



Prescribing Guidelines for Asthma



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Prescribing for Asthma

This tool was created by Partners For Kids to assist in following recommendations from the guidelines to treat asthma after proper diagnosis. For more information, refer to the asthma clinical tool (www.NationwideChildrens.org/for-medical-professionals/tools-for-your-practice/clinical-tools > Pulmonary Medicine > Asthma), the Global Initiative for Asthma Report, or the National Asthma Guidelines.

Initial Visit/Starting Therapy

1. Start by classifying asthma severity to select initial treatment
 - a. Select medication and delivery devices appropriate for each individual patient
 - b. Intermittent asthma: short acting beta agonists (SABA) are first-line treatment
 - c. Persistent asthma: inhaled corticosteroids (ICS) for long-term control, combined with as needed short acting beta-agonists (SABA), are first-line treatment
2. Complete patient education by reviewing medication administration technique and describing how to manage asthma
3. Develop a written Asthma Action Plan (AAP) and provide to patient/family at each visit
 - a. Defines steps to be taken to control asthma, when experiencing symptoms, and in times of danger
 - b. Goal is to prevent asthma attacks and reduce emergency visits by increasing adherence, knowledge, and comfortability with medication therapy
 - c. Example AAP: asthma.com > Toolbox > Asthma Action Plan
 - d. Example AAP: www.NationwideChildrens.org/family-resources-education/health-wellness-and-safety-resources/resources-for-parents-and-kids/asthma-program-resources > Using an Asthma Action Plan

Classification of Asthma Severity: Clinical Features before Treatment <i>(Modeled after NHLBI Guidelines)</i>				
	Intermittent	Mild Persistent	Moderate Persistent	Severe Persistent
Daytime symptoms	≤ 2 days/week	> 2 days/week	Daily	Throughout the day
Nighttime symptoms	≤ 2 times/month	3 – 4 times/month	> 1 time/week	Nightly
Rescue inhaler use	≤ 2 days/week	> 2 days/week	Daily	Several times a day
Exercise limitation	None	Minor	Some	Extremely
FEV1	>80%	>80%	60 – 80%	<60%
FEV1/FVC	>85%	>80%	75 – 80%	<75%
“Risk”	0 – 1 oral steroids/year	≥ 2 oral steroids per year		

Follow-up Visits/Continuing Therapy

1. Administer and determine asthma control using an Asthma Control Test (ACT) at every visit
 - a. Example ACT: asthma.com> Additional Resources > Asthma Control Test or Childhood Asthma Control Test
2. Review asthma control; if inadequate control, optimize therapy as needed
 - a. Step-up in therapy after checking adherence, inhaler technique, environmental control, and comorbid conditions
 - b. Start with low-dose inhaled corticosteroid (ICS) for patients on no controller therapy
 - c. If already on controller therapy, but not achieving goals, choose from the following options: increase to medium-dose ICS, add montelukast, and/or add a long-acting beta agonist (LABA) [typically used if > 6 years of age]
 - d. Consider referral to pulmonary or allergy specialist if the patient has already been stepped-up twice and is still uncontrolled for evaluation of:
 - i. Diagnosis accuracy and/or presence of comorbidities (allergies, vocal cord dysfunction, etc.)
 - ii. Consideration for more aggressive therapies such as an ICS/LABA in patients < 5 years of age or biologic therapies (e.g., anti-IGE or anti-IL5 agents)
3. Update and provide current AAP to patient/family at each visit
4. Schedule follow-up appointments in appropriate time frame depending on asthma control and adherence to therapy
 - a. Intermittent: every 6 months
 - b. Persistent: every 3 months
 - c. Poorly controlled: every 4 – 6 weeks

What is uncontrolled asthma? Follow the “Rule of 2’s”.
≥ 2 daytime/exercise symptoms per week OR
≥ 2 episodes of albuterol use per week OR
≥ 2 nighttime awakenings per month OR
≥ 2 steroid courses or hospital admissions per year

Controller Medications

Inhaled Corticosteroids (ICS)					
<ul style="list-style-type: none"> Breathe out before inhaling Hold breath for 10 seconds or as long as possible after inhaling medication Rinse mouth after use 					
Drug	Inhaler Type	Strengths	Usual Dosing	Counter	Clinical Pearls
Metered-dose Inhalers (MDI) Aerosolized inhalation that is pushed to activate; Spacer compatible					
Asmanex® (Mometasone furoate) HFA	MDI	100 mcg 200 mcg	BID	Yes	Shake before use Needs primed
Flovent® (Fluticasone propionate) HFA	MDI	44 mcg 110 mcg 220 mcg	BID	Yes	Shake before use Needs primed
Dry Powder Inhalers (DPI) Breath-actuated; Spacer incompatible and not required*					
Arnuity® Ellipta® (Fluticasone furoate)	DPI	50 mcg 100 mcg 200 mcg	QDay	Yes	Do not open cap until ready to use
Asmanex® Twisthaler® (Mometasone furoate)	DPI	110 mcg 220 mcg	QDay	Yes	Hold horizontally
Flovent® Diskus® (Fluticasone propionate)	DPI	50 mcg 100 mcg 250 mcg	BID	Yes	Keep level and flat while holding horizontally
Pulmicort® Flexhaler® (Budesonide)	DPI	90 mcg 180 mcg	BID	Yes	Hold horizontally
QVAR® RediHaler® (Beclomethasone)	DPI	40 mcg 80 mcg	BID	Yes	Do not open cap until ready to use
Nebulizer solution Passive inhalation via nebulizer; Requires functioning nebulizer					
Pulmicort® Respules (Budesonide)	Nebulizer vials	0.25mg/2mL; 0.5mg/2mL; 1mg/2mL	0.25mg BID or 0.5mg QDay	N/A	Can be irritating to the eyes; Nebulizer requires power supply and longer administration time

Key: **Bolded medications** are available generically, * = advanced technique required, avoid if patient requires spacer with mask.

ICS + Long-Acting Beta Agonist (LABA)

- Breathe out before inhaling
- Hold breath for 10 seconds or as long as possible after inhaling medication
- Rinse mouth after use

Drug	Inhaler Type	Strengths	Usual Dosing	Counter	Clinical Pearls
Metered-dose Inhalers (MDI) Aerosolized inhalation that is pushed to activate; Spacer compatible					
Advair® (Fluticasone / salmeterol) HFA	MDI	45-21 mcg 115-21 mcg 230-21 mcg	BID	Yes	Shake before use Needs primed
Dulera® (Mometasone / formoterol) HFA	MDI	100-5 mcg 200-5 mcg	BID	Yes	Shake before use Needs primed
Symbicort® (Budesonide / formoterol) HFA	MDI	80-4.5 mcg 160-4.5 mcg	BID	Yes	Shake before use Needs primed
Dry Powder Inhalers (DPI) Breath-actuated; Spacer incompatible and not required*					
Advair® Diskus® (Fluticasone / salmeterol)	DPI	100-50 mcg 250-50 mcg 500-50 mcg	BID	Yes	Keep level and flat while holding horizontally
Wixela® Inhub® (Fluticasone / salmeterol)	DPI	100-50 mcg 250-50 mcg 500-50 mcg	BID	Yes	Hold vertically
AirDuo® Respiclick® (Fluticasone / salmeterol)	DPI	55-14 mcg 113-14 mcg 232-14 mcg	BID	Yes	Do not open cap until ready to use
Leukotriene Inhibitors					
Drug		Strength	Usual Dosing		Clinical Pearl
Singulair® (Montelukast)		4mg chewable tablet and granule packet 5mg chewable tablet 10mg tablet	QDay		Granules can be placed directly in the mouth or mixed with cold or room temperature food such as applesauce, formula, breast milk, mashed potatoes, rice, or ice cream

Key: **Bolded medications** are available generically, * = advanced technique required, avoid if patient requires spacer with mask.

Rescue Medications

Short-Acting Beta-2 Agonists (SABA)					
<ul style="list-style-type: none"> Breathe out before inhaling Hold breath for 10 seconds or as long as possible after inhaling medication 					
Drug	Inhaler Type	Strengths	Usual Dosing	Counter	Clinical Pearls
Metered-dose Inhalers (MDI) Aerosolized inhalation that is pushed to activate; Spacer compatible					
Ventolin [®] , ProAir [®] , Proventil [®] (Albuterol) HFA	MDI	90 mcg	PRN	Yes	Shake before use Needs primed Ventolin [®] and ProAir [®] have authorized generics available
Xopenex [®] (Levalbuterol) HFA	MDI	45 mcg	PRN	No	Shake before use Needs primed; Requires PA
Nebulizer Solution Passive inhalation via nebulizer; Requires functioning nebulizer					
AccuNeb [®] (Albuterol)	Nebulizer vials	2.5 mg/3 mL (0.083%) 2.5 mg/0.5 mL (0.5%) 0.63 mg/3 mL 1.25 mg/3 mL	PRN	N/A	
Xopenex [®] (Levalbuterol)	Nebulizer vials	0.31 mg/3 mL 0.63 mg/3 mL 1.25 mg/3 mL	PRN	N/A	Requires PA

Systemic Corticosteroids

- Use for asthma exacerbations

Drug	Strength	Usual Dosing	Clinical Pearl
Prednisolone (OraPred®)	Solution: 6.7mg/5ml, 10mg/5ml, 15mg/5ml, 20mg/5ml, 25mg/5ml ODT: 10mg, 15mg, 30mg Tablet: 5mg	QDay or BID	Take with food Easier and better administration for pediatric patients vs. prednisone since solution does not contain alcohol
Prednisone (Deltasone®)	Solution: 5mg/5ml, 5mg/ml Tablets: 1mg, 2.5mg, 5mg, 10mg, 20mg, 50mg EC Tablets: 1mg, 2mg, 5mg	QDay or BID	Take with food Solution contains alcohol; avoid in younger patients

Key: **Bolded medications** are available generically, * = advanced technique required, avoid if patient requires spacer with mask.

Comparative Total Daily Dosages for Inhaled Corticosteroids

Inhaled Corticosteroids (ICS)									
Drug	Low TOTAL Daily Dose			Medium TOTAL Daily Dose			High TOTAL Daily Dose		
	0-4 yrs	5-11 yrs	≥12 yrs and adult	0-4 yrs	5-11 yrs	≥12 yrs and adult	0-4 yrs	5-11 yrs	≥12 yrs and adult
Arnuity® Ellipta® (Fluticasone furoate) DPI • 50 mcg; 100 mcg; 200 mcg	NA	50 mcg	100 mcg	NA	50 mcg	100 mcg	NA	50 mcg	200 mcg
Asmanex® (Mometasone furoate) HFA • 100 mcg; 200 mcg	NA ^Δ	NA ^Δ	NA	NA ^Δ	NA ^Δ	400 mcg	NA	NA	800 mcg
Asmanex® Twisthaler® (Mometasone furoate) DPI • 110 mcg; 220 mcg	NA	110 mcg	220 mcg	NA	220- ≤440 mcg*	330-440 mcg	NA	≥440 mcg*	>440 mcg
Flovent® (Fluticasone propionate) HFA • 44 mcg; 110 mcg; 220 mcg	88-176 mcg*	176 mcg	176 mcg	220-352 mcg*	220-352 mcg*	264-440 mcg	>352 mcg*	>352 mcg*	>440 mcg
Flovent® Diskus® (Fluticasone propionate) DPI • 50 mcg; 100 mcg; 250 mcg	NA	100-200 mcg	200-300 mcg	NA	>200- 400 mcg*	350-500 mcg	NA	>400 mcg*	>500 mcg

Key: DPI= dry powder inhaler; HFA= hydrofluoroalkane; MDI= metered-dose inhaler; NA= not available (either not approved, no data available, or safety and efficacy not established for this age group); *= exceeds FDA-approved dose for age group, see package insert and use clinical judgement; Δ= fluticasone HFA preferred for ages 0 – 11 years, but if insurance requires, can use mometasone HFA 100 mcg BID as an alternative

Inhaled Corticosteroids (ICS) (continued)									
Drug	Low TOTAL Daily Dose			Medium TOTAL Daily Dose			High TOTAL Daily Dose		
	0-4 yrs	5-11 yrs	≥12 yrs and adult	0-4 yrs	5-11 yrs	≥12 yrs and adult	0-4 yrs	5-11 yrs	≥12 yrs and adult
Pulmicort® (Budesonide) Flexhaler® DPI • 90 mcg; 180 mcg	NA	360 mcg	360-540 mcg	NA	450-720 mcg	>630-1,080 mcg*	NA	>800 mcg*	>1,200 mcg*
Pulmicort® Respules® (Budesonide) Inhalation Suspension for Nebulization • 0.25 mg; 0.5 mg; 1 mg	0.25-0.5 mg	0.5 mg	NA	>0.5-1 mg	1 mg	NA	>1 mg	2 mg*	NA
QVAR® (Beclomethasone) RediHaler® HFA • 40 mcg; 80 mcg	NA	80-160 mcg	80-240 mcg	NA	200-320 mcg*	280-480 mcg	NA	>320 mcg*	>480 mcg

Key: DPI= dry powder inhaler; HFA= hydrofluoroalkane; MDI= metered-dose inhaler; NA= not available (either not approved, no data available, or safety and efficacy not established for this age group); *= exceeds FDA-approved dose for age group, see package insert and use clinical judgement; Δ= fluticasone HFA preferred for ages 0 – 11 years, but if insurance requires, can use mometasone HFA 100 mcg BID as an alternative

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Referrals and Consultations

Online: [NationwideChildrens.org](https://www.nationwidechildrens.org)

Phone: (614) 722-6600 or (877) 722-6220 | Fax: (614) 722-4000

Physician Direct Connect Line for 24-hour urgent physician consultations:
(614) 355-0221 or (877) 355-0221.



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