> </ul>				

# Asthma Exacerbation Severity and Treatments

Severity Classification		Mild			Moderate			Severe
Medication	Dosage form	Weight	Dose	Frequency	Weight	Dose	Frequency	<b>Call 911</b>  <b>Monitoring:</b> Continuous HR, RR and pulse oximetry  <b>Initiate Treatment, as outlined for Moderate severity</b>
Albuterol	Albuterol MDI (90mcg)	< 15 kg	4 puffs	Reassess in 20 minutes; may repeat x2				
	Albuterol Nebulization (2.5mg/3mL vial)	≥ 15 kg	8 puffs					
	Albuterol Nebulization (2.5mg/3mL vial)	All	3 mL	Reassess in 20 minutes; may repeat x2				
Ipratropium (use in combo with albuterol)	DuoNeb® (Ipratropium 0.5mg and albuterol 2.5mg per 3mL vial)				All	3 mL	Reassess in 20 minutes; may repeat x2	
Oral Steroids	*Prednisolone or prednisone	All	2 mg/kg (Max 60 mg)	Daily for 5 days	All	2 mg/kg (Max 60 mg)	Daily for 5 days	
	*Dexamethasone	All	0.6 mg/kg (Max 16 mg)	Once for 1 dose then repeat dose in 48hrs	All	0.6 mg/kg (Max 16 mg)	Once for 1 dose then repeat dose in 48hrs	
Next Steps		Repeat assessment: <ul style="list-style-type: none"><li>If incomplete response, consider DuoNeb® treatment (Moderate dosing)</li><li>If responds well, review asthma action plan and send home</li><li>Patient should continue albuterol treatment scheduled every 4 hours for 24-48 hours and then use PRN dosing</li></ul>			Repeat assessment: <ul style="list-style-type: none"><li>If incomplete response refer to ED or activate 911</li><li>If responds well, review asthma action plan and send home</li><li>Patient should continue albuterol treatment scheduled every 4 hours for 24-48 hours and then use PRN dosing</li></ul>			

\*For patients presenting with mild symptoms that have NOT tried albuterol to relieve symptoms, albuterol treatment should be completed first. If a complete response is observed, oral steroids may not be necessary.

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## Short-Acting Beta-2 Agonists (SABA)

**BOLD** = Preferred, no PA required for Medicaid patients

Mechanism of delivery	Drug	Strength	Dose and Frequency	Cost
<b>Metered-dose Inhalers (MDI)</b> <ul style="list-style-type: none"> <li>Shake before use</li> <li>Needs primed</li> <li>Use with spacer</li> </ul>	<b>Ventolin<sup>®</sup>, Proventil<sup>®</sup>, Proair<sup>®</sup></b> Albuterol HFA <a href="#">Childrens Health Information</a>	90 mcg	2 puffs as needed Every 4 hours	\$76
<b>Nebulizer Solution</b> <ul style="list-style-type: none"> <li>Passive inhalation via nebulizer</li> <li>Requires nebulizer device</li> </ul>	<b>AccuNeb<sup>®</sup></b> Albuterol <a href="#">Childrens Health Information</a>	2.5 mg/3 mL (0.083%)	1 vial as needed Every 4 hours	\$17

## Intermittent Inhaled Corticosteroids (ICS)

Mechanism of delivery	Drug	Strength	Dose and Frequency	Cost
<b>Nebulizer Solution</b> <ul style="list-style-type: none"> <li>Passive inhalation via nebulizer</li> <li>Requires nebulizer device</li> </ul>	<b>Pulmicort<sup>®</sup> Respules</b> Budesonide	1 mg/2mL solution	1 mg (1 ampule) BID for 7 to 10 days at first sign of respiratory illness	\$106
<b>Metered-dose Inhalers (MDI)</b> <ul style="list-style-type: none"> <li>Shake before use</li> <li>Needs primed</li> <li>Use with spacer</li> </ul>	<b>Flovent<sup>®</sup> HFA*</b> Fluticasone propionate <a href="#">Childrens Health Information</a>	110 mcg	2 puffs BID for 7 to 10 days at first sign of respiratory illness	\$351

\*Flovent HFA dosing is the expert opinion of Dayton Children's Hospital and is not described in the NHLBI guidelines

## Systemic Corticosteroids

Drug	Strength	Dose, Frequency and Duration*	Maximum daily dose	Clinical Considerations
<b>Orapred<sup>®</sup></b> Prednisolone	Liquid: 15mg/5mL	2 mg/kg <b>Daily</b> for 5 days	60 mg/day	Take with food  Solution does NOT contain alcohol
	ODT: 10mg, 15mg, 30mg			
	Tablet: 5mg			
<b>Deltasone<sup>®</sup></b> Prednisone	Liquid: 5mg/5mL	2 mg/kg <b>Daily</b> for 5 days	60 mg/day	Take with food  Solution contains alcohol (5%)
	Tablets: 1mg, 2.5mg, 5mg, 10mg, 20mg, 50mg			

\* Duration of 5 days is average and typical duration. Treatment may be shorter or longer depending on patient.  
Range 3 – 10 days of treatment. Do not need to taper due to short course.

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# Inhaled Corticosteroids (ICS) – Low and Medium Dose

**BOLD** = Preferred, no PA required for Medicaid patients

Inhaler Mechanism	Drug	Age (years)	Low Dose Inhaler Strength	Dose and Frequency	Medium Dose Inhaler Strength	Dose and Frequency	Cost per Inhaler
<b>Metered-dose Inhalers (MDI)</b> <ul style="list-style-type: none"> <li>Aerosolized inhalation that is pushed to activate</li> <li>Shake before use</li> <li>Needs primed</li> <li>Spacer compatible</li> </ul>	<b>Flovent® HFA</b> <b>Fluticasone propionate</b> <a href="#">Childrens Health Information</a>	0-4	44 mcg	2 puffs BID	110 mcg	1 puff BID	\$351
		5-11				2 puffs BID	
		≥ 12	44 mcg	2 puffs BID	110 mcg	2 puffs BID	
	<b>Asmanex® HFA</b> <b>Mometasone furoate</b> <a href="#">Childrens Health Information</a>	0-4	NA	NA	NA	NA	\$250
		5-11	NA	NA	50 mcg	1 puff BID	
		≥ 12	100 mcg	1 puff BID	100 mcg	2 puffs BID	
<b>Dry Powder Inhalers (DPI)</b> <ul style="list-style-type: none"> <li>Breath-actuated</li> <li>Spacer Incompatible</li> </ul>	<b>Asmanex® Twisthaler®</b> <b>Mometasone furoate</b> <a href="#">Childrens Health Information</a>	≥ 12*	110 mcg	2 inhalations Daily	220 mcg	2 inhalations Daily	\$238
	<b>Pulmicort® Flexhaler®</b> <b>Budesonide</b> <a href="#">Childrens Health Information</a>	≥ 12*	90 mcg	2 inhalations BID	180 mcg	2 inhalations BID	\$269
	<b>Qvar® Redihaler®</b> <b>Beclomethasone</b>	≥ 12*	40 mcg	2 inhalations BID	80 mcg	2 inhalations BID	\$260
	<b>Arnuity® Elipta®</b> <b>Fluticasone furoate</b>	≥ 12*	100 mcg	1 inhalation Daily	100 mcg	1 inhalation Daily	\$220
<b>Nebulizer Solution</b> <ul style="list-style-type: none"> <li>Passive inhalation via nebulizer</li> <li>Requires nebulizer device</li> </ul>	<b>Pulmicort® Respules</b> <b>Budesonide</b>	≤ 6	0.25 mg/2mL solution	2 ampules Daily	0.5 mg/2mL solution	2 ampules Daily	\$106
For patients ages 5 and older, the medium and low doses are suggestions based on the 2020 GINA guidelines. For patients ages 0-4, the NHLBI EPR3 2007 guidelines were referenced. These doses are based on available studies and product information, and are not steroid equivalencies. NA: There is not sufficient evidence to recommend a dose for this age and medication							
*DPIs may also be used in patients < 12 with shared decision-making. A younger patient may have the inspiratory capacity and coordination to use a DPI, but an MDI with mask and spacer is the optimal delivery method for patients < 12.							

Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2020. Available from: [www.ginasthma.org](http://www.ginasthma.org)

Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. [Bethesda, Md.]: U.S. Dept. of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, 2007. National Heart, Lung, and Blood Institute.

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# Single Maintenance and Reliever Therapy (SMART)

## ICS + Long-Acting Beta Agonist (LABA)

**BOLD** = Preferred, no PA required for Medicaid patients

Inhaler Mechanism	Drug	Age (years)	Low Dose Inhaler Strength	Medium Dose Inhaler Strength	Dose and Frequency	Max Dose
<b>Metered-dose Inhalers (MDI)</b> <ul style="list-style-type: none"> <li>Aerosolized inhalation that is pushed to activate</li> <li>Shake before use</li> <li>Needs primed</li> <li>Use with spacer</li> </ul>	<b>Symbicort® HFA</b> Budesonide / formoterol	4-11	80-4.5 mcg	160-4.5 mcg	2 puffs BID and 1 puff PRN	8 puffs
	<a href="#">Childs Health Information</a>	≥ 12	80-4.5 mcg	160-4.5 mcg	2 puffs BID and 2 puffs PRN	12 puffs
	<b>Dulera® HFA</b> Mometasone / formoterol	4-11	50-5 mcg	100-5 mcg	2 puffs BID and 1 puff PRN	8 puffs
	<a href="#">Childs Health Information</a>	≥ 12	50-5 mcg	100-5 mcg	2 puffs BID and 2 puffs PRN	12 puffs

## Example Prescription – Low Dose ICS + LABA

Age (years)	Drug	Strength	Directions
4-11	<b>Symbicort® HFA</b> Budesonide / formoterol	80-4.5 mcg	Inhale 2 puffs twice a day. May also inhale 1 puff every 4 hours, as needed for symptoms (Max: 8 puffs per day). Dispense 2 inhalers for 30-day supply.
≥ 12	<b>Symbicort® HFA</b> Budesonide / formoterol	80-4.5 mcg	Inhale 2 puffs twice a day. May also inhale 2 puffs every 4 hours, as needed for symptoms (Max: 12 puffs per day). Dispense 2 inhalers for 30 day supply.

Expert Panel Working Group of the National Heart, Lung, and Blood Institute (NHLBI) administered and coordinated National Asthma Education and Prevention Program Coordinating Committee (NAEPPCC), Cloutier MM, et al. 2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group. J Allergy Clin Immunol. 2020 Dec;146(6):1217-1270.

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# ICS + Long-Acting Beta Agonist (LABA) – Low and Medium Dose

**BOLD** = Preferred, no PA required for Medicaid patients

Inhaler Mechanism	Drug	Age (years)	Low Dose Inhaler Strength	Medium Dose Inhaler Strength	Dose and Frequency	Cost per Inhaler
<b>Metered-dose Inhalers (MDI)</b> <ul style="list-style-type: none"><li>Aerosolized inhalation that is pushed to activate</li><li>Shake before use</li><li>Needs primed</li><li>Spacer compatible</li></ul>	<b>Symbicort® HFA</b> Budesonide / formoterol <a href="#">Childs Health Information</a>	0-4*	80-4.5 mcg	160-4.5 mcg	1-2 puffs BID	\$359
		5-11	80-4.5 mcg	160-4.5 mcg	2 puffs BID	
		≥ 12	80-4.5 mcg	160-4.5 mcg		
	<b>Dulera® HFA</b> Mometasone / formoterol <a href="#">Childs Health Information</a>	0-4*	50-5 mcg	50-5 mcg	1-2 puffs BID	\$374
		5-11				
		≥ 12	100-5 mcg	100-5 mcg		
	<b>Advair® HFA</b> Fluticasone/ salmeterol <a href="#">Childs Health Information</a>	0-4*	45-21 mcg	115-21 mcg	1-2 puffs BID	\$327
		5-11			2 puffs BID	
		≥ 12	45-21 mcg	115-21 mcg		
<b>Dry Powder Inhalers (DPI)</b> <ul style="list-style-type: none"><li>Breath-actuated</li><li>Spacer Incompatible</li></ul>	<b>Advair® Diskus®</b> Fluticasone / salmeterol <a href="#">Childs Health Information</a>	≥ 12`	100-50 mcg	250-50 mcg	1 inhalation BID	\$182
	<b>Airduo® Respiclick®</b> Fluticasone / salmeterol	≥ 12	55-14 mcg	113-14 mcg	1 inhalation BID	\$120
*Dosages for products used in these age groups are not referenced in clinical guidelines and there are limited studies available. The suggested reference doses provided are the expert opinion of clinicians at Nationwide Children’s Hospital.						
For patients ages 5 and older, the medium and low doses are suggestions based on the 2020 GINA guidelines or Lexicomp® reference doses. These doses are based on available studies and product information, and are not steroid equivalencies.						

Global Initiative for Asthma. Global Strategy for Asthma Management and. Prevention, 2020. Available from: [www.ginasthma.org](http://www.ginasthma.org)

[Return to Pathway](#)



# ICS + Long-Acting Beta Agonist (LABA) – High Dose

**BOLD** = Preferred, no PA required for Medicaid patients

Inhaler Mechanism	Drug	High Dose Inhaler Strength	Dose and Frequency	Cost per Inhaler
<b>Metered-dose Inhalers (MDI)</b> <ul style="list-style-type: none"> <li>Aerosolized inhalation that is pushed to activate</li> <li>Shake before use</li> <li>Needs primed</li> <li><b>Use with spacer</b></li> </ul>	<b>Dulera® HFA</b> Mometasone / formoterol <a href="#">Childs Health Information</a>	200-5 mcg	2 puffs BID	\$374
	<b>Advair® HFA</b> Fluticasone/ salmeterol <a href="#">Childs Health Information</a>	230-21 mcg	2 puffs BID	\$327
<b>Dry Powder Inhalers (DPI)</b> <ul style="list-style-type: none"> <li>Breath-actuated</li> <li>Spacer Incompatible</li> </ul>	<b>Advair® Diskus®</b> Fluticasone / salmeterol <a href="#">Childs Health Information</a>	500-50 mcg	1 inhalation BID	\$182
	<b>Airduo® Respiclick®</b> Fluticasone / salmeterol	232-14 mcg	1 inhalation BID	\$120

Ages are not specified on this chart. If a patient has progressed to step 5 or 6 and requires a high dose ICS-LABA, consult with or refer patient to an asthma specialist to assess patient specific dosing.

[Return to Pathway](#)

# asthma action plan

name: \_\_\_\_\_ date: \_\_\_\_\_

primary care provider: \_\_\_\_\_

primary care phone number: \_\_\_\_\_

primary care provider signature: \_\_\_\_\_



**Green means go zone!**  
Use preventive medicine.

**Yellow means caution zone!**  
Add quick relief medicine.

**Red means danger zone!**  
Get help from a doctor.

## GO - good control

### use these daily controller medicines:

#### You have all of these:

- Breathing is good
- No cough or wheeze
- Sleep through the night
- Can work & play

medicine	how much	how often/when
20 minutes before physical activity use this medicine:		

## WARNING - take action

### continue with green zone medicine and add:

#### You have any of these:

- Daytime and/or nighttime coughing
- Tight chest
- Wheeze
- First sign of a cold

medicine	how much	how often/when
Call your primary care provider if not getting better in 24 hours or if rescue medication is used more than two times a week or you started prednisone or oral steroids.		

## DANGER - take these medications and call your primary care provider now!

#### Your asthma is getting worse fast:

- Your medicine is not helping
- Breathing is hard & fast
- Nose opens wide
- Trouble speaking
- Ribs show

medicine	how much	how often/when
<div>911</div> lips are bluish, getting worse fast, struggling to breathe, can't talk or cry because of hard breathing, has passed out		

If you cannot contact your doctor, go directly to the emergency department. Do not wait!

Make an appointment with your asthma care provider within two days of an emergency department visit or hospitalization.



[Return to Pathway](#)

the goal of a good asthma action plan is to:

- Have minimal or no asthma symptoms during the day and night
- Reduce or eliminate asthma attacks
- Have no limitations on activities – no missed school or work days
- Use quick-relief (rescue) inhaler less often
- Reduce or have no side-effects from medicines
- Maintain normal or almost normal lung function

there are three types of medicines for treating asthma

#### rescue medicines

Everyone with asthma needs a rescue medicine. Use it at the first signs of an asthma flare up. A rescue medicine:

- May be an albuterol inhaler also known as Ventolin, Proventil, Pro-Air or a nebulizer (aerosol)
- Works very quickly to open airways that makes it easier to breathe, but it lasts for a short time
- May make you feel jittery and increase your heart rate temporarily
- Should not be needed more than 2 times per week
- May not work for a flare-up more than 2 times per week
- May be used 15 to 20 minutes before exercising or playing, if instructed by your provider



#### controller medicines

Most children with asthma also need one or more controller medicines. A controller medicine:

- Helps prevent asthma symptoms and flare ups
- Works to reduce the swelling and the mucus in the airways
- Is taken every day even if feeling well
- Does NOT help immediately in an asthma flare up
- Should be rinsed from your mouth after using



#### oral steroids:

- Are prescribed for short periods
- Are powerful medicines used to treat serious asthma flare-ups
- Are taken by mouth, in pill or liquid form
- Are not the same steroids some people take to build muscles
- Discuss possible side effects with your provider

#### tips

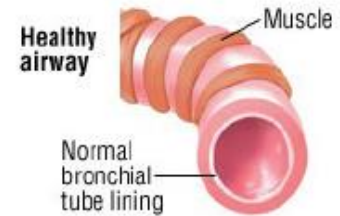
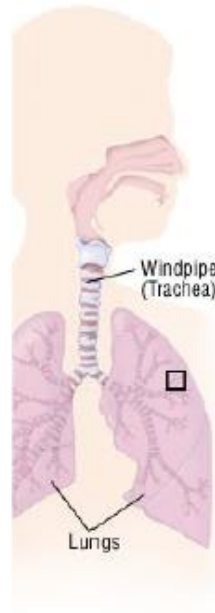
- Be sure you know how to take your medication correctly
- Use your rescue medicine as directed by your provider
- Keep your rescue inhaler and spacer with you at all times
- Take your controller medicine every day as directed by your doctor, even when you feel fine
- Use your Asthma Action

# What is asthma?

Asthma is a chronic disease of the lungs. When you breathe, air goes in and out of your lungs through small tubes called airways. With asthma, two main things happen in the airways of your lungs:

- **Inflammation** (irritation) – the airways become swollen and fill with mucus
- **Constriction** – the muscles around the airways tighten, making the airways narrower

Both these things make it hard for you to breathe and can cause asthma symptoms.



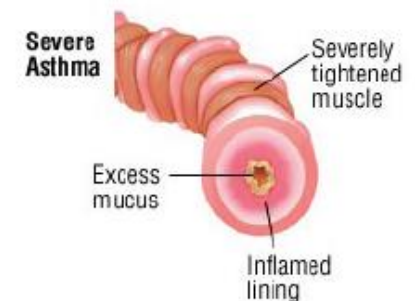
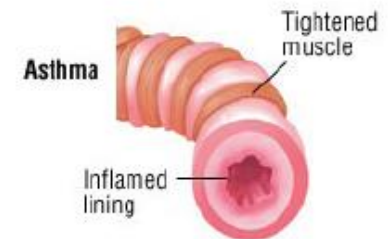
## asthma symptoms

Your child may have all, some or just one of these symptoms. They can be mild or severe and change from day to day.

- **Wheezing** – a whistling noise when you breathe.
- **Coughing**
- **Chest tightness** – a feeling that someone is sitting on your chest
- **Shortness of breath**
- **Trouble breathing** – often at night and in the early morning
- **Mucus** – Phlegm or sputum

## an asthma attack

Your child's asthma symptoms are a sign that a flare-up may be starting. When asthma symptoms become worse than usual, it is called an asthma attack. In a severe asthma attack, the airways can tighten so much that not enough oxygen can get to vital organs. People can die from severe asthma attacks. Most people with asthma can manage their disease and have fewer asthma symptoms and attacks.





# Ventolin HFA

**brand:** Ventolin HFA

**generic:** albuterol 90 mcg

**type:** Short-acting beta agonist - **Rescue**

**device:** Metered-Dose Inhaler (MDI)

**number of doses per container:** 200 inhalations (puffs)

**use with a spacer:** as directed by your doctor

## priming

1. Prime the MDI before using for the first time so you get the right amount of medicine when you use it.
2. Remove protective cap from the mouthpiece. Make sure the canister is seated firmly in the actuator (plastic case) every time MDI is used.
3. Shake the MDI well for 5 seconds and then away from the face spray into the air by pressing down on the metal canister one time. (See Figure 1)
4. Shake and spray the MDI like this 3 more times to finish priming.
5. The dose counter will countdown from 204 to 200 when primed. (See Figure 2)

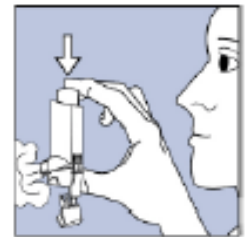


Figure 1

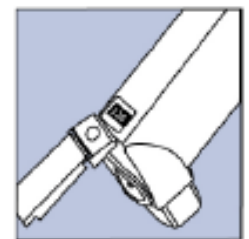


Figure 2

## cleaning instructions

1. Clean the MDI at least once a week to prevent medication buildup, which will block the spray.
2. Remove the canister and protective mouthpiece cap from the actuator. Never wash the canister or submerge in water.
3. Hold actuator under warm running water for 30 seconds through both top and bottom.
4. Shake off excess water and air-dry overnight. Medication blockage is less likely if the mouthpiece dries completely.
5. If inhaler is needed before it is dry, shake off excess water, insert the canister into the actuator, test spray away from face once and administer dose. Rewash and air-dry.



## counting doses

1. The dose counter will count down by 1 number each time canister is sprayed. When MDI dose counter reads 020, refill medication if prescribed.
2. Throw away the MDI when the counter reads 000 or it reaches its expiration date. Discard your inhaler even if it does not feel empty when it reads 000. You will not receive the correct amount of medicine.

## storage

1. Store MDI at room temperature.
2. Keep away from heat and flames.

## directions for using MDI with a spacer by mask

1. Remove protective cap from MDI mouthpiece and check it and the spacer for damage, missing parts or foreign objects. Remove any foreign objects before use.
2. Insert the MDI mouthpiece into the back oval-piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Have the child sit or stand straight up. If the child resists, sit the child on your lap and wrap one arm around the child.
5. Place the mask gently over the nose and mouth and press so no air or medication can escape.
6. The FLOW-VU Inspiratory Flow Indicator only moves if mask has a good seal.
7. Press down on top of the canister to release 1 spray of medication into the spacer.
8. Allow your child to take 6-10 breaths in and out of the spacer before removing mask from face.
9. Wait for 1 minute and repeat Steps 3 – 9 for the number of doses (puffs) prescribed.
10. Remove MDI from spacer and replace cap on mouthpiece after use.



## directions for using MDI with a spacer by mouthpiece

1. Remove protective caps from MDI and spacer mouthpieces. Check for damage, missing parts or foreign objects, removing any foreign objects.
2. Insert the MDI mouthpiece into the back oval -piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Sit or stand straight up, place the spacer mouthpiece in the mouth and close lips. May use nose clips or pinch nose closed. The FLOW-VU Inspiratory Flow Indicator only moves if there is a good seal.
5. Breathe out all the air, press down on top of the canister to release 1 spray of medication into the spacer.
6. Begin breathing in slowly and continue breathing in as deeply as you can through your mouth. A whistling sound indicates that you are breathing in too quickly, slow down.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 1 minute and repeat Steps 3 – 8 for the number of doses (puffs) prescribed.
9. Remove MDI from spacer and replace cap on mouthpieces of MDI and spacer after use.



## cleaning instructions for spacer

1. Clean at least once a week.
2. Remove back-piece only. Do not tamper with valve or take apart the spacer beyond what is recommended. Damage may result.
3. Soak the parts for 15 minutes in a mild solution of liquid dish detergent and clean lukewarm water. Agitate gently.
4. Rinse parts in clean water.
5. Gently shake excess water, air dry on a clean surface. Make sure parts are dry before putting them together.
6. To put together, center the alignment feature on the back piece with the FLOW-VU Indicator and press firmly to attach the chamber.
7. Inspect the spacer before daily use and replace after 6-12 months of use.

## directions for using MDI without a spacer by mouthpiece

Use the following technique if there is no spacer available.

1. Take the protective cap off the MDI mouthpiece and check for and remove any foreign objects. (See Figure 3)
2. Shake the MDI well for 5 seconds just before each use.
3. Hold MDI with mouthpiece down. Breathe out through your mouth, push as much air from your lungs as you can. (See Figure 4)
4. Put the mouthpiece in your mouth pointing towards the back of the throat and close your lips around it.
5. Push down firmly on top of the canister while you breathe in deeply and slowly through your mouth. Right after the spray comes out take your finger off the canister.
6. After you have breathed in all the way, remove MDI mouthpiece from your mouth.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 1 minute and repeat Steps 2-8 for number of puffs prescribed.
9. Put cap back on the mouthpiece, snap firmly into place.



Figure 3



Figure 4

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# home aerosol treatment

## **what is a home aerosol (nebulizer) treatment?**

A nebulizer (neb cup) changes liquid medicine into a mist (aerosol) so it can be breathed into the lungs through a mouthpiece or mask. It is powered by an air compressor (aerosol or breathing machine) that plugs into an electrical outlet.

## **how will this treatment help?**

Nebulizers can be used to deliver bronchodilators (rescue medications) that relax the muscles surrounding the airways (breathing tubes), which open the airways so your child can breathe easier. Also, corticosteroids (controller medications) may be prescribed to reduce inflammation in the lining of the airways to prevent breathing problems.

## **what do I need to do?**

Read the medication fact sheet and learn about any medication actions or problems your child might have. Some medications may cause: nervousness, shakiness, pounding in chest, or nausea. Not all medications cause these side effects and not all people react the same way (if at all). IF YOUR CHILD DOES - STOP and REST, wait for the feeling to lessen, then finish the treatment. If these feelings continue, call your child's doctor.

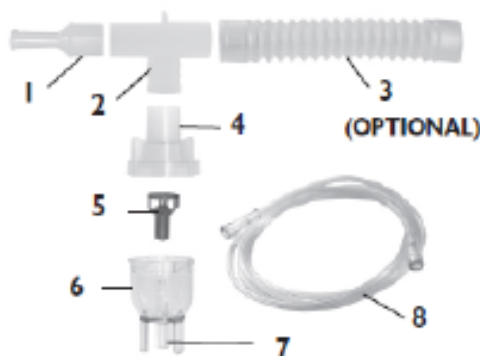


## how do I/does my child do this treatment?



### COMPRESSOR

1. Power switch
2. Carrying handle
3. Nebulizer holder
4. Filter (non-washable)
5. Air-outlet connector



### NEBULIZER \*

1. Mouthpiece
2. T-piece
3. Corrugated Tubing
4. Cap
5. Baffle
6. Medication Cup
7. Nebulizer Air-Inlet Connector
8. Tubing

**\* NOTE**—Depending on model purchased, your unit may include a disposable or reusable nebulizer, or both.

## gather your supplies and equipment

- Compressor
  - Medication cup
  - Tubing
  - Prescribed medication
  - Dropper or syringes if needed
1. Place compressor on a flat sturdy surface, not the floor. Plug the cord of the compressor into a grounded electrical outlet (three-prong). If compressor falls off an unsteady surface, dust gets inside the compressor or use the wrong outlet, it may void the warranty contract.
  2. Wash your hands, dry with a clean towel. Prepare a clean working surface. This will reduce the chance of contaminating the equipment and medication.
  3. Assemble the medication cup. Between treatments, the medication cup is taken apart to air dry on a clean paper towel.
  4. Measure (unless using unit vials) the medications and place in medication cup.
  5. Connect the tubing and mouthpiece or mask to the medication cup. Connect the other end of the tubing to the nipple adaptor on the air compressor.
  6. Turn on the air compressor with the on/off switch.

7. Have the child in a sitting or slight reclining position. The sitting position will allow the child to breathe deeper. Instruct your child to hold the mouthpiece between the teeth with lips sealed so there are no leaks and take slow deep breaths through the mouth, holding the breath for 2-3 seconds before exhaling. If using a mask, hold the mask lightly against the child's face, covering the mouth and nose.
8. Continue the treatment. When most of the medication is gone, tap the side of the nebulizer cup until there is hardly any or no more mist.
9. Turn off the compressor. Take the nebulizer cup apart and shake it dry over the sink. Place on a paper towel until it is time for the next treatment. Air-drying will reduce the chance for growth of bacteria and mold.

### **how do I disinfect the aerosol equipment?**

Purpose: To reduce the chance for infection in the lungs.

Gather your equipment and supplies:

- Dirty nebulizer kit(s) (nebulizer cup and mouthpiece or mask), not the tubing
- Dish washing liquid (Clear, no color or lotion added)
- White vinegar
- Warm Tap Water (cooled boiled-well water)
- Container (Non-aluminum)

### **disinfecting procedure for nebulizer equipment**

1. Take apart and wash nebulizer equipment (not the tubing) in the dish washing liquid. Rinse with warm tap water to remove soap.
2. Prepare disinfectant solution. Place 1 part white vinegar and three parts warm tap water or cool boiled water in the container. (e.g. 1 cup of vinegar in 3 cups of water)
3. Place equipment in the vinegar and water solution. Use enough solution to completely cover the equipment. Allow to soak for at least one hour.
4. Wash your hands, dry with clean towel.
5. Remove each piece of equipment from the vinegar and water solution after one hour. Rinse completely with warm tap water or cooled boiled water.
6. After rinsing, place equipment on a clean paper towel. Cover with another paper towel and allow to dry overnight.

*Note: Do not wipe dry, this can get lint in the nebulizer cup causing it to clog and contaminate it. Inspect the equipment for damage. If damaged throw away.*

7. In the morning, wash your hands and assemble the nebulizer cup. If you give treatments every day, use a clean nebulizer kit each day, and then clean all three kits on the third day.

### **how to clean air compressor:**

- Make sure the air compressor is unplugged, then wipe with a clean damp cloth.
- Never operate or store the air compressor on the floor. The floor is very dusty.
- Cover the compressor with a clean cloth when not in use.
- The air filter will need to be changed or cleaned when it becomes light brown or dusty (about every 4-6 months of daily use).
- If moisture is in the connecting tubing, hook one end to the compressor nipple adaptor; turn on the compressor to allow air to flow through tubing.

*Please contact your Home Care Company to order more nebulizer kits and filters or for equipment questions or repair*

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# Flovent HFA

**brand:** Flovent HFA 44 mcg, 110 mcg, 220 mcg

**generic:** Fluticasone propionate HFA

**type:** Inhaled corticosteroid - **Controller**

**device:** Metered-Dose Inhaler (MDI)

**number of doses per container:** 120 inhalations (puffs)

**use with a spacer:** as directed by your doctor

## priming

1. Prime the MDI before using for the first time so you get the right amount of medicine when you use it.
2. Remove protective cap from the mouthpiece. Remove any foreign object. Make sure the canister is seated firmly in the plastic actuator every time MDI is used.
3. Shake the MDI well for 5 seconds and then away from your face, spray into the air by pressing down on the metal canister one time. (See Figure 1)
4. Shake and spray the MDI like this 3 more times to finish priming. The dose counter should now read 120 from 124. (See Figure 2)
5. Prime again if MDI is not used for more than 7 days or if dropped, by shaking MDI for 5 seconds and spray away from face one time.

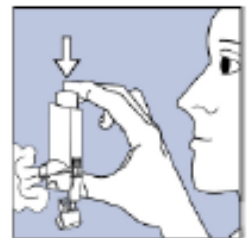


Figure 1

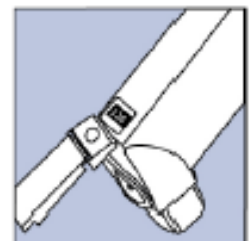


Figure 2

## cleaning instructions

1. Clean MDI at least once a week to prevent medicine buildup, which will block the spray.
2. Take protective cap off the mouthpiece. Keep the strap attached to the actuator. Do not take the canister out of the actuator.
3. Use a dry cotton swab to clean the small circular opening where the medication sprays out of the canister. Carefully twist the swab in a circular motion to remove any medicine. Repeat with a clean water-dampened swab to take off any medicine still at the opening.
4. Wipe the inside of the mouthpiece with a clean tissue dampened with water.
5. Let the actuator air dry overnight, then put the protective cap back on the mouthpiece.



## counting doses

1. The dose counter on the back of the actuator shows 60 or 120 after first time priming.
2. When the counter reads 020, refill medication if prescribed.
3. Throw away the inhaler when the counter reads 000.

## storage

Store at room temperature. Keep away from heat and open flames. Do not puncture.

## directions for using MDI with spacer by mask

1. Remove protective cap from MDI mouthpiece and check it and the spacer for damage, missing parts or foreign objects. Remove any foreign objects before use.
2. Insert the MDI mouthpiece into the back oval-piece of the spacer.
3. Shake the MDI and spacer as a unit hard for 10 seconds immediately before each use.
4. Have the child sit or stand straight up. If the child resists, sit the child on your lap and wrap one arm around the child.
5. Place the mask gently over the nose and mouth and press so no air or medication can escape.
6. The *FLOW-VU* Inspiratory Flow Indicator only moves if mask has a good seal.
7. Press down on top of the canister to release 1 spray of medication into the spacer.
8. Allow your child to take 6-10 breaths in and out of the spacer before removing mask from face.
9. Wait for 2 minutes and repeat Steps 3 – 9 for the number of doses (puffs) prescribed.
10. Remove MDI from spacer and replace cap on mouthpiece after use.
11. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it. Wipe around outside of mouth with a wet cloth.



## directions for using MDI with a spacer by mouthpiece

1. Remove protective caps from MDI and spacer mouthpieces. Check for damage, missing parts or foreign objects, removing any foreign objects.
2. Insert the MDI mouthpiece into the back oval -piece of the spacer.
3. Shake the MDI and spacer as a unit hard for 10 seconds immediately before each use.
4. Sit or stand straight up, place the spacer mouthpiece in the mouth and close lips. May use nose clips or pinch nose closed. The *FLOW-VU* Inspiratory Flow Indicator only moves if there is a good seal.
5. Breathe out all the air, press down on top of the canister to release 1 spray of medication into the spacer.
6. Begin breathing in slowly and continue breathing in as deeply as you can through your mouth. A whistling sound indicates that you are breathing in too quickly, slow down.
- 7.



7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 2 minutes and repeat Steps 3 – 8 for the number of doses (puffs) prescribed.
9. Remove MDI from spacer and replace caps on mouthpieces of MDI and spacer after use.
10. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it.

#### **cleaning instructions for spacer**

1. Clean at least once a week.
2. Remove back-piece only. Do not tamper with valve or take apart the spacer beyond what is recommended. Damage may result.
3. Soak the parts for 15 minutes in a mild solution of liquid dish detergent and clean lukewarm water. Agitate gently.
4. Rinse parts in clean water.
5. Gently shake excess water, air dry on a clean surface. Make sure parts are dry before putting them together.
6. To put together, center the alignment feature on the back piece with the *FLOW-VU* Indicator and press firmly to attach the chamber.
7. Inspect the spacer before daily use and replace after 6-12 months of use.

*Use the following technique if there is no spacer available.*

#### **directions for using MDI without spacer**

1. Take the protective cap off the MDI mouthpiece. Check for and remove any foreign objects. (See Figure 3)
2. Shake the MDI well for 5 seconds just before each use.
3. Hold MDI with mouthpiece down. Breathe out through your mouth, push as much air from your lungs as you can. (See Figure 4)
4. Put the mouthpiece in your mouth pointing towards the back of the throat and close your lips around it, keeping eyes closed.
5. Push down firmly on top of the canister while you breathe in deeply and slowly through your mouth. Right after the spray comes out take your finger off the canister.
6. After you have breathed in all the way, remove MDI mouthpiece from your mouth.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 1 minute and repeat Steps 2-8 for number of puffs prescribed.
9. Put cap back on the mouthpiece, snap firmly into place.
10. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it.



**Figure 3**



**Figure 4**



# Asmanex HFA

**brand:** Asmanex HFA 100 mcg, 200 mcg

**generic:** Mometasone Furoate HFA

**type:** Inhaled corticosteroid - **Controller**

**device:** Metered-Dose Inhaler (MDI)

**number of doses per container:** 120 inhalations (puffs)

**use with a spacer:** as directed by your doctor

## **priming**

1. Prime the MDI before using for the first time so you get the right amount of medicine when you use it.
2. Remove protective cap from the mouthpiece. Remove any foreign object. Make sure the canister is seated firmly in the plastic actuator every time MDI is used.
3. Shake the MDI well for 5 seconds. Then, away from the face, spray into the air by pressing down on the metal canister one time.
4. Shake and spray the MDI like this 3 more times to finish priming. The dose counter should now read 120 from 124.
5. Repeat these steps to prime the inhaler if it has been more than 5 days since it was last used.

## **cleaning the inhaler**

1. Clean MDI at least once a week after your evening dose. Keeping the canister and plastic actuator clean will prevent medicine buildup, which will block the spray.
2. Take protective cap off the mouthpiece. Keep the strap attached to the actuator. Do not take the canister out of the actuator.
3. Use a clean, dry lint free cloth to clean the outside and inside of the opening of the mouthpiece where the medication sprays out of the canister. Do not wash or put any part of the MDI in water.
4. Put the protective cap back on the mouthpiece of the actuator.



## counting doses

1. The dose counter will count down backwards automatically each time a puff is sprayed.
2. When the counter reads 20, the number will change to red. You should ask your doctor about getting a re-fill at this time.
3. Throw away the MDI when the counter shows zero ("0") or the inhaler reaches its expiration date, whichever comes first. When the counter reaches ("0"), it may feel like there is medicine still in it, but it will not give you the correct amount of medicine when pressed.

## storage

1. Store the MDI Store at room temperature.
2. Keep away from heat and open flames.

## directions for using MDI with a spacer by mask

1. Remove protective cap from MDI mouthpiece and check it and the spacer for damage, missing parts or foreign objects. Remove any foreign objects before use.
2. Insert the MDI mouthpiece into the back oval-piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Have the child sit or stand straight up. If the child resists, sit the child on your lap and wrap one arm around the child.
5. Place the mask gently over the nose and mouth and press so no air or medication can escape.
6. The *FLOW-VU* Inspiratory Flow Indicator only moves if mask has a good seal.
7. Press down on top of the canister to release 1 spray of medication into the spacer.
8. Allow your child to take 6-10 breaths in and out of the spacer before removing mask from face, about 10 seconds.
9. Wait for 30 seconds and repeat Steps 3 – 9 for the number of doses (puffs) prescribed.
10. Remove MDI from spacer and replace cap on mouthpiece after use.
11. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it. Wipe area of face where mask touched with a wet cloth.



## directions for using MDI with a spacer by mouthpiece

1. Remove protective caps from MDI and spacer mouthpieces. Check for damage, missing parts or foreign objects. Remove any foreign objects.
2. Insert the MDI mouthpiece into the back oval -piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Breathe out through your mouth, pushing as much air from your lungs as you can. Sit or stand straight up, place the spacer mouthpiece in the mouth and close lips around it. (The *FLOW-VU* Inspiratory Flow Indicator only moves if there is a good seal.)



5. Press down on top of the canister to release 1 spray of medication into the spacer. Begin breathing in slowly, and continue breathing in as deeply as you can through your mouth. A whistling sound indicates you are breathing in too quickly, slow down.
6. Hold your breath as long as you can, up to 10 seconds. Then breathe normally.
7. Wait for 30 seconds and repeat Steps 3–7 for the number of doses (puffs) prescribed.
8. Remove MDI from spacer and replace cap on mouthpieces of MDI and spacer after use.
9. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it.

### **cleaning instructions for spacer**

1. Clean at least once a week.
2. Remove back-piece only. Do not tamper with valve or take apart the spacer beyond what is recommended. Damage may result.
3. Soak the parts for 15 minutes in a mild solution of liquid dish detergent and clean lukewarm water. Agitate gently.
4. Rinse parts in clean water.
5. Gently shake excess water, air dry on a clean surface. Make sure parts are dry before putting them together.
6. To put together, center the alignment feature on the back piece with the *FLOW-VU* Indicator and press firmly to attach the chamber.
7. Inspect the spacer before daily use and replace after 12-18 months of use.

### ***Use the following technique if a spacer is not available***

1. Take the protective cap off the MDI mouthpiece. Check for and remove any foreign objects. (See Figure 3).
2. Shake the MDI well for 5 seconds just before each use.
3. Sit or stand straight up. Hold MDI with mouthpiece down. Breathe out through your mouth, pushing as much air from your lungs as you can.
4. Put the mouthpiece in your mouth pointing towards the back of the throat and close your lips around it.
5. Push down firmly on top of the canister while you breathe in deeply and slowly through your mouth. (See Figure 4).
6. After you have breathed in all the way, remove MDI mouthpiece from your mouth.
7. Hold your breath as long as you can up to 10 seconds, then breathe normally.
8. Wait for 30 seconds and repeat Steps 2- 8 for number of puffs prescribed.
9. Put cap back on the mouthpiece, snap firmly into place.
10. Rinse your mouth out immediately after using medication. Spit out water. Do not swallow it.

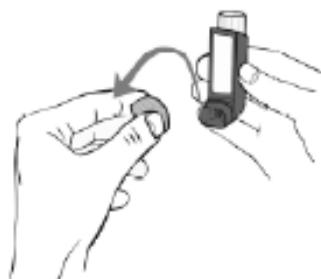


Figure 3



Figure 4

# Asmanex Twister

**brand:** Asmanex Twister 220 mcg

**generic:** Mometasone furoate

**type:** Inhaled corticosteroid - **Controller**

**number of doses per container:** 120

**prime:** No

**directions for use:**

1. Hold inhaler upright with the base (pink) on the bottom.
2. Grip the base and twist the cap (white) counterclockwise while keeping the inhaler in an upright position. (See Figure 3)
3. As the cap is lifted off, the dose counter counts down by one (the arrow on the white mouthpiece should point to the dose counter.)
4. Breathe out fully. Firmly close your lips around the mouthpiece and take a fast, deep breath while holding the mouthpiece in a level position. (See Figure 4)
5. Remove the inhaler from your mouth and hold your breath for 10 seconds (or as long as you comfortably can).
6. Replace the cap and twist it clockwise until it clicks (The cap must be fully closed to load the next dose). (See Figure 5)
7. Check to make sure that the arrow is lined up with the dose counter.
8. Repeat steps 1-7 every time you take a dose. Brush your teeth and rinse your mouth after using.

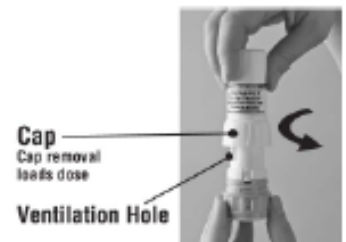


Figure 3: Cap Removal Loads Dose



Figure 4: Inhalation

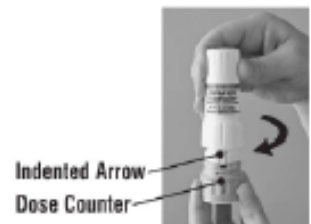


Figure 5: Closing the Inhaler





**cleaning instructions**

The mouthpiece should be wiped dry and the cap replaced immediately after each inhalation.

**counting doses**

Discard the inhaler 45 days after opening the foil pouch or when dose counter reads "00" whichever comes first.

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# Pulmicort Flexhaler

**brand:** Pulmicort Flexhaler

**generic:** budesonide 90, 180 mcg

**type:** Inhaled corticosteroid - **Controller**

**device:** Dry Powder Inhaler (DPI)

**number of doses per container:** 120

**prime:** Only before the first dose. To prime, turn the cover and lift off. Hold the Flexhaler upright with mouthpiece up. Twist the brown grip as far as it will go in one direction and then fully back again in the other direction. Repeat. Now you are ready for the first dose. You do not have to prime any other time after this.

## Directions for Use:

1. Twist the cover and lift off with inhaler in upright position.
2. The inhaler must be held in the upright position (mouthpiece up) whenever a dose of medication is loaded.
3. Twist the brown grip fully in one direction as far as it will go. Twist it back again fully in the other direction as far as it will go. You will hear a click.
4. Do not hold the mouthpiece when you load the inhaler.
5. Turn your head away from the inhaler and breathe out fully.
6. Do not shake the inhaler after loading it.
7. Place the mouthpiece between your lips and inhale deeply and forcefully.
8. Remove the inhaler from your mouth and exhale. Do not exhale into the mouthpiece.
9. If more than one dose is required, repeat the above steps 2-7.
10. Place the cover back on the inhaler and twist shut.
11. Rinse your mouth with water. Do not swallow.



Figure 2 - Load



Figure 3 - Twist



Figure 4 - Click



Figure 5 - Inhale



**Cleaning instructions:**

1. Keep your Pulmicort Flexhaler clean and dry at all times. Do not immerse in water.
2. Wipe the outside of the mouthpiece regularly (once a week) with a dry tissue.

**Counting doses:**

1. Pulmicort Flexhaler has a convenient dose indicator window just below the mouthpiece which shows how many doses are left in the inhaler.
2. When the dose counter has 10-15 puffs left, check with the pharmacy or doctor about a refill.
3. Your inhaler is empty when the number 0 on the red background has reached the middle of the window.
4. At this time the inhaler should be discarded and a new one should be ordered unless told otherwise by your doctor.

*Image credit: <Plumicort Flexhaler>. This handout is for general information only and should not be considered complete. For more specific information, please ask your child's health care provider.*

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# Symbicort HFA

**brand:** Symbicort HFA 80/4.5, 160/4.5

**generic:** Budesonide 80 mcg or 160 mcg and formoterol 4.5 mcg

**type:** Inhaled corticosteroid and long-acting beta agonist - **Controller**

**device:** Metered-dose Inhaler (MDI)

**number of doses per container:** 120 inhalations (puffs)

**use with a spacer:** as directed by your doctor

## priming

1. Prime the MDI before using for the first time so you get the right amount of medicine when you use it.
2. Remove protective cap from the mouthpiece. Remove any foreign object. Make sure the canister is seated firmly in the plastic actuator every time MDI is used.
3. Shake the MDI well for 5 seconds and then spray into the air, away from the face by pressing down on the metal canister one time. **(See Figure 1)**
4. Shake and spray the MDI like this 1 more time to finish priming.
5. After MDI is primed for the first time, the counter will read 120.



Figure 1

## cleaning instructions

1. Clean MDI at least once a week after your evening dose. Keep the canister and plastic actuator clean to prevent medicine buildup, which will block the spray.
2. Take protective cap off the mouthpiece. The strap on the cap will stay attached to the actuator.
3. Use a clean, dry cloth to clean the outside and inside of the opening of the mouthpiece where the medication sprays out of the canister.
4. Put the protective cap back on the mouthpiece of the actuator.
5. Do not put MDI in water or try to take it apart.



## counting doses

1. The inhaler comes with a dose counter that will count down each time you release a puff of medicine.
2. When the dose counter reaches 20, the number will change to red. You should ask your doctor about getting a refill at this time.
3. Throw away the MDI when the counter shows zero ("0") or the inhaler reaches its expiration date, whichever comes first. When the counter reaches ("0"), it may feel like there is medicine still in it, but it will not give you the correct amount of medicine when pressed.

## storage

1. Store at room temperature.
2. Keep away from heat or open flame.

## Directions for using MDI with a spacer by mask:

1. Remove protective cap from MDI mouthpiece and check it and the spacer for damage, missing parts or foreign objects.
2. Remove any foreign objects before use.
3. Insert the MDI mouthpiece into the back oval-piece of the spacer.
4. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
5. Have the child sit or stand straight up. If the child resists, sit the child on your lap and wrap one arm around the child.
6. Place the mask gently over the nose and mouth and press so no air or medication can escape.
7. The *FLOW-VU* Inspiratory Flow Indicator only moves if mask has a good seal.
8. Press down on top of the canister to release 1 spray of medication into the spacer.
9. Allow your child to take 6-10 breaths in and out of the spacer before removing mask from face.
10. Wait for 1 minute and repeat Steps 3 – 9 for the number of doses (puffs) prescribed.
11. Remove MDI from spacer and replace cap on mouthpiece after use.
12. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it. Wipe area of face where masked touched with a wet cloth.



## directions for using MDI with a spacer by mouthpiece:

1. Remove protective caps from MDI and spacer mouthpieces. Check for damage, missing parts or foreign objects, removing any foreign objects.
2. Insert the MDI mouthpiece into the back oval -piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Sit or stand straight up, place the spacer mouthpiece in the mouth and close lips. May use nose clips or pinch nose closed. The *FLOW-VU* Inspiratory Flow Indicator only moves if there is a good seal.
5. Breathe out all the air, press down on top of the canister to release 1 spray of medication into the spacer.



6. Begin breathing in slowly and continue breathing in as deeply as you can through your mouth. A whistling sound indicates that you are breathing in too quickly, slow down.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 1 minute and repeat Steps 3–8 for the number of doses (puffs) prescribed.
9. Remove MDI from spacer and replace cap on mouthpieces of MDI and spacer after use.
10. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it.

### **cleaning instructions for spacer**

1. Clean at least once a week.
2. Remove back-piece only. Do not tamper with valve or take apart the spacer beyond what is recommended. Damage may result.
3. Soak the parts for 15 minutes in a mild solution of liquid dish detergent and clean lukewarm water. Agitate gently.
4. Rinse parts in clean water.
5. Gently shake excess water, air dry on a clean surface. Make sure parts are dry before putting them together.
6. To put together, center the alignment feature on the back piece with the *FLOW-VU* Indicator and press firmly to attach the chamber.
7. Inspect the spacer before daily use and replace after 6-12 months of use.

*Use the following technique if a spacer is not available.*

### **directions for using MDI without a spacer**

1. Take the protective cap off the mouthpiece. Check for and remove any foreign objects.
2. Shake the MDI well for 5 seconds just before each use.
3. Hold MDI with mouthpiece down. Breathe out through your mouth, push as much air from your lungs as you can.
4. Put the mouthpiece in your mouth pointing towards the back of the throat and close your lips around it.
5. Push down firmly on top of the canister while you breathe in deeply and slowly through your mouth. (See Figure 2)
6. After you have breathed in all the way, remove MDI mouthpiece from your mouth.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 1 minute and repeat Steps 2-8 for number of puffs prescribed.
9. Put cap back on the mouthpiece, snap firmly into place.
10. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it.



Figure 2



# Dulera HFA

1. **brand:** Dulera HFA 100 mcg/5 mcg; 200 mcg/5 mcg
2. **generic:** mometasone furoate and formoterol fumarate dehydrate
3. **strength:** 100/5 mcg, 200/5 mcg
4. **color:** blue
5. **type:** Inhaled corticosteroid and long acting beta agonist - **Controller**
6. **device:** Metered-Dose Inhaler (MDI)
7. **number of doses per container:** 120 inhalations (puffs)
8. **use with a spacer:** as directed by your doctor
9. **priming**

1. Prime the MDI before using for the first time so you get the right amount of medicine when you use it.
2. Remove protective cap from the mouthpiece. Remove any foreign object. Make sure the canister is seated firmly in the plastic actuator every time MDI is used.
3. Shake the MDI well for 5 seconds and then away from the face, spray into the air by pressing down on the metal canister one time.
4. Shake and spray the MDI like this 3 more times to finish priming.
5. The dose counter will countdown from 124 to 120 when primed.
6. Repeat these steps to prime the inhaler if it has been more than 5 days since it was last used.

## 10. directions for using MDI with spacer by mask

1. Remove protective cap from MDI mouthpiece and check it and the spacer for damage, missing parts or foreign objects. Remove any foreign objects before use.
2. Insert the MDI mouthpiece into the back oval-piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Have the child sit or stand straight up. If the child resists, sit the child on your lap and wrap one arm





5. Place the mask gently over the nose and mouth and press so no air or medication can escape.
6. The FLOW-VU Inspiratory Flow Indicator only moves if mask has a good seal.
7. Press down on top of the canister to release 1 spray of medication into the spacer.
8. Allow your child to take 6-10 breaths in and out of the spacer before removing mask from face.
9. Wait for 30 secs. and repeat Steps 3– 9 for the number of doses (puffs) prescribed.
10. Remove MDI from spacer and replace cap on mouthpiece after use.
11. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it. Wipe area of face where mask touched with a wet cloth.

#### **11. directions for using MDI with a spacer by mouthpiece**

1. Remove protective caps from MDI and spacer mouthpieces. Check for damage, missing parts or foreign objects, removing any foreign objects.
2. Insert the MDI mouthpiece into the back oval -piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Breathe out through your mouth, push as much air from your lungs as you can . Sit or stand straight up, place the spacer mouthpiece in the mouth and close lips around it.( The *FLOW-VU* Inspiratory Flow Indicator only moves if there is a good seal.)
5. Press down on top of the canister to release 1 spray of medication into the spacer. Begin breathing in slowly and continue breathing in as deeply as you can through your mouth. A whistling sound indicates you are breathing in too quickly, slow down.
6. Begin breathing in slowly and continue breathing in as deeply as you can through your mouth. A whistling sound indicates that you are breathing in too quickly, slow down.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 30 secs. and repeat Steps 3 – 8 for the number of doses (puffs) prescribed.
9. Remove MDI from spacer and replace caps on mouthpieces of MDI and spacer after use.
10. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it.



#### **12. Use the following technique if there is no spacer available.**

1. Take the protective cap off the MDI mouthpiece. Check for and remove any foreign objects.
2. Shake MDI well for 5 seconds just before each use
3. Sit or stand straight up. Breathe out through your mouth, push as much air from your lungs as you can.
4. Hold MDI with mouthpiece down. Put the mouthpiece in your mouth pointing towards the back of the throat and close your lips around it.

5. Push down firmly on top of the canister while you breathe in deeply and slowly through your mouth. Right after the spray comes out take your finger off the canister. (See Figure 1)
6. After you have breathed in all the way, remove MDI mouthpiece from your mouth.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Wait for 30 secs. and repeat Steps 2-8 for number of puffs prescribed.
9. Put cap back on the mouthpiece, snap firmly into place.
10. Rinse mouth out immediately after using medication. Spit out water. Do not swallow it.

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Figure 1

### 13. counting doses

1. The dose counter will count down backwards automatically each time a puff is sprayed.
2. When the counter reads 20, the number will change to red. You should ask your doctor about getting a refill at this time.
3. Throw away the MDI when the counter shows zero ("0") or the inhaler reaches its expiration date, whichever comes first. When the counter reaches ("0"), it may feel like there is medicine still in it, but it will not give you the correct amount of medicine when pressed.

### 14. cleaning the spacer

1. Clean at least once a week.
2. Remove back-piece only. Do not tamper with valve or take apart the spacer beyond what is recommended. Damage may result.
3. Soak the parts for 15 minutes in a mild solution of liquid dish detergent and clean lukewarm water. Agitate gently.
4. Rinse parts in clean water.
5. Gently shake excess water, air dry on a clean surface. Make sure parts are dry before putting them together.
6. To put together, center the alignment feature on the back piece with the *FLOW-VU* Indicator and press firmly to attach the chamber.
7. Inspect the spacer before daily use and replace after 12-18 months of use, or as needed.

## 15. cleaning the inhaler

1. Clean MDI at least once a week after your evening dose. Keeping the canister and plastic actuator clean will prevent medicine buildup, which will block the spray.
2. Take protective cap off the mouthpiece. The strap on the cap will stay attached to the actuator. Do not take the canister out of the plastic actuator.
3. Use a clean, dry cloth to clean the outside and inside of the opening of the mouthpiece where the medication sprays out of the canister.
4. Put the protective cap back on the mouthpiece of the actuator.

## 16. storage

1. Store the MDI at room temperature.
2. Keep away from heat and flames.

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# Advair HFA

**brand:** Advair HFA 45/21, 115/21, 230/21

**generic:** Fluticasone propionate 45 mcg, 230 mcg and Salmeterol 21 mcg

**type:** inhaled corticosteroid and long acting beta agonist - **Controller**

**device:** metered dose inhaler (MDI)

**number of doses per container:** 120 inhalations (puffs)

**use with a spacer:** as directed by your doctor

## priming

Inhalers must be primed before using for the first time so you get the right amount of medicine.

1. Remove protective cap from the mouthpiece. Make sure the canister is seated firmly in the plastic actuator every time MDI is used.
2. Shake the MDI well for 5 seconds and then away from the face, spray into the air by pressing down on the metal canister one time. (See Figure 1)
3. Shake and spray the MDI like this 3 more times to finish priming.
4. The dose counter will countdown from 124 to 120 when primed. (See Figure 2)
5. Prime again if MDI is not used in more than 4 weeks or if dropped by repeating step 3 two times to finish priming it.

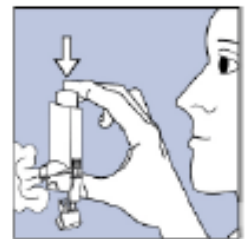


Figure 1

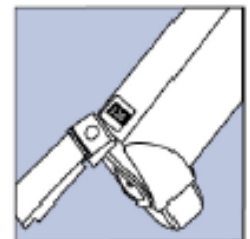


Figure 2

## cleaning instructions

1. Clean MDI at least once a week to prevent medicine buildup, which will block the spray.
2. Take protective cap off the mouthpiece. Keep the strap attached to the actuator. Do not take the canister out of the plastic actuator.
3. Use a dry cotton swab to clean the small circular opening where the medication sprays out of the canister. Carefully twist the swab in a circular motion to remove any medicine.
4. Wipe the inside of the mouthpiece with a clean tissue dampened with water.
5. Let the actuator air dry overnight, then put the protective cap back on the mouthpiece.





## counting doses

When MDI dose counter reads 020, refill medication if prescribed. Throw away the MDI when the counter reads 000. Do not use the MDI after expiration date, which is on the package it comes in

## storage

Store at room temperature. Do not puncture. Keep away from heat and flames.

## directions for using MDI with a spacer by mask

1. Remove protective cap from MDI mouthpiece and check it and the spacer for damage, missing parts or foreign objects. Remove any foreign objects before use.
2. Insert the MDI mouthpiece into the back oval-piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Have the child sit or stand straight up. If the child resists, sit the child on your lap and wrap one arm around the child.
5. Place the mask gently over the nose and mouth and press so no air or medication can escape.
6. The *FLOW-VU* Inspiratory Flow Indicator only moves if mask has a good seal.
7. Press down on top of the canister to release 1 spray of medication into the spacer.
8. Allow your child to take 6-10 breaths (about 10 seconds) in and out of the spacer before removing mask from face.
9. Shake inhaler for 5 seconds, then repeat Steps 3 – 9 for the number of doses (puffs) prescribed.
10. Remove MDI from spacer and replace cap on mouthpiece after use.
11. Brush teeth and rinse mouth out immediately after using medication. Spit out water. Do not swallow it.
12. Wipe face where mask touched with a wet cloth.



## directions for using MDI with a spacer by mouthpiece

1. Remove protective caps from MDI and spacer mouthpieces. Check for damage, missing parts or foreign objects, removing any foreign objects.
2. Insert the MDI mouthpiece into the back oval -piece of the spacer.
3. Shake the MDI and spacer as a unit for 5 seconds immediately before each use.
4. Sit or stand straight up. Breathe out all the air. Place the spacer mouthpiece in the mouth and close lips. The *FLOW-VU* Inspiratory Flow Indicator only moves if there is a good seal.
5. Press down on top of the canister to release 1 spray of medication into the spacer.



6. Begin breathing in slowly and continue breathing in as deeply as you can through your mouth. A whistling sound indicates that you are breathing in too quickly, slow down.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Shake inhaler for 5 seconds, then repeat Steps 3 – 8 for the number of doses (puffs) prescribed.
9. Remove MDI from spacer and replace caps on mouthpieces of MDI and spacer after use.
10. Brush teeth and rinse mouth out immediately after using medication. Spit out water. Do not swallow it.

### **cleaning instructions for spacer**

1. Clean at least once a week.
2. Remove back-piece only. Do not tamper with valve or take apart the spacer beyond what is recommended. Damage may result.
3. Soak the parts for 15 minutes in a mild solution of liquid dish detergent and clean lukewarm water. Agitate gently.
4. Rinse parts in clean water.
5. Gently shake excess water, air dry on a clean surface. Make sure parts are dry before putting them together.
6. To put together, center the alignment feature on the back piece with the *FLOW-VU* Indicator and press firmly to attach the chamber.
7. Inspect the spacer before daily use and replace as needed (will typically last at least 12 months).

*We do not recommend using without a spacer, but if necessary, follow these directions:*

### **directions for using MDI without a spacer**

1. Take the protective cap off the MDI mouthpiece. Check for and remove any foreign objects. (See Figure 3)
2. Shake the MDI well for 5 seconds just before each use.
3. Hold MDI with mouthpiece down. Breathe out through your mouth, push as much air from your lungs as you can. (See Figure 4)
4. Put the mouthpiece in your mouth pointing towards the back of the throat and close your lips around it.
5. Push down firmly on top of the canister while you breathe in deeply and slowly through your mouth. Right after the spray comes out take your finger off the canister.
6. After you have breathed in all the way, remove MDI mouthpiece from your mouth.
7. Hold your breath as long as you can up to 10 seconds and then breathe normally.
8. Shake inhaler for 5 seconds, then repeat Steps 2-8 for number of puffs prescribed.
9. Put cap back on the mouthpiece, snap firmly into place.
10. Brush teeth and rinse mouth out immediately after using medication. Spit out water. Do not swallow it.



Figure 3



Figure 4

# Advair Diskus

1. **brand:** Advair Diskus
2. **generic:** Fluticasone propionate salmeterol xinafoate
3. **strength:** 100/50 mcg, 250/50 mcg, 500/50 mcg
4. **color:** purple
5. **type:** Inhaled corticosteroid and long acting beta agonist - **Controller**
6. **device:** dry powder inhaler (DPI)
7. **number of doses per container:** 60
8. **prime:** no
9. **directions for use:**

1. To open: Hold the Diskus in one hand and put the thumb of your other hand on the thumb grip. Push your thumb away from you as far as it will go until the mouthpiece appears and snaps into position.

2. Hold Diskus in a level, flat position with the mouthpiece towards you. Slide the lever away from you as far as it will go until it clicks. The Diskus is now ready to use.

3. Exhale fully while holding the Diskus level and away from your mouth.

4. Put the mouthpiece to your lips. Breathe in quickly and deeply through the Diskus. Do not breathe in through your nose.

5. Remove the Diskus from your mouth. Hold your breath for about 10 seconds. Breathe out slowly.

6. Rinse your mouth with water and brush teeth after breathing in the medicine. Spit the water out. Do not swallow.

7. Close the Diskus when you are finished taking a dose so that the Diskus will be ready for you to take your next dose.





## 10. counting doses:

1. The dose indicator on the top of the Diskus tells you how many doses are left.
2. When you have 5 doses remaining, the numbers 5 to 0 will appear in red, reminding you it is time to get a refill.
3. The Diskus delivers medications as a very fine powder that you may or may not taste or feel. If you do not taste or feel the medication, do not take another dose as this means the medication has run out.



## 11. cleaning instructions:

Never wash the mouthpiece or any part of the Diskus. Keep it dry.

## 12. storage

1. Store Advair Diskus in a dry place, out of direct heat or sunlight.
2. Throw away the Diskus when the dose counter reaches 0 or 1 month after it has been removed from the foil pouch, whichever comes first.

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