



Inhaled QUICK RELIEF Medications

Generic Name	Brand Name	FDA Approved Age	Strengths (# Doses/Inhaler)	Comments
Short-Acting Beta₂-Agonists				
Albuterol for Nebulization	AccuNeb	2 and older	0.63 mg per 3 mL 1.25 mg per 3 mL	Pre-mixed unit dose (3 mL); vials must be placed back in the foil wrap after the foil wrap is opening; expires 1 week after foil wrap is opened
	0.083%	2 and older	2.5 mg per 3 mL	Pre-mixed unit dose (3 mL)
	0.50%	2 and older	0.25-0.5 mL can be added to 2-3 mL saline solution for inhalation, then nebulized	Supplied as 20 mL dropper bottle
Albuterol	Albuterol CFC	4 and older	90 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 4 weeks without use
	ProAir HFA	4 and older	90 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 3 primes to start; reprime after 2 weeks without use
	Proventil HFA, Ventolin HFA	4 and older	90 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 2 weeks without use or if dropped; expires 6 months after opening
Levalbuterol	Xopenex HFA	4 and older	45 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 3 days without use
	Xopenex Nebulized	6 and older	0.31 mg per unit dose	Unit dose for nebulization; needs no mixing; must use as soon as foil wrapper is opened
12 and older		0.63 or 1.25 mg per unit dose		
Pirbuterol	Maxair Autohaler CFC	12 and older	200 mcg per inhalation (400)	MDI; breath-actuated so no spacer needed; shake 5 seconds; 2 primes to start; reprime after 2 days without use

MDI, metered dose inhaler; CFC, chlorofluorocarbon propellants; HFA, hydrofluoroalkane propellants

The information in this reference was reviewed by the UMHS Asthma Quality Improvement Steering Committee and was last updated on 08/13/2009. Questions and/or comments may be directed to DeAnn Vansickle, BSN, RN (dvansick@umich.edu) or Annie Sy, PharmD (anniesy@umich.edu).



Inhaled CONTROLLER Medications

Generic Name	Brand Name	FDA Approved Age	Available Strengths (# Doses/Inhaler)	Comments
Inhaled Corticosteroids (ICS)				
Flunisolide	Aerobid CFC	6 and older	250 mcg per inhalation (100)	MDI; should be used with a spacer; shake 5 seconds
Ciclesonide	Alvesco HFA	12 and older	80 or 160 mcg per inhalation (60)	MDI; should be used with a spacer; no shaking required; 3 primes to start; reprime after 10 days without use; dose indicator in increments of 10
Mometasone	Asmanex DPI*	4 and older	110 mcg per actuation (14, 30, 60, or 120)	Has dose counter; no priming; do not tip once dose is loaded; avoid humidity & moisture; may be given once daily in the evening; expires 45 days after opening
		12 and older	220 mcg per actuation (14, 30, 60, or 120)	
Triamcinolone	Azmacort CFC	6 and older	100 mcg per inhalation (240)	MDI; includes built-in spacer; shake 5 seconds; 2 primes to start; reprime after 3 days without use
Fluticasone	Flovent DPI*	4 and older	50 mcg per inhalation (60)	No priming; do not tip once dose is loaded; avoid humidity and moisture; 50 mcg strength is equivalent to Flovent HFA 44 mcg; expires 6 weeks after opening
		4 and older	44 mcg per inhalation (120)	
		12 and older	44, 110 or 220 mcg per inhalation (120)	
Budesonide	Pulmicort Flexhaler DPI*	6 and older	90 mcg per actuation (60); 180 mcg per actuation (120)	Has dose indicator in increments of 10; must twist fully to the right, then left twice to prime; do not tip once dose is loaded; avoid humidity and moisture
	Pulmicort Respules	12 months to 8 years	0.25, 0.5 or 1.0 mg per unit dose	Deliver with closed system mask if < 3 years (Bubbles fish mask); older children may use a mouthpiece if they are able to breath through their mouths only (nose clips may be helpful); expires two weeks after opening
Beclomethasone	QVAR HFA	5 and older	40 or 80 mcg per actuation (100)	MDI; recommended to be used without spacer; no shaking required; 2 primes to start; reprime after 10 days without use
Long-Acting Beta₂-Agonists (LABAs) - NOT TO BE USED WITHOUT ICS				
Salmeterol	Serevent DPI*	4 and older	50 mcg per actuation (60)	Not to be used for quick relief or without ICS in asthma; no priming; do not tip once dose is loaded; avoid humidity and moisture; expires 6 weeks after opening
Formoterol	Foradil DPI*	5 and older	12 mcg per capsule (72 or 360)	Not to be used for quick relief or without ICS in asthma; sometimes used for exercise-induced bronchospasm prevention; no priming; do not tip once dose is loaded; avoid humidity and moisture; expires 4 months after opening
ICS and LABA Combinations				
Fluticasone and Salmeterol	Advair DPI*	4 and older	100/50, 250/50 or 500/50 mcg per inhalation (60)	No priming; do not tip once dose is loaded; avoid humidity and moisture; do not use more than one dose twice daily; expires one month after opening
	Advair HFA	12 and older	45/21, 115/21 or 230/21 mcg per inhalation (120)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 4 weeks without use or if dropped; do not use more than twice daily
Budesonide and Formoterol	Symbicort HFA	12 and older	80/4.5 or 160/4.5 mcg per inhalation (120)	MDI; should be used with a spacer; shake 5 seconds; 2 primes to start, reprime after 7 days without use; do not use more than twice daily; expires 90 days after opening

* Contains lactose

+ Recommended per NHLBI/NAEPP guidelines, but not FDA-approved for this age group

DPI, dry powered inhaler



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Short-Acting Beta₂-Agonists				
Albuterol for Nebulization	AccuNeb	2 and older	0.63 mg per 3 mL 1.25 mg per 3 mL	Pre-mixed unit dose (3 mL); vials must be placed back in the foil wrap after the foil wrap is opening; expires 1 week after foil wrap is opened
	0.083%	2 and older	2.5 mg per 3 mL	Pre-mixed unit dose (3 mL)
	0.50%	2 and older	0.25-0.5 mL can be added to 2-3 mL saline solution for inhalation, then nebulized	Supplied as 20 mL dropper bottle
Albuterol	Albuterol CFC	4 and older	90 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 4 weeks without use
	ProAir HFA	4 and older	90 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 3 primes to start; reprime after 2 weeks without use
	Proventil HFA, Ventolin HFA	4 and older	90 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 2 weeks without use or if dropped; expires 6 months after opening
Levalbuterol	Xopenex HFA	4 and older	45 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 3 days without use
	Xopenex Nebulized	6 and older	0.31 mg per unit dose	Unit dose for nebulization; needs no mixing; must use as soon as foil wrapper is opened
		12 and older	0.63 or 1.25 mg per unit dose	
Pirbuterol	Maxair Autohaler CFC	12 and older	200 mcg per inhalation (400)	MDI; breath-actuated so no spacer needed; shake 5 seconds; 2 primes to start; reprime after 2 days without use

MDI, metered dose inhaler; CFC, chlorofluorocarbon propellants; HFA, hydrofluoroalkane propellants

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Generic Name	Brand Name	FDA Approved Age	Available Strengths (# Doses/Inhaler)	Comments
Inhaled Corticosteroids (ICS)				
Flunisolide	Aerobid CFC	6 and older	250 mcg per inhalation (100)	MDI; should be used with a spacer; shake 5 seconds
Ciclesonide	Alvesco HFA	12 and older	80 or 160 mcg per inhalation (60)	MDI; should be used with a spacer; no shaking required; 3 primes to start; reprime after 10 days without use; dose indicator in increments of 10
Mometasone	Asmanex DPI*	4 and older	110 mcg per actuation (14, 30, 60, or 120)	Has dose counter; no priming; do not tip once dose is loaded; avoid humidity & moisture; may be given once daily in the evening; expires 45 days after opening
		12 and older	220 mcg per actuation (14, 30, 60, or 120)	
Triamcinolone	Azmacort CFC	6 and older	100 mcg per inhalation (240)	MDI; includes built-in spacer; shake 5 seconds; 2 primes to start; reprime after 3 days without use
Fluticasone	Flovent DPI*	4 and older	50 mcg per inhalation (60)	No priming; do not tip once dose is loaded; avoid humidity and moisture; 50 mcg strength is equivalent to Flovent HFA 44 mcg; expires 6 weeks after opening
	Flovent HFA ⁺	4 and older	44 mcg per inhalation (120)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 7 days without use or if dropped
		12 and older	44, 110 or 220 mcg per inhalation (120)	
Budesonide	Pulmicort Flexhaler DPI*	6 and older	90 mcg per actuation (60); 180 mcg per actuation (120)	Has dose indicator in increments of 10; must twist fully to the right, then left twice to prime; do not tip once dose is loaded; avoid humidity and moisture
	Pulmicort Respules	12 months to 8 years	0.25, 0.5 or 1.0 mg per unit dose	Deliver with closed system mask if < 3 years (Bubbles fish mask); older children may use a mouthpiece if they are able to breath through their mouths only (nose clips may be helpful); expires two weeks after opening
Beclomethasone	QVAR HFA	5 and older	40 or 80 mcg per actuation (100)	MDI; recommended to be used without spacer; no shaking required; 2 primes to start; reprime after 10 days without use
Long-Acting Beta₂-Agonists (LABAs) - NOT TO BE USED WITHOUT ICS				
Salmeterol	Serevent DPI*	4 and older	50 mcg per actuation (60)	Not to be used for quick relief or without ICS in asthma; no priming; do not tip once dose is loaded; avoid humidity and moisture; expires 6 weeks after opened; expires 6 weeks after opening
Formoterol	Foradil DPI*	5 and older	12 mcg per capsule (72 or 360)	Not to be used for quick relief or without ICS in asthma; sometimes used for exercise-induced bronchospasm prevention; no priming; do not tip once dose is loaded; avoid humidity and moisture; expires 4 months after opening
ICS and LABA Combinations				
Fluticasone and Salmeterol	Advair DPI*	4 and older	100/50, 250/50 or 500/50 mcg per inhalation (60)	No priming; do not tip once dose is loaded; avoid humidity and moisture; do not use more than one dose twice daily; expires 1 month after opening
	Advair HFA	12 and older	45/21, 115/21 or 230/21 mcg per inhalation (120)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 4 weeks without use or if dropped; do not use more than twice daily
Budesonide and Formoterol	Symbicort HFA	12 and older	80/4.5 or 160/4.5 mcg per inhalation (120)	MDI; should be used with a spacer; shake 5 seconds; 2 primes to start, reprime after 7 days without use; do not use more than twice daily; expires 90 days after opening

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Fluticasone	Flovent DPI*	4 and older	50 mcg per inhalation (60)	No priming; do not tip once dose is loaded; avoid humidity and moisture; 50 mcg strength is equivalent to Flovent HFA 44 mcg; expires 6 weeks after opening
	Flovent HFA [†]	4 and older	44 mcg per inhalation (120)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 7 days without use or if dropped
12 and older		44, 110 or 220 mcg per inhalation (120)		
Budesonide	Pulmicort Flexhaler DPI*	6 and older	90 mcg per actuation (60); 180 mcg per actuation (120)	Has dose indicator in increments of 10; must twist fully to the right, then left twice to prime; do not tip once dose is loaded; avoid humidity and moisture
	Pulmicort Respules	12 months to 8 years	0.25, 0.5 or 1.0 mg per unit dose	Deliver with closed system mask if < 3 years (Bubbles fish mask); older children may use a mouthpiece if they are able to breath through their mouths only (nose clips may be helpful); expires two weeks after opening
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Levalbuterol	Xopenex HFA	4 and older	45 mcg per inhalation (200)	MDI; should be used with a spacer; shake 5 seconds; 4 primes to start; reprime after 3 days without use
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