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Asthma Guidelines

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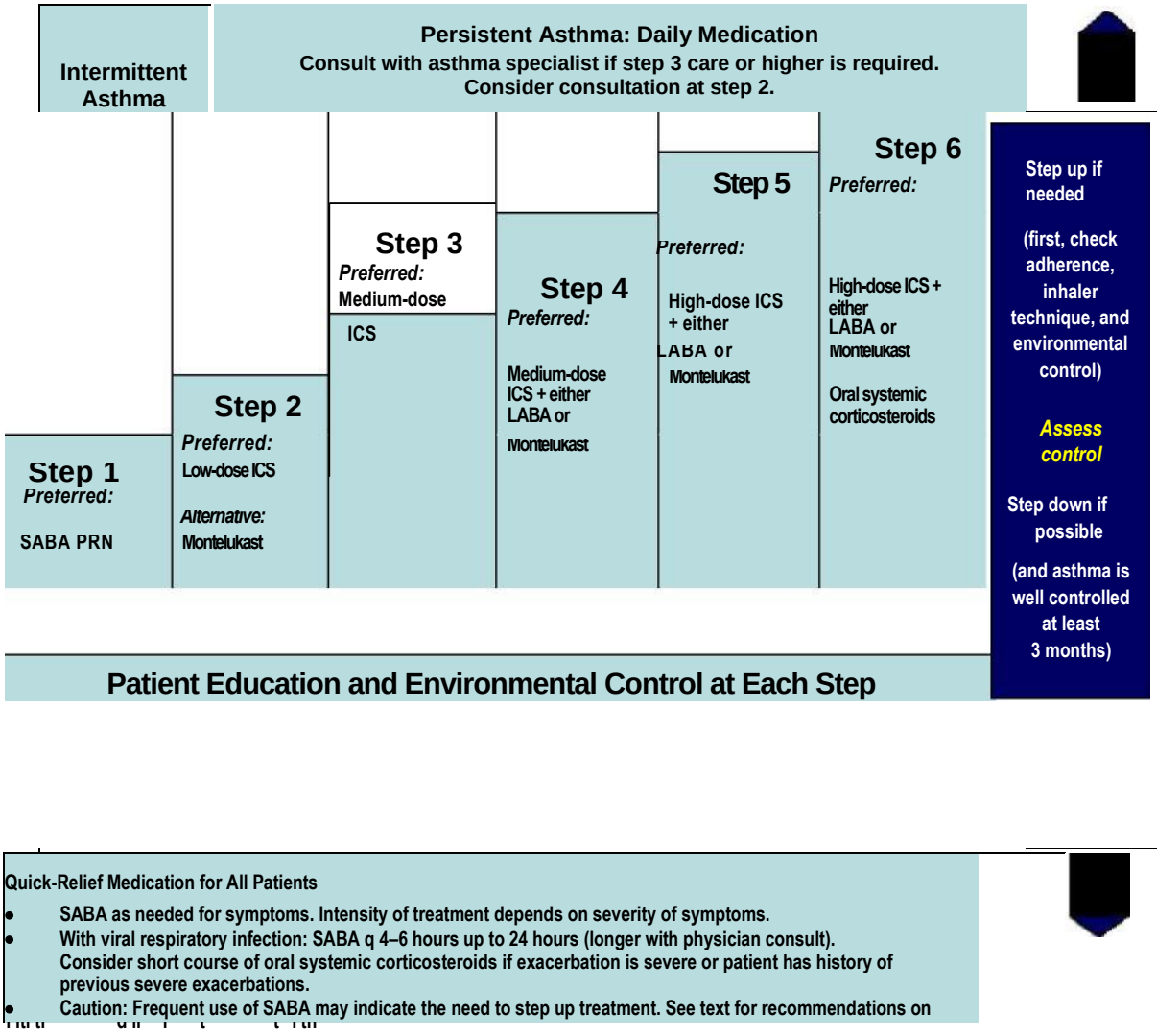
Adopted: SWHP Quality Improvement Committee 11/12/2002: Revision/Approval: Quality Improvement Subcommittee 10/04, 10/06, 9/12/2008, 8/10, 10/12, 10/14, 10/15

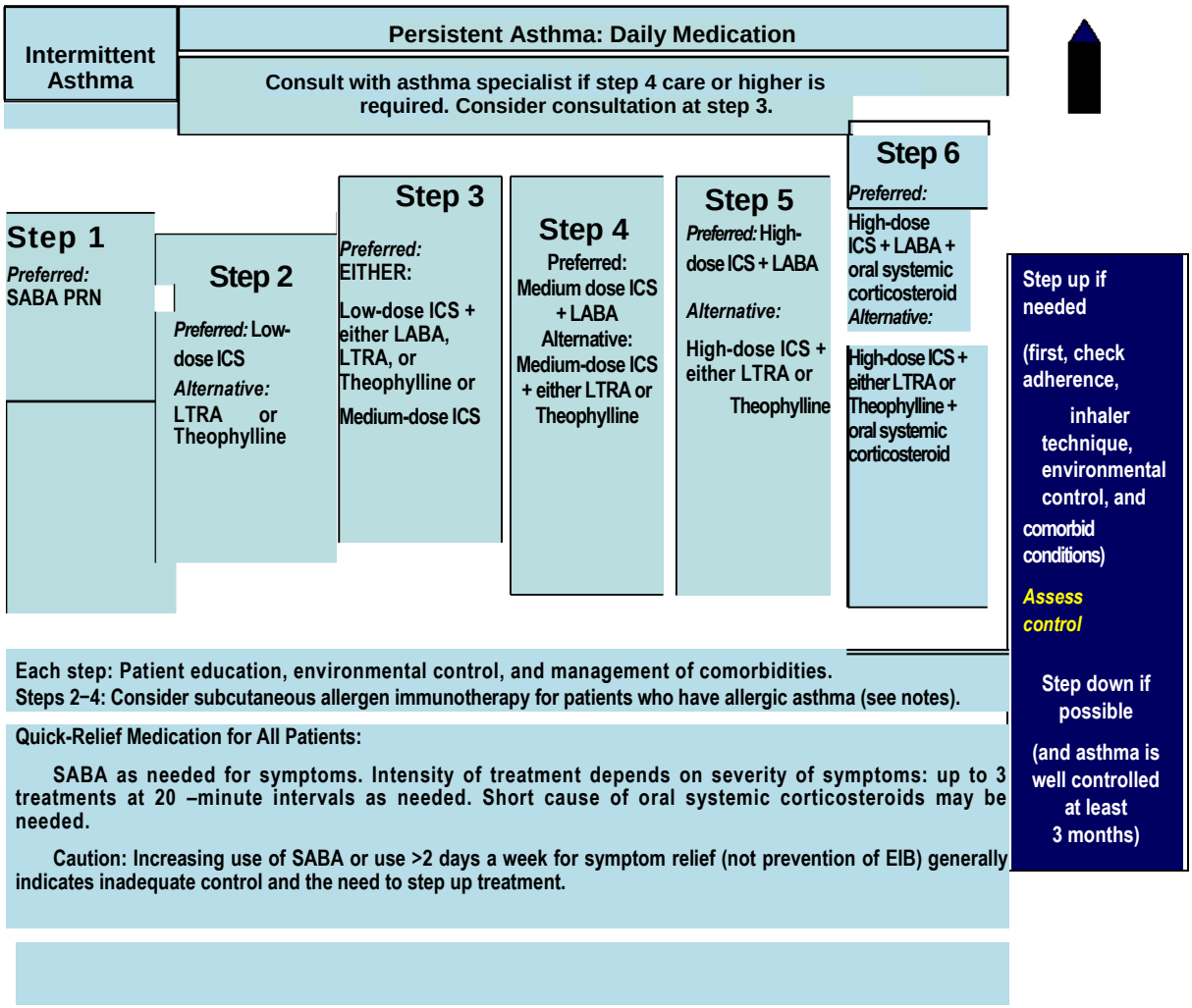
STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 0–4 YEARS OF AGE



Key: **Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy.** ICS, inhaled corticosteroid, LABA, inhaled long-acting beta2-agonist; SABA, inhaled short-acting beta2-agonist **Notes:**

- The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs.
- If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up.
- If clear benefit is not observed within 4–6 weeks and patient/family medication technique and adherence are satisfactory, consider adjusting therapy or alternative diagnosis.
- Studies on children 0–4 years of age are limited. Step 2 preferred therapy is based on Evidence A. All other recommendations are based on expert opinion and extrapolation from studies in older children.

STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 5-11 YEARS OF AGE



Key: **Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy.** ICS, inhaled corticosteroid; LABA, inhaled long-acting beta2-agonist, LTRA, l eukotriene receptor antagonist; SABA, inhaled short-acting beta2-agonist

Notes:

The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs. If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up. Theophylline is a less desirable alternative due to the need to monitor serum concentration levels.

Step 1 and step 2 medications are based on Evidence A. Step 3 ICS + adjunctive therapy and ICS are based on Evidence B for efficacy of each treatment and extrapolation from comparator trials in older children and adults— comparator trials are not available for this age group; steps 4–6 are based on expert opinion and extrapolation from studies in older children and adults.

Immunotherapy for steps 2–4 is based on Evidence B for house-dust mites, animal danders, and pollens; evidence is weak or lacking for molds and cockroaches. Evidence is strongest for immunotherapy with single allergens. The role of allergy in asthma is greater in children than in adults. Clinicians who administer immunotherapy should be prepared and equipped to identify and treat anaphylaxis that may occur.

USUAL DOSAGES FOR LONG-TERM CONTROL MEDICATIONS IN CHILDREN*

Medication	Dosage Form	0-4 years	5-11 years	Comments
Inhaled Corticosteroids (ICS)				
Systemic Corticosteroids				***(Applies to all three corticosteroids)***
Methylprednisolone	2, 4, 8, 16, 32 mg tablets	0.25–2 mg/kg daily in single dose in a.m. or qod as needed	0.25–2 mg/kg daily in single dose in a.m. or qod as needed	• For long-term treatment of severe persistent asthma, administer single dose in a.m. either daily or on alternate days (alternate-day therapy may produce less adrenal suppression).
Prednisolone	5 mg tablets, 5 mg/5 cc, 15 mg/5 cc	for control Short-course "burst": 1–2	for control Short-course "burst": 1–2	• Short courses or "bursts" are effective for establishing control when initiating therapy or during a period of gradual deterioration.
Prednisone	1, 2.5, 5, 1 0, 20, 50 mg tablets; 5 mg/cc 5 mg/5 cc	mg/kg/day, maximum 60 mg/day for3–10 days	mg/kg/day, maximum 60 mg/day for 3–10 days	• There is no evidence that tapering the dose following improvement in symptom control and pulmonary function prevents relapse. • Patients receiving the lower dose (1 mg/kg/day) experience fewer behavioral side effects (Kayani and Shannon 2002), and it appears to be equally efficacious (Rachelefsky 2003). • For patients unable to tolerate the liquid preparations, dexamethasone syrup at 0.4 mg/kg/day may be an alternative. Studies are limited, however, and the longer duration of activity increases the risk of adrenal suppression (Hendeles 2003)
Long-Acting Beta2-Agonists (LABAs)				• **Should not be used for symptom relief or exacerbations. Use only with ICSs.** • **Should not be used alone –use in combination with an asthma controller medication.**
Salmeterol	DPI 50 mcg/ blister	Safety and efficacy not established in children <4 years	1 blisterq 12 hours	• Decreased duration of protection against EIB may occur with regular use. • Most children <4 years of age cannot provide sufficient inspiratory flow for adequate lung delivery. • Do not blow into inhaler after dose is activated.
Formoterol	DPI 12 mcg/ single-use capsule	Safety and efficacy not established in children <5 years		• Most children <4 years of age cannot provide sufficient inspiratory flow for adequate lung delivery. • Each capsule is for single use only; additional doses should not be administered for at least 12 hours. • Capsules should not be taken orally.
Long-Acting Beta2-Agonists (LABAs)				• **Should not be used for symptom relief or exacerbations. Use only with ICSs.**

*Dosages are provided for those products that have been approved by the U.S. Food and Drug Administration or have sufficient clinical trial safety and efficacy data in the appropriate age ranges to support their use.

USUAL DOSAGES FOR LONG-TERM CONTROL MEDICATIONS IN CHILDREN* (CONTINUED)

Medication	Dosage Form	0–4 years	5–11 years	Comments
Combined Medication				
Fluticasone/ Salmeterol	DPI 100 mcg/ 50 mcg	Safety and efficacy not established in children <4 years	1 inhalation bid	• There have been no clinical trials in children <4 years of age. • Most children <4 years of age cannot provide sufficient inspiratory flow for adequate lung delivery. • Do not blow into inhaler after dose is activated.
Budesonide/ Formoterol	HFA MDI 80 mcg/4.5 mcg	Safety and efficacy not established	2 puffs bid	• There have been no clinical trials in children <4 years of age. • Currently approved for use in youths ≥12. Dose for children 5–12 years of age based on clinical trials using DPI with slightly different delivery characteristics (Pohunek et al. 2006; Tal et al. 2002; Zimmerman et al. 2004).
Leukotriene Receptor Antagonists (LTRAs)				
Montelukast 4 mg granule packets	4 mg or 5 mg chewable tablet	4 mg qhs (1–5 years of age)	5 mg qhs (6–14 years of age)	• Montelukast exhibits a flat dose-response curve. • No more efficacious than placebo in infants 6–24 months (van Adelsberg et al. 2005).
Zafirlukast	10 mg tablet	Safety and efficacy not established	10 mg bid (7–11 years of age)	• For zafirlukast, administration with meals decreases bioavailability; take at least 1 hour before or 2 hours after meals. • Monitor for signs and symptoms of hepatic dysfunction.
Methylxanthines				
Theophylline age: 0.2 (age = mg/kg/day	Liquids, sustained-release tablets, and capsules	Starting dose 10 mg/kg/day; usual maximum: <1 year of in weeks) + 5 ≥1 year of age: 16 mg/kg/day	Starting dose 10 mg/kg/day; usual maximum: 16 mg/kg/day	• Adjust dosage to achieve serum concentration of 5–15 mcg/mL at steady-state (at least 48 hours on same dosage). • Due to wide interpatient variability in theophylline metabolic clearance, routine serum theophylline level monitoring is essential. See next page for factors that can affect theophylline levels.

Key: DPI, dry powder inhaler; EIB, exercise-induced bronchospasm; HFA, hydrofluoroaklane (inhaler propellant): MDI, metered dose inhaler

USUAL DOSAGES FOR LONG-TERM CONTROL MEDICATIONS IN CHILDREN* (CONTINUED)

Factors Affecting Serum Theophylline Concentrations†

Factor	Decreases Theophylline Concentrations	Increases Theophylline Concentrations	Recommended Action
Food	J or delays absorption of some sustained-release theophylline (SRT) products	↑ rate of absorption (fatty foods)	Select theophylline preparation that is not affected by food.
Diet	↑ metabolism (high protein)	↓metabolism (high carbohydrate)	Inform patients that major changes in diet are not recommended while taking theophylline.
Systemic, febrile viral illness (e.g., influenza)		J metabolism	Decrease theophylline dose according to serum concentration. Decrease dose by 50 percent if serum concentration measurement is not available.
Hypoxia, cor pulmonale, and decompensated congestive heart failure, cirrhosis		↑ metabolism	Decrease dose according to serum concentration.
Age	metabolism (1–9 years)	J metabolism (<6 months, elderly)	Adjust dose according to serum concentration.
Phenobarbital, phenytoin, carbamazepine	↑metabolism		Increase dose according to serum concentration.
Cimetidine		Jmetabolism	Use alternative H_2 blocker (e.g., famotidine or ranitidine).
Macrolides: erythromycin, clarithromycin, troleandomycin		Jmetabolism	Use alternative macrolide antibiotic, azithromycin, or alternative antibiotic or adjust theophylline dose.
Quinolones: ciprofloxacin, enoxacin, perfloxacin		Jmetabolism	Use alternative antibiotic or adjust theophylline dose. Circumvent with ofloxacin if quinolone therapy is required.
Rifampin	↑metabolism		Increase dose according to serum concentration.
Ticlopidine		Jmetabolism	Decrease dose according to serum concentration.
Smoking	↑metabolism		Advise patient to stop smoking; increase dose according to serum concentration.

†This list is not all inclusive.

USUAL DOSAGES FOR QUICK-RELIEF MEDICATIONS IN CHILDREN*

Medication	Dosage Form	0–4 Years	5–11 Years	Comments
Inhaled Short-Acting Beta2-Agonists				
	MDI			• An increasing use or lack of expected effect indicates diminished control of asthma. • Not recommended for long-term daily treatment. Regular use exceeding 2 days/week for symptom control (not prevention of EIB) indicates the need for additional long-term control therapy. • May double usual dose for mild exacerbations.
Albuterol HFA	90 mcg/puff, 200 puffs/canister	2 puffs every 4–6 hours as needed	2 puffs every 4–6 hours as needed	
Levalbuterol HFA	45 mcg/puff, 200 puffs/canister	Safety and efficacy not established in children <4 years	2 puffs every 4–6 hours as needed	• Should prime the inhaler by releasing 4 actuations prior to use. • Periodically clean HFA actuator, as drug may plug orifice.
Pirbuterol CFC Autohaler	200 mcg/puff, 400 puffs/canister	Safety and efficacy not established	Safety and efficacy not established	• Children <4 years may not generate sufficient inspiratory flow to activate an auto-inhaler. • Nonselective agents (i.e., epinephrine, isoproterenol, metaproterenol) are not recommended due to their potential for excessive cardiac stimulation, especially in high doses.
	Nebulizer solution			
Albuterol	0.63 mg/3 mL 1.25 mg/3 mL 2.5 mg/3 mL 5 mg/mL (0.5%)	0.63–2.5 mg in 3 cc of saline q 4–6 hours, as needed	1.25–5 mg in 3 cc of saline q 4–8 hours, as needed	• May mix with cromolyn solution, budesonide inhalant suspension, or ipratropium solution for nebulization. May double dose for severe exacerbations.
Levalbuterol (R-albuterol)	0.31 mg/3 mL 0.63 mg/3 mL 1.25 mg/0.5 mL 1.25 mg/3 mL	0.31–1.25 mg in 3 cc q 4–6 hours, as needed	0.31–0.63 mg, q 8 hours, as needed	• Does not have FDA-approved labeling for children <6 years of age. • The product is a sterile-filled preservative-free unit dose vial. • Compatible with budesonide inhalant suspension.

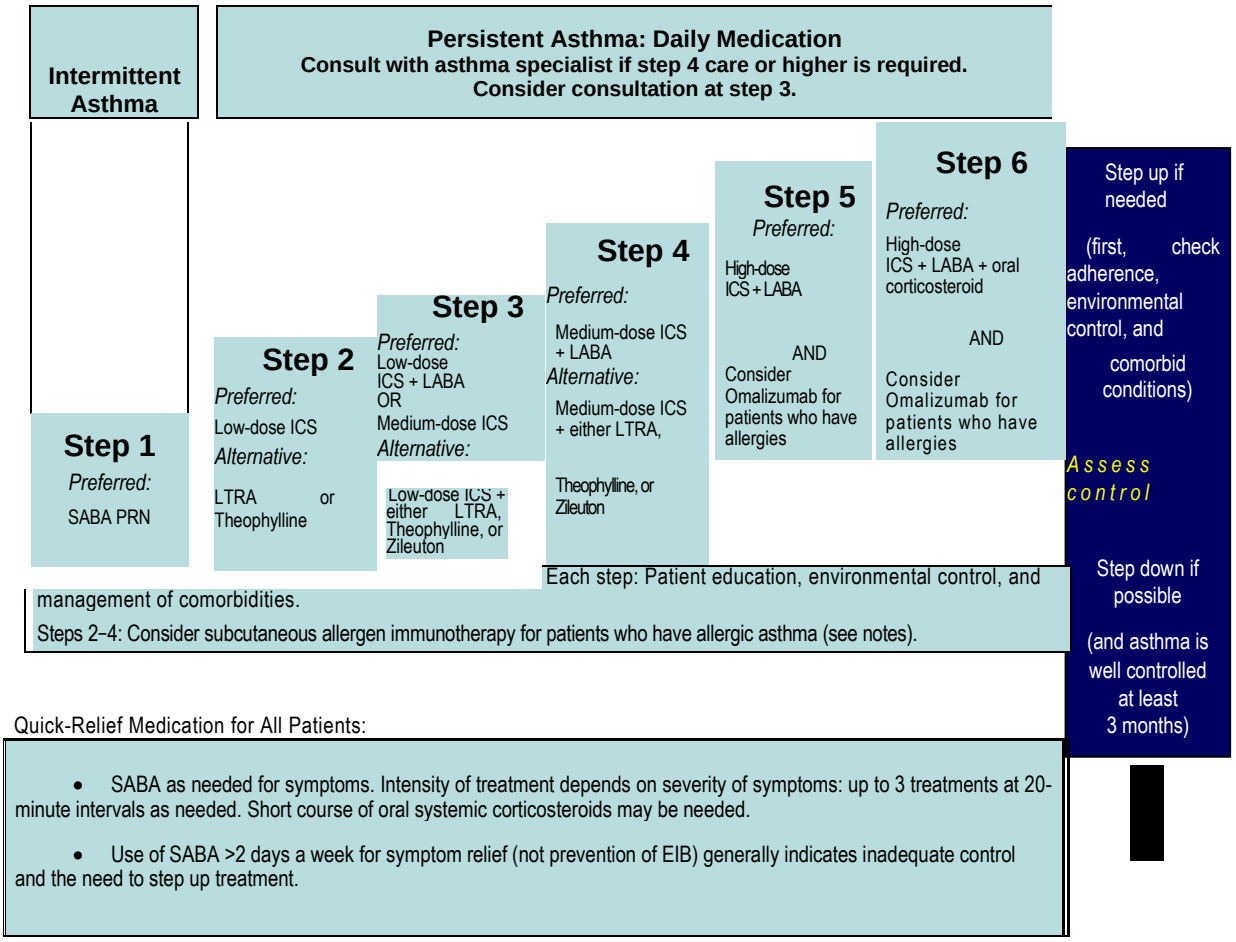
USUAL DOSAGES FOR QUICK-RELIEF MEDICATIONS IN CHILDREN* (CONTINUED)

Medication	Dosage Form	0–4 Years	5–11 Years	
Anticholinergics				
	MDI			
Ipratropium HFA	17 mcg/puff, 200 puffs/ canister	Safety and efficacy not established	Safety and efficacy not established	• Evidence is lacking for anticholinergics producing added benefit to beta2-agonists in long-term control asthma therapy. • See "Management of Acute Asthma" for dosing in ED
	Nebulizer solution			
	0.25 mg/mL (0.025%)	Safety and efficacy not established	Safety and efficacy not established	
Systemic Corticosteroids				
Methylprednisolone	2, 4, 6, 8, 16,32mg tablets	Short course "burst": 1–2 mg/kg/day, maximum 60 mg/day, for 3–10 days	Short course "burst": 1-2 mg/kg/day, maximum 60 mg/day, for 3–10 days	• ***Applies to the first three corticosteroids*** • Short courses or "bursts" are effective for establishing control when initiating therapy or during a period of gradual deterioration. The burst should be continued until patient achieves 80% PEF personal best or symptoms resolve. This usually requires 3–10 days but may require longer. There is no evidence that tapering the dose following improvement prevents relapse.
Prednisolone	5 mg tablets, 5 mg/5 cc, 15 mg/5 cc			
Prednisone	1, 2.5, 5, 10, 20, 50 mg tablets; 5 mg/cc, 5 mg/5 cc			
	Repository injection			
(Methylprednisolone acetate)	40 mg/mL 80 mg/mL	7.5 mg/kg IM once	240 mg IM once	• May be used in place of a short burst of oral steroids in patients who are vomiting or if adherence is a problem.

Key: CFC, chlorofluorocarbon; ED, emergency department; EIB, exercise-induced bronchospasm; HFA, hydrofluoroalkane; IM, intramuscular; MDI, metered-dose inhaler; PEF, peak expiratory flow

*Dosages are provided for those products that have been approved by the U.S. Food and Drug Administration or have sufficient clinical trial safety and efficacy data in the appropriate age ranges to support their use.

STEPWISE APPROACH FOR MANAGING ASTHMA IN YOUTHS >12 YEARS OF AGE AND ADULTS



Key: **Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy.** EIB, exercise-induced bronchospasm; ICS, inhaled corticosteroid; LABA, long-acting inhaled beta2- agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta2-agonist

Notes:

- The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs.
- If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up.
- Zileuton is a less desirable alternative due to limited studies as adjunctive therapy and the need to monitor liver function. Theophylline requires monitoring of serum concentration levels.
- In step 6, before oral systemic corticosteroids are introduced, a trial of high-dose ICS + LABA + either LTRA, theophylline, or zileuton may be considered, although this approach has not been studied in clinical trials.
- Step 1, 2, and 3 preferred therapies are based on Evidence A; step 3 alternative therapy is based on Evidence A for LTRA, Evidence B for theophylline, and Evidence D for zileuton. Step 4 preferred therapy is based on Evidence B, and alternative therapy is based on Evidence B for LTRA and theophylline and Evidence D for zileuton. Step 5 preferred therapy is based on Evidence B. Step 6 preferred therapy is based on (EPR−2 1997) and Evidence B for omalizumab.
- Immunotherapy for steps 2–4 is based on Evidence B for house-dust mites, animal danders, and pollens; evidence is weak or lacking for molds and cockroaches. Evidence is strongest for immunotherapy with single allergens. The role of allergy in asthma is greater in children than in adults. Clinicians who administer immunotherapy or omalizumab should be prepared and equipped to identify and treat anaphylaxis that may occur.

USUAL DOSAGES FOR LONG-TERM CONTROL MEDICATIONS FOR YOUTHS ≥12 YEARS OF AGE AND ADULTS

Medication	Dosage Form	Adult Dose	Comments
Inhaled Corticosteroids (ICS) ***(See figure 4–8b, "Estimated Comparative Daily Dosages for Inhaled Corticosteroids.")***			
Systemic Corticosteroids			***(Applies to all three corticosteroids)***
Methylprednisolone	2, 4, 8, 16, 32 mg tablets	7.5–60 mg daily in a single dose in a.m. or qod as needed for control	For long-term treatment of severe persistent asthma, administer single dose in a.m. either daily or on alternate days (alternate-day therapy may produce less adrenal suppression). Short courses or "bursts" are effective for establishing control when initiating therapy or during a period of gradual deterioration.
Prednisolone	5 mg tablets, 5 mg/5 cc, 15 mg/5 cc	Short-course "burst": to achieve control, 40–60 mg per day as single or 2 divided doses for 3–10 days	
Prednisone	1, 2.5, 5, 10, 20, 50 mg Tablets; tablets; 5 mg/cc,		There is no evidence that tapering the dose following improvement in symptom control and pulmonary function prevents relapse.
Inhaled Long-Acting Beta2-Agonists (LABA)			• **Should not be used for symptom relief or exacerbations. Use with ICS.** ***Should not be used alone-use in Combination with an asthma controller medication.**
Salmeterol	DPI 50 mcg/ blister	1 blister q 12 hours	• Decreased duration of protection against EIB may occur with regular use.
Formoterol	DPI 12 mcg/ single-use capsule	1 capsule q 12 hours	• Each capsule is for single use only; additional doses should not be administered for at least 12 hours. Capsules should be used only with the Aerolizor™ inhaler and should not be taken orally.
Combined Medication			
Fluticasone/Salmeterol	DPI 100 mcg/50 mcg, 250 mcg/50 mcg, or 500 mcg/50 mcg HFA 45 mcg/21 mcg 115 mcg/21 mcg 230 mcg/21 mcg	1 inhalation bid; dose depends on severity of asthma	• 100/50 DPI or 45/21 HFA for patient not controlled on low- to medium-dose ICS 250/50 DPI or 115/21 HFA for patients not controlled on medium- to high-dose ICS
Budesonide/ Formoterol	HFA MDI 80 mcg/4.5 mcg 160mcg/4.5 mcg	2 inhalations bid; dose depends on severity of asthma	• 80/4.5 for patients who have asthma not controlled on low- to medium-dose ICS 160/4.5 for patients who have asthma not controlled on medium- to high-dose ICS

USUAL DOSAGES FOR LONG-TERM CONTROL MEDICATIONS FOR YOUTHS ≥12 YEARS OF AGE AND ADULTS (CONTINUED)

Leukotriene Modifiers			
Leukotriene Receptor Antagonists			
Montelukast	4 mg or 5 mg chewable tablet 10 mg tablet	10 mg qhs	• Montelukast exhibits a flat dose-response curve. Doses >10 mg will not produce a greater response in adults.
Zafirlukast	10 or 20 mg tablet	40 mg daily (20 mg tablet bid)	• For zafirlukast, administration with meals decreases bioavailability; take at least 1 hour before or 2 hours after meals. □ Monitor forsigns and symptoms of hepatic dysfunction.
5-Lipoxygenase Inhibitor			
Zileuton	600 mg tablet	2,400 mg daily (give tablets qid)	• For zileuton, monitor hepatic enzymes (ALT).
Zileuton CR	600 mg tablet	2,400 mg daily (give tablets bid)	• CR tablets given within one hour • after morning and evening meals.
Methylxanthines			
Theophylline	Liquids, sustained-release tablets, and capsules	Starting dose 10 mg/kg/day up to 300 mg maximum; usual maximum . 800 mg/day	• Adjust dosage to achieve serum concentration of 5–15 mcg/mL at steady-state (at least 48 hours on same dosage) □ Due to wide interpatient variability in theophylline metabolic clearance, routine serum theophylline level monitoring is important.
Immunomodulators			
Omalizumab mg	Subcutaneous injection, 150 mg/1 .2 mL following reconstitution with 1 .4 mL sterile water for injection	150–375 mg SC q 2–4 weeks, depending on body weight and pretreatment serum IgE level	• Do not administer more than 150 per injection site. • Monitor for anaphylaxis for 2 hours following at least the first 3 injections. **Anaphylaxis has been reported for up to one year after initiation of therapy**

Key: DPI, dry powder inhaler; EIB, exercise-induced bronchospasm; HFA, hydrofluoroalkane; IgE, immunoglobulin E; MDI, metered-dose inhaler; SABA, short-acting beta2-agonist

USUAL DOSAGES FOR LONG-TERM CONTROL MEDICATIONS FOR YOUTHS ≥12 YEARS OF AGE AND ADULTS (CONTINUED)

Factors Affecting Serum Theophylline Concentrations*

Factor	Decreases Theophylline Concentrations	Increases Theophylline Concentrations	Recommended Action
Food ↓ some sustained-release	or delays absorption of theophylline (SRT) products	rate of absorption (fatty foods)	Select theophylline preparation that is not affected by food.
Diet	↑ metabolism (high protein)	↓ metabolism (high carbohydrate)	Inform patients that major changes in diet are not recommended while taking theophylline.
Systemic, febrile viral illness (e.g., influenza)		↓ metabolism	Decrease theophylline dose according to serum concentration. Decrease dose by 50 percent if serum concentration measurement is not available.
Hypoxia, cor pulmonale, and decompensated congestive heart failure, cirrhosis		↓ metabolism	Decrease dose according to serum concentration.
Age	↑ metabolism (1–9 years)	↓ metabolism (<6 months,	Adjust dose according to serum concentration.
Phenobarbital, phenytoin, carbamazepine	↑ metabolism		Increase dose according to serum concentration.
Cimetidine		↓ metabolism	Use alternative H_2 blocker (e.g., famotidine or ranitidine).
Macrolides: erythromycin, clarithromycin, troleandomycin		↓ metabolism	Use alternative macrolide antibiotic, azithromycin, or alternative antibiotic or adjust theophylline dose.
Quinolones: ciprofloxacin, enoxacin, perfloxacin		↓ metabolism	Use alternative antibiotic or adjust theophylline dose. Circumvent with ofloxacin if quinolone therapy is required.
Rifampin	↑ metabolism		Increase dose according to serum concentration.
Ticlopidine		↓ metabolism	Decrease dose according to serum concentration.
Smoking	↑ metabolism		Advise patient to stop smoking; increase dose according to serum concentration.

*This list is not all inclusive.

USUAL DOSAGES FOR QUICK-RELIEF MEDICATIONS FOR YOUTHS ≥ 1 2 YEARS O F AGE AND ADULTS

Medication	Dosage Form	Adult Dose	Comments
Inhaled Short-Acting Beta$_2$-Agonists (SABA)			
	MDI		***Applies to all three SABAs***
Albuterol HFA	90 mcg/puff, 200 puffs/canister	• 2 puffs every 4-6 hours as needed	• Not recommended for long-term daily treatment. Regular use exceeding 2 days/week for symptom control (not prevention of EIB) indicates the need to step up therapy.
Pirbuterol CFC Autohaler	200 mcg/puff, 400 puffs/canister		
Levalbuterol HFA	45 mcg/puff, 200 puffs/canister		• Differences in potency exist, but all products are essentially comparable on a per puff basis. • May double usual dose for mild exacerbations. • Should prime the inhaler by releasing 4 actuations prior to use. • Periodically clean HFA activator, as drug may block/plug orifice. • Nonselective agents (i.e., epinephrine, isoproterenol, metaproterenol) are not recommended due to their potential for excessive cardiac stimulation, especially in high doses.
	Nebulizer solution		
Albuterol	0.63 mg/3 mL 1.25 mg/3 mL 2.5 mg/3 mL 5 mg/mL (0.5%)	1.25-5 mg in 3 cc of saline q 4-8 hours as needed	• May mix with budesonide inhalant suspension, cromolyn or ipratropium nebulizer solustions. May double dose for severe exacerbations.
Levalbuterol (R-albuterol)	0.31 mg/3 mL 0.63 mg/3 mL 1.25 mg/0.5 mL 1.25 mg/3 mL	0.63 mg – 1.25 mg q 8 hours as needed	• Compatible with budesodine inhalant suspension. The product is a sterile-filled, preservative-free, unit dose vial.

USUAL DOSAGES FOR QUICK-RELIEF MEDICATIONS FOR YOUTHS ≥ 12 YEARS O F AGE AND ADULTS (Continued)

Medication	Dosage Form	Adult Dose	Comments
Anticholinergics			
	MDI		
Ipratropium HFA	17 mcg/puff, 200 puffs/canister	2-3 puffs q 6 hours	Evidence is lacking for anticholinergics producing added benefit to beta$_2$-agonists in long-term control asthma therapy.
	Nebulizer solution		
	0.25 mg/mL (0.025%)	0.25 mg q 6 hours	
	MDI		
Ipratropium with albuterol	18 mcg/puff of ipratropium bromide and 90 mcg/puff of albuterol 200 puffs/canister	2-3 puffs q 6 hours	
	Nebulizer solution		
	0.5 mg/3 mL ipratropium bromide and 2.5 mg/3 mL albuterol	3 mL q 4-6 hours	Contains EDTA to prevent discoloration of the solution. This additive does not induce bronchospasm.
Systemic Corticosteroids			***Applies to the first three corticosteroids***
Methylprednisolone	2, 4, 8 16, 32 mg tablets	Short course “burst”: 40-60 mg/day as single or 2 divided doses for 3-10 days.	Short course or “bursts” are effective for establishing control when initiating therapy or during a period of gradual deterioration.
Prednisolone	5 mg tablets, 5 mg/5 cc, 15 mg/5cc		The burst should be continued until symptoms resolve and the PEF is at least 80 percent of personal best. This usually requires 3-10 days but may require longer. There is no evidence that tapering the dose following improvement prevents relapse.
Prednisone	1, 2.5, 5, 10, 20, 50 mg tablets; 5 mg/cc, 5 mg/5cc		
	Repository injection		
(Methylprednisolone acetate)	20mg/mL 40 mg/mL 80 mg/mL	240 mg IM once	May be used in place of a short burse of oral steroids in patients who are vomiting or if adherence is a problem.

Key: CFC, chlorofluorocarbon; EIB, Exercise-induced bronchospasm; HFA, hydrofluoroalkane; IM, intramuscular; MDI, metered-dose inhaler: PEF, peak expiratory flow.

MANAGEMENT OF ASTHMA EXACERBATIONS: HOME TREATMENT

Assess Severity

- **Patients at high risk for a fatal attack (see figure 5–2a) require immediate medical attention after initial treatment.**
- Symptoms and signs suggestive of a more serious exacerbation such as marked breathlessness, inability to speak more than short phrases, use of accessory muscles, or drowsiness (see figure 5–3) should result in initial treatment while immediately consulting with a clinician.
- Less severe signs and symptoms can be treated initially with assessment of response to therapy and further steps as listed below.
- If available, measure PEF—values of 50–79% predicted or personal best indicate the need for quick-relief mediation. Depending on the response to treatment, contact with a clinician may also be indicated. Values below 50% indicate the need for immediate medical care.

Initial Treatment

- Inhaled SABA: up to two treatments 20 minutes apart of 2–6 puffs by metered-dose inhaler (MDI) or nebulizer treatments.
- Note: Medication delivery is highly variable. Children and individuals who have exacerbations of lesser severity may need fewer puffs than suggested above.

Good Response

No wheezing or dyspnea (assess tachypnea in young children).

PEF ≥80% predicted or personal best.

- Contact clinician for Follow-up instructions and further management.
- May continue inhaled SABA every 3–4 hours for 24– 48 hours.
- Consider short course of oral systemic corticosteroids.

Incomplete Response

Persistent wheezing and dyspnea (tachypnea). PEF 50–79% predicted or personal best.

- Add oral systemic corticosteroid.
- Continue inhaled SABA.

Contact clinician urgently (this day) for further instruction.

Poor Response

Marked wheezing and dyspnea.

PEF <50% predicted or personal best.

- dd oral systemic corticosteroid.
- Repeatinhaled SABA immediately.
- If distress is severe and nonresponsive to initial treatment:
  —Call your doctor AND — **PROCEED TO ED;** — Consider calling 9–1–1 (ambulance transport).
- To ED.

Key: ED, emergency department; MDI, metered-dose inhaler; PEF, peak expiratory flow; SABA, short-acting beta2-agonist (quick-relief inhaler)

CLINICAL PRACTICE GUIDELINES FOR ASTHMA

Scott and White Health Plan (SWHP) has adopted "Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma – Full Report 2007", dated August 28, 2007, of the National Heart, Lung, and Blood Institute, which is located at the following internet website link:

http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

SWHP Guideline Approval Body: SWHP Quality Improvement Subcommittee **Date**

of Adoption: October 13, 2015

Physician Sponsor:

Thu Vo, M.D.

Paper Copy: A paper copy of this Guideline is available upon request by contacting the SWHP Quality Improvement Division. Call toll free 1-800-321-7947
ext. 3468 or
254-298-3468