

# ASTHMA TREATMENTS: INHALATIONS (Part 1 of 2)

Generic	Brand	Strength	Form	Dosage
<b>ANTICHOLINERGIC</b>				
ipratropium bromide	—	0.02%	soln	<b>Children: Not recommended.</b> <b>Adults:</b> 500mcg orally by nebulization 3–4 times daily; separate doses by 6–8hrs.
	<b>Atrovent HFA</b>	17mcg	MDI	<b>Children: Not established.</b> <b>Adults:</b> 2 inh 4 times daily; max 12 inh/day.
tiotropium bromide monohydrate	<b>Spiriva Respimat</b>	1.25mcg, 2.5mcg	soln	<b>Children: Not established.</b> <b>Adults:</b> 2 inh of 1.25mcg/actuation (2.5mcg) once daily.
<b>BETA<sub>2</sub>-AGONIST</b>				
albuterol sulfate	—	0.5%	soln	<b>Children:</b> Use other forms. <b>Adults:</b> Use nebulizer. 2.5mg 3–4 times daily.
		0.083% 90mcg	soln MDI	<b>&lt;4yrs: Not recommended.</b> <b>≥4yrs: Bronchospasm:</b> 2 inh every 4–6hrs as needed; 1 inh every 4hrs may suffice. <i>EIB:</i> 2 inh 15min before exercise.
	<b>ProAir HFA</b>	90mcg	MDA	<b>&lt;4yrs: Not established.</b> <b>≥4yrs: Bronchospasm:</b> 2 inh every 4–6hrs; 1 inh every 4hrs may suffice. <i>EIB:</i> 2 inh 15–30min before exercise.
	<b>ProAir RespiClick</b>	90mcg	dry pwd	<b>&lt;4yrs: Not established.</b> <b>≥4yrs: Bronchospasm:</b> 2 inh every 4–6hrs; in some patients: 1 inh every 4hrs may suffice. <i>EIB:</i> 2 inh 15–30min before exercise.
	<b>Proventil HFA</b>	90mcg	MDA	<b>&lt;4yrs: Not established.</b> <b>≥4yrs: Bronchospasm:</b> 2 inh every 4–6hrs as needed; 1 inh every 4hrs may suffice. <i>EIB:</i> 2 inh 15–30min before exercise.
	<b>Ventolin HFA</b>	90mcg	MDA	<b>&lt;4yrs: Not established.</b> <b>≥4yrs: Bronchospasm:</b> 2 inh every 4–6hrs as needed; 1 inh every 4hrs may suffice. <i>EIB:</i> 2 inh 15–30min before exercise.
levalbuterol HCl	<b>Xopenex</b>	0.31mg/3mL, 0.63mg/3mL, 1.25mg/3mL	soln	<b>&lt;6yrs: Not recommended.</b> <b>6–11yrs:</b> 0.31mg by nebulization 3 times daily; max 0.63mg 3 times daily. <b>&gt;12yrs:</b> Initially 0.63mg 3 times daily at 6–8hr intervals; may increase to 1.25mg 3 times daily.
	<b>Xopenex Concentrate</b>	1.25mg/0.5mL	soln	
levalbuterol tartrate	<b>Xopenex HFA</b>	45mcg	MDI	<b>&lt;4yrs: Not established.</b> <b>≥4yrs:</b> 2 inh every 4–6hrs; 1 inh every 4hrs may suffice.
metaproterenol sulfate	—	5%	soln	<b>&lt;6yrs: Not recommended.</b> <b>6–12yrs:</b> Use nebulizer. 0.1–0.2mL 3–4 times daily, up to every 4hrs. <b>≥12yrs:</b> 3–4 times daily (see full labeling).
		0.4%, 0.6%	soln	<b>Children: Not recommended.</b> <b>Adults:</b> Use intermittent positive pressure breathing apparatus (IPPB): 2.5mL 3–4 times daily; up to every 4hrs.
<b>LONG-ACTING BETA<sub>2</sub>-AGONIST</b>				
salmeterol xinafoate	<b>Serevent Diskus</b>	50mcg	dry pwd	<b>&lt;4yrs: Not recommended.</b> <b>≥4yrs: Asthma/Bronchospasm:</b> 1 inh every 12hrs. <i>EIB:</i> 1 inh at least 30min before exercise. Max 2 doses/day.
<b>MAST CELL STABILIZER</b>				
cromolyn sodium	—	20mg/2mL	soln	<b>&lt;2yrs: Not recommended.</b> <b>≥2yrs:</b> Use nebulizer. 20mg 4 times a day.
<b>STERIOD</b>				
beclomethasone dipropionate	<b>Qvar</b>	40mcg, 80mcg	MDI	<b>&lt;5yrs: Not recommended.</b> <b>5–11yrs:</b> Initially 40mcg twice daily (approx. 12hrs apart); max 80mcg twice daily. <b>Adults: Previously on bronchodilators alone:</b> Initially 40–80mcg twice daily (approx. 12hrs apart). <b>Previously on inhaled corticosteroids:</b> Initially 40–320mcg twice daily. <b>Both:</b> Max 320mcg twice daily.
budesonide	<b>Pulmicort Flexhaler</b>	90mcg, 180mcg	dry pwd	<b>&lt;6yrs: Not recommended.</b> <b>6–17yrs:</b> Initially 180mcg twice daily; may start at 360mcg twice daily; max 360mcg twice daily. <b>≥18yrs:</b> Initially 360mcg twice daily; 180mcg twice daily may suffice; max 720mcg twice daily.
	<b>Pulmicort Respules</b>	0.25mg/2mL, 0.5mg/2mL, 1mg/2mL	susp	<b>&lt;6mos: Not recommended.</b> <b>6–12mos: Not established.</b> <b>12mos–8yrs: Previously on bronchodilators alone:</b> 0.5mg once daily or 0.25mg twice daily. <b>Previously on inhaled corticosteroids:</b> 0.5mg once daily or 0.25mg twice daily; max 1mg/day. <b>Previously on oral corticosteroids:</b> 0.5mg twice daily or 1mg once daily.

(continued)

# ASTHMA TREATMENTS: INHALATIONS (Part 2 of 2)

Generic	Brand	Strength	Form	Dosage
<b>STERIOD (continued)</b>				
ciclesonide	<b>Alvesco</b>	80mcg, 160mcg	MDA	<b>&lt;12yrs: Not recommended.</b> <b>≥12yrs:</b> <i>Previously on bronchodilators alone:</i> Initially 80mcg twice daily, max 160mcg twice daily. <i>Previously on inhaled corticosteroids:</i> Initially 80mcg twice daily; max 320mcg twice daily. <i>Previously on oral corticosteroids (see full labeling):</i> 320mcg twice daily.
flunisolide	<b>Aerospan</b>	80mcg/inh	MDI	<b>&lt;6yrs: Not recommended.</b> <b>6–11yrs:</b> Initially 80mcg twice daily (approx. 12hrs apart); may increase to max 160mcg twice daily. <b>≥12yrs:</b> Initially 160mcg twice daily (approx. 12hrs apart); may increase to max 320mcg twice daily.
fluticasone furoate	<b>Arnuity Ellipta</b>	100mcg, 200mcg	dry pwd	<b>Children: Not established.</b> <b>Adults:</b> Base initial dose on previous asthma therapy and disease severity. <i>Not on inhaled corticosteroid:</i> usually initiate at 100mcg once daily; may increase to 200mcg once daily if inadequate response after 2 weeks. Max 200mcg/day.
fluticasone propionate	<b>ArmonAir RespiClick</b>	55mcg, 113mcg, 232mcg	dry pwd	<b>&lt;12yrs: Not established.</b> <b>≥12yrs:</b> <i>Previously on inhaled steroids:</i> Initially 1 inh of 55mcg, 113mcg, or 232mcg twice daily (approx. 12hrs apart) based on asthma severity and previous steroid dose. <i>Not on inhaled steroid:</i> Initially 55mcg twice daily. <i>Both:</i> Max 232mcg twice daily.
	<b>Flovent Diskus</b>	50mcg, 100mcg, 250mcg	dry pwd	<b>&lt;4yrs: Not recommended.</b> <b>4–11yrs:</b> <i>Previously on bronchodilators alone or on inhaled corticosteroids:</i> Initially 50mcg twice daily; max 100mcg twice daily. <b>≥11yrs:</b> <i>Previously on bronchodilators alone:</i> Initially 100mcg twice daily; max 500mcg twice daily. <i>Previously on inhaled corticosteroids:</i> initially 100–250mcg twice daily; max 500mcg twice daily. <i>Previously on oral corticosteroids (wean gradually):</i> initially 500–1000mcg twice daily; max 1000mcg twice daily.
	<b>Flovent HFA</b>	44mcg, 110mcg, 220mcg	MDI	<b>&lt;4yrs: Not established.</b> <b>4–11yrs:</b> max 88mcg twice daily. <b>≥12yrs:</b> <i>Previously on bronchodilators alone:</i> Initially 88mcg twice daily; max 440mcg twice daily. <i>Previously on inhaled steroids:</i> Initially 88–220mcg twice daily; max 440mcg twice daily. <i>Previously on oral steroids:</i> Initially 440mcg twice daily; max 880mcg twice daily.
mometasone furoate	<b>Asmanex HFA</b>	100mcg, 200mcg	MDI	<b>Children: Not established.</b> <b>Adults:</b> <i>Previously on inhaled medium-dose corticosteroids:</i> use 100mcg strength. <i>Previously on inhaled high-dose or oral corticosteroids (wean gradually):</i> use 200mcg strength. <i>For both:</i> 2 inh twice daily (AM & PM).
	<b>Asmanex Twisthaler</b>	110mcg, 220mcg	dry pwd	<b>&lt;4yrs: Not established.</b> <b>4–11yrs:</b> 110mcg once in PM; max 110mcg/day. <b>≥12yrs:</b> <i>Previously on bronchodilators alone or inhaled steroids:</i> Initially 220mcg once in PM; max 440mcg/day (as 2 inh once daily or 1 inh twice daily). <i>Previously on oral steroids:</i> Initially 440mcg twice daily; max 880mcg/day.
<b>STERIOD + LONG-ACTING BETA<sub>2</sub>-AGONIST</b>				
budesonide/ formoterol fumarate dihydrate	<b>Symbicort</b>	80mcg/4.5mcg, 160mcg/4.5mcg	MDI	<b>&lt;6yrs: Not established.</b> <b>6–&lt;12yrs:</b> 2 inh of 80/4.5 twice daily (AM & PM). <b>≥12yrs:</b> Base initial dose on asthma severity. 2 inh of 80/4.5 or 160/4.5 twice daily (AM & PM). If insufficient response after 1–2wks of 80/4.5 strength, may switch to 160/4.5 strength. Max 2 inh of 160/4.5 twice daily.
fluticasone furoate/ vilanterol	<b>Breo Ellipta</b>	100mcg/25mcg, 200mcg/25mcg	dry pwd	<b>Children: Not established.</b> <b>Adults:</b> Initially 1 inh of 100/25mcg or 200/25mcg once daily; max 1 inh of 200/25mcg once daily. <i>Previously on low- to mid-dose corticosteroid:</i> consider 100/25mcg; <i>mid- to high-dose corticosteroid:</i> consider 200/25mcg.
fluticasone propionate/ salmeterol	<b>Advair Diskus</b>	100mcg/50mcg, 250mcg/50mcg, 500mcg/50mcg	dry pwd	<b>&lt;4yrs: Not recommended.</b> <b>4–11yrs:</b> 1 inh of 100/50 twice daily. <b>≥12yrs:</b> 1 inh of 100/50, 250/50, or 500/50 twice daily; max 1 inh of 500/50 twice daily.
	<b>Advair HFA</b>	45mcg/21mcg, 115mcg/21mcg, 230mcg/21mcg	MDI	<b>&lt;12yrs: Not recommended.</b> <b>≥12yrs:</b> 2 inh of 45/21, 115/21, or 230/21 twice daily; max 2 inh 230/21 twice daily.
mometasone furoate/formoterol fumarate	<b>Dulera</b>	100mcg/5mcg, 200mcg/5mcg	MDI	<b>&lt;12yrs: Not established.</b> <b>≥12yrs:</b> <i>Previously on medium dose of steroid:</i> Use 100/5. <i>Previously on high dose of steroid:</i> Use 200/5. <i>Both:</i> 2 inh twice daily.

## NOTES

**Key:** dry pwd = dry powder for inhalation; EIB = exercise induced bronchospasm; MDI = metered-dose inhaler; MDA = metered dose aerosol; soln = solution for inhalation; susp = suspension for inhalation

(Rev. 11/2017)