

Stepwise Approach for Managing Asthma in Adults and Children Older Than 5 Years of Age: Treatment

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Classify Severity: Clinical Features Before Treatment or Adequate Control		Medications Required to Maintain Long-Term Control		↓ Step down Review treatment every 1 to 6 months; a gradual stepwise reduction in treatment may be possible. ↑ Step up If control is not maintained, consider step up. First, review patient medication technique, adherence, and environmental control.
	Symptoms/Day Symptoms/Night	PEF or FEV ₁ PEF Variability	Preferred Daily Medications	
STEP 4 Severe Persistent	Continual Frequent	≤ 60% > 30%	High-dose inhaled corticosteroid (ICS) + long-acting beta ₂ -agonist (LABA)	Goals of Therapy: Asthma Control • Minimal or no chronic symptoms day or night • Minimal or no exacerbations • No limitations on activities; no school/work missed • Maintain (near) normal pulmonary function • Minimal use of short-acting inhaled beta ₂ -agonist • Minimal or no adverse effects from medications
STEP 3 Moderate Persistent	Daily > 1 night/week	> 60% – < 80% > 30%	Low-to medium-dose ICS + LABA If needed—particularly in patients with recurring severe exacerbations: Medium-dose ICS + LABA	
STEP 2 Mild Persistent	> 2/week but < 1x/day > 2 nights/month	≥ 80% 20–30%	Low-dose ICS	
STEP 1 Mild Intermittent	≤ 2 days/week ≤ 2 nights/month	≥ 80% < 20%	No daily medication needed	
QUICK RELIEF All Patients	• Short-acting bronchodilator: 2–4 puffs short-acting inhaled beta ₂ -agonists as needed for symptoms. • Intensity of treatment will depend on severity of exacerbation; up to 3 treatments at 20-minute intervals or a single nebulizer treatment as needed. Course of systemic corticosteroids may be needed. • Use of short-acting beta ₂ -agonists >2 times a week in intermittent asthma (daily, or increasing use in persistent asthma) may indicate the need to initiate (increase) long-term-control therapy.			

Table produced by the Oregon Asthma Network

Diagnosing and Managing Asthma in Infants and Young Children Under Age 5 Years

Asthma diagnosis and long-term therapy should be considered in infants and young children if

- ♦ Symptoms >2 times a week (remember the "Rules of Two" criteria), or
- ♦ Severe exacerbations <6 weeks apart, or
- ♦ >3 episodes of wheezing in past year (lasting over 1 day and affecting sleep) plus the following risk factors:
 - Either parental history of asthma or atopic dermatitis/eczema, or
 - 2 of the following:
 - Physician-diagnosed allergic rhinitis
 - Wheezing not related to colds/viruses (wheeze triggered by allergens, irritants)
 - Peripheral blood eosinophilia ≥ 4%

Asthma treatment follows the same "Stepwise Approach" table above except that LABAs may not be applicable in younger children and there are some alternative treatments for persistent asthma, although inhaled steroids are preferred.

When to refer a patient to a specialist

- ♦ Long-term oral steroids, high-dose inhaled steroids, or more than 2 bursts of steroids were used in the last year
- ♦ A life-threatening asthma exacerbation occurred.
- ♦ Goals of asthma therapy are not met after 3–6 months of treatment (or patient not responding to therapy.)
- ♦ The diagnosis is in question, additional diagnostic testing is indicated, or other conditions complicate the diagnosis.
- ♦ Specialized treatment (immunotherapy) or patient education is needed.
- ♦ The patient is under 3 years of age with moderate to severe persistent asthma.

GOALS OF ASTHMA TREATMENT AND CONTROL

- ♦ No significant sleep disturbance or activity limitation
- ♦ No missed school/work
- ♦ Minimal use of short-acting bronchodilators
- ♦ Minimal or no side effects from medications
- ♦ No unscheduled medical care or hospitalizations
- ♦ Normal or near-normal lung function

Ensure that the patient remembers the "Rules of Two":™

- ♦ Do you use your "quick-relief inhaler" more than 2 times a week?
- ♦ Do you awaken at night with asthma more than 2 times a month?
- ♦ Do you refill your "quick-relief inhaler" more than 2 times a year?

If the patient answers "yes" to any of these questions, asthma control has not been achieved!

- ♦ Patients not on anti-inflammatory medications may need to start them.
- ♦ Those already on long-term medications may need changes to their plan (such as a **step-up** in treatment).

Rules of Two™ is a registered trademark of Baylor Health System

Use tools like the Asthma Control Test (A.C.T.) to assess asthma control:

- ♦ Patients take a simple 5 question quiz about their asthma over the last 4 weeks
- ♦ A score is generated that determines whether the treatment plan is working or if it might be time for a change

The Asthma Control Test is a trademark of QualityMetric Incorporated, Copyright 2002. The American Lung Association supports the Asthma Control Test and does not endorse products.

For more information, contact the Arizona Asthma Coalition
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www.azasthma.org

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NATIONAL ASTHMA GUIDELINES



Arizona Asthma Coalition

IS IT ASTHMA?

Consider asthma if the following indicators are present:

- ♦ History of recurrent wheezing, coughing, chest tightness, or shortness of breath
- ♦ Symptoms worsen at night, while exercising, or in the presence of allergens or irritants
- ♦ Repeated diagnoses of RAD, bronchitis, pneumonia or chronic cough; allergic rhinitis or atopic dermatitis/eczema
- ♦ There is a family history of asthma or allergy
- ♦ Alternative diagnoses are excluded (e.g. vocal cord dysfunction, vascular rings, foreign bodies, or other pulmonary disease)
- ♦ **Physical findings that increase the likelihood of asthma:**
 - Hyperexpansion of the thorax, use of accessory muscles, or tachypnea
 - Wheezing (not always present!); prolonged expiration
 - Presence of other allergic disease (nasal secretions, sinusitis, or nasal polyps; atopic dermatitis/eczema)

Confirm asthma diagnosis with objective measures:

- Spirometry** can document reversible airflow obstruction by
- FEV₁ < 80% of the predicted limit
 - FEV₁/FVC < 65% the lower limit of normal
 - FEV₁ increases ≥12% and at least 200 ml after using a short-acting inhaled bronchodilator

Children younger than 7 years may not be able to perform spirometry. For some, peak expiratory flow variability can be helpful (change of >20%). Otherwise, clinical judgement and/or response to asthma treatment may be the only means for diagnosing asthma.

Inhaled Steroids ⇒ the most effective long-term control medication for asthma

Dosing of inhaled steroids is based on symptoms/severity of asthma, not age or body weight!

Inhaled Steroids	Low Daily Dose		Medium Daily Dose		High Daily Dose	
	Adult	Child ≤ 12 yrs	Adult	Child ≤ 12 yrs	Adult	Child ≤ 12 yrs
Beclomethasone CFC (Beclivent, Vancerial) 42 or 84 mcg/puff	168-504 mcg 4-12 puffs – 42mcg 2-6 puffs – 84 mcg	84-336 mcg 2-8 puffs – 42 mcg 1-4 puffs – 84 mcg	504-840 mcg 12-20 puffs – 42 mcg 6-10 puffs – 84 mcg	336-672 mcg 8-16 puffs – 42 mcg 4-8 puffs – 84 mcg	>840 mcg > 20 puffs – 42 mcg > 10 puffs – 84 mcg	>672 mcg > 16 puffs– 42 mcg > 8 puffs– 84 mcg
Budesonide DPI (Pulmicort Turbuhaler) 200 mcg/dose	200-600 mcg 1-3 inhalations	200-400 mcg 1-2 inhalations	600-1200 mcg 3-6 inhalations	400-800 mcg 2-4 inhalations	> 1200 mcg > 6 inhalations	> 800 mcg > 4 inhalations
Budesonide suspension (Pulmicort Respules)		0.5 mg		1 mg		2 mg
Flunisolide (Aerobid) 250 mcg/puff	500-1,000 mcg 2-4 puffs	500-750 mcg 2-3 puffs	1,000-2,000 mcg 4-8 puffs	1,000-1,250 mcg 4-5 puffs	> 2,000 mcg > 8 puffs	> 1,250 mcg > 5 puffs
Fluticasone (Flovent) MDI: 44, 110 or 220 mcg/puff DPI: 50, 100 or 250 mcg/dose	88-264 mcg 2-6 puffs – 44 mcg 2 puffs – 110 mcg 100-300 mcg 2-6 doses – 50mcg	88-176 mcg 2-4 puffs – 44 mcg 100-200 mcg 2-4 doses – 50 mcg	264-660 mcg 2-6 puffs – 110 mcg 300-600 mcg 3-6 doses – 100 mcg	176-440 mcg 4-10 puffs – 44 mcg 2-4 puffs – 110 mcg 200-400 mcg 2-4 doses – 100 mcg	> 660 mcg > 6 puffs – 110 mcg > 3 puffs – 220 mcg > 600 mcg > 6 doses – 100 mcg > 2 doses – 250 mcg	> 440 mcg > 4 puffs – 110 mcg > 2 puffs – 220 mcg > 400 mcg > 4 doses – 100 mcg > 2 doses – 250 mcg
Triamcinolone acetonide (Azmacort) 100 mcg/puff	400-1,000 mcg 4-10 puffs	400-800 mcg 4-8 puffs	1,000-2,000 mcg 10-20 puffs	800-1,200 mcg 8-12 puffs	> 2,000 mcg > 20 puffs	> 1,200 mcg > 12 puffs
Other Long-term Medications/Controllers						
Fluticasone/Salmeterol DPI (Advair Diskus) 100, 250 or 500 mcg Fluticasone/ 50 Salmeterol	100-300 mcg flutic. 1 dose bid – 100 mcg	100-200 mcg flutic. 1 dose bid – 100 mcg	300-600 mcg flutic. 1 dose bid (100 or 250 mcg depending on severity)	200-400 mcg flutic. 1 dose bid – (100 or 250 mcg depending on severity)	> 600 mcg flutic. 1 dose bid – (250 or 500 mcg depending on severity)	> 400 mcg flutic. 1 dose bid – (250 or 500 mcg depending on severity)
Montelukast (Singulair) 4mg or 5mg (chew), 10mg	1-5 years: 4 mg daily; 6-14 years: 5 mg daily >14 years: 10 mg daily					
Zafirlukast (Accolate) 10 or 20 mg tabs	7-11 years: 10 mg bid ≥12 years: 20 mg bid					
Zileuton (Zyflo) 300 or 600 mg tabs	≥12 years: 600 mg qid					
Salmeterol (Serevent) DPI 50 mcg/dose	1 dose bid (≥ 4 years old) Alternative: Exercise-induced bronchospasm – 1 dose 30 min. before					
Formoterol (Foradil) MDI 12 mcg/puff	1 puff bid (≥ 5 years old) Alternative: Exercise-induced bronchospasm – 1 puff 15 min. before					

Initial Classification of Asthma Severity

- ◆ Determine asthma severity using step classification based on clinical features **before** treatment begun (or adequate control obtained)
- ◆ Step is determined by **single** most frequent/severe symptoms; does not need to meet all criteria!
- ◆ Remember to ask about all the **symptoms of asthma** - coughing (especially at night or with exercise), wheezing, chest tightness, shortness of breath.

Clinical Features Before Treatment or Adequate Control:

Current Symptoms/History	Mild Intermittent	Mild Persistent	Moderate Persistent	Severe Persistent
Exercise sx/ Activity limitation	≤2x/wk/ not limited	>2x/wk/ can affect	Sx whenever exercises/ often stops activity	Limited exercise/ will avoid the activity
Night sxs	≤2x/mo	>2x/mo	>1x/wk	Frequent
Albuterol use	≤2x/wk	3 - 6x/wk	Daily	Continual
Albuterol refills	≤2x/yr	3 or more/yr	3 or more/yr	3 or more/yr
FEV ₁ /PEF	≥ 80% predicted	≥ 80% predicted	> 60% - < 80% predicted	≤ 60% predicted
PEF Variability	< 20%	20-30%	> 30%	> 30%
Initial Treatment Suggested:	<i>Albuterol prn with no daily medication needed</i>	<i>low dose ICS (or cromolyn trial or leukotriene trial)</i>	<i>low to medium dose ICS + LABA or moderate dose ICS +/- leukotriene</i>	<i>high dose ICS + LABA +/- leukotriene</i>

NOTE: ICS = inhaled corticosteroids

LABA = long-acting beta-agonist

On Follow-up visits, reassess symptoms to determine if asthma controlled or if change in treatment needed:

Current Symptoms/History	Controlled Asthma	Persistent Symptoms (asthma not optimally controlled)
Exercise sx/ Activity limitation	≤2x/wk/ not limited	>2x/wk/ may be affected or limited
Night sxs	≤2x/mo	>2x/mo - frequent
Albuterol use	≤2x/wk	>2x/wk - continual
Albuterol refills	≤2x/yr	3 or more/yr
FEV ₁ /PEF	≥ 80% predicted	< 80% predicted
PEF Variability	< 20%	≥ 20%
Adjust or Change Treatment:	<i>Continue current tx (or wean if controlled for several months)</i>	<i>Step-up treatment: previously diagnosed intermittent should begin low dose ICS; mild to moderate persistent can increase ICS dose +/- add LABA if not yet begun, +/- leukotriene trial</i>

NOTE: ICS = inhaled corticosteroids

LABA = long-acting beta-agonist

REMEMBER: Consider STEP-UP in therapy if

→ using albuterol more than 2x/week → exercise symptoms more than 2x/week → night symptoms more than 2x/month

Goal of adequate asthma therapy should be good control!

→ Use higher doses of medications if needed, and step-down once under control.

→ Always check compliance with medications and equipment technique to ensure proper delivery of medication.