

2007 Asthma Guidelines Summary

Summary of the *Expert Panel Report 3:* *Guidelines for the Diagnosis and Management of Asthma*

*National Heart, Lung, and Blood Institute
National Asthma Education and Prevention Program*

This information is directly abstracted from the 2007 NAEPP *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma* and is not intended to promote or endorse any of the listed products.





Goals of Asthma Control

- Reduce impairment
 - Prevent chronic and troublesome symptoms
 - Require infrequent use of inhaled SABA for quick relief of symptoms (≤ 2 days per week)
 - Maintain (near) “normal” pulmonary function
 - Maintain normal activity levels (including exercise and other physical activity and attendance at work or school)
 - Meet patients’ and families’ expectations of and satisfaction with asthma care
- Reduce risk
 - Prevent recurrent exacerbations and minimize the need for ED visits/hospitalizations
 - Prevent progressive loss of lung function; for children, prevent reduced lung growth
 - Provide optimal pharmacotherapy with minimal or no adverse effects
- Periodic assessments (every 1 to 6 months) and ongoing monitoring of asthma control recommended
 - To determine the degree to which the manifestations of asthma (symptoms, functional impairments, and risks of untoward events) are minimized and the goals of therapy are met
 - To guide decisions to maintain or adjust therapy

Establishing an asthma diagnosis

- Use medical history and physical examination to determine that recurrent episodes of airflow obstruction are present.
- Use spirometry in all patients ≥ 5 years of age to determine that airway obstruction is at least partially reversible.
- Consider alternative causes of airway obstruction.



Summary of the 2007 Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma

Guidelines include separate but related concepts of severity, control, and responsiveness to treatment

- **Severity**

- The intrinsic intensity of the disease process
- Measured most easily and directly in a patient not receiving long-term control therapy
- Assessed to guide clinical decisions on appropriate medications and interventions

- **Control**

- The degree to which the manifestations of asthma (symptoms, functional impairments, and risks of untoward events) are minimized and the goals of therapy are met
- Guide decisions to maintain or adjust therapy

- **Responsiveness**

- The ease with which asthma control is achieved by therapy



Summary of the 2007 Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma

Assess asthma severity to initiate therapy

- During a patient's initial presentation, if the patient is not currently taking long-term control medication, assess asthma severity to guide clinical decisions for initiating the appropriate medication and other therapeutic interventions.

Assess asthma control to monitor and adjust therapy

- Once therapy is initiated, the emphasis for clinical management is changed to the assessment of asthma control. Use the level of asthma control to guide decisions either to maintain or to adjust therapy.

Schedule follow-up care

In general:

- Schedule visits at 2- to 6-week intervals for patients who are just starting therapy or who require a step up in therapy to achieve or regain asthma control.
- Schedule visits at 1- to 6-month intervals, after asthma control is achieved, to monitor whether asthma control is maintained. The interval will depend on factors such as the duration of asthma control or the level of treatment required.
- Consider scheduling visits at 3-month intervals if a step down in therapy is anticipated.

Youths ≥12 Years of Age and Adults

TABLE 1: Classifying Asthma Severity and Initiating Treatment in Youths ≥12 Years of Age and Adults¹

Assessing severity and initiating treatment for patients who are not currently taking long-term control medications

Components of Severity		Classification of Asthma Severity (≥12 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment Normal FEV ₁ /FVC: 8-19 yr 85% 20-39 yr 80% 40-59 yr 75% 60-80 yr 70%	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3-4x/month	>1x/week but not nightly	Often 7x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily, and not more than 1x on any day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> • Normal FEV₁ between exacerbations • FEV₁ >80% predicted • FEV₁/FVC normal 	<ul style="list-style-type: none"> • FEV₁ >80% predicted • FEV₁/FVC normal 	<ul style="list-style-type: none"> • FEV₁ >60% but <80% predicted • FEV₁/FVC reduced 5% 	<ul style="list-style-type: none"> • FEV₁ <60% predicted • FEV₁/FVC reduced >5%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1 per year	≥2 per year		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. Relative annual risk of exacerbations may be related to FEV ₁ .			
Recommended Step for Initiating Therapy		Step 1	Step 2	Step 3	Step 4 or 5
		and consider short course of oral systemic corticosteroids			
In 2-6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.					

Table 1 Notes

- The stepwise approach is meant to assist, not replace, the clinical decision-making required to meet individual patient needs.
- Level of severity is determined by assessment of both impairment and risk. Assess impairment domain by patient's/caregiver's recall of previous 2–4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and intense exacerbations (eg, requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

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Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; ICU, intensive care unit

Youths ≥12 Years of Age and Adults (cont.)

TABLE 2: Assessing Asthma Control and Adjusting Therapy in Youths ≥12 Years of Age and Adults¹

Components of Control		Classification of Asthma Control (≥12 years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime awakenings	≤2x/month	1-3x/week	≥4/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
	FEV ₁ or peak flow	>80% predicted/personal best	60-80% predicted/personal best	<60% predicted/personal best
	Validated questionnaires ATAQ ACQ ACT™	0 ≤0.75* ≥20	1-2 ≥1.5 16-19	3-4 N/A ≤15
Risk	Exacerbations requiring oral systemic corticosteroids	0-1 per year	≥2 per year	
		Consider severity and interval since last exacerbation		
	Progressive loss of lung function	Evaluation requires long-term followup care		
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action for Treatment		<ul style="list-style-type: none"> Maintain current step. Regular followup every 1-6 months to maintain control. Consider step down if well controlled for at least 3 months. 	<ul style="list-style-type: none"> Step up 1 step and Reevaluate in 2-6 weeks. For side effects, consider alternative treatment options. 	<ul style="list-style-type: none"> Consider short course of oral systemic corticosteroids, Step up 1-2 steps, and Reevaluate in 2 weeks. For side effects, consider alternative treatment options.

Table 2 Notes

- The stepwise approach is meant to assist, not replace, the clinical decision-making required to meet individual patient needs.
- The level of control is based on the most severe impairment or risk category. Assess impairment domain by patient's recall of previous 2–4 weeks and by spirometry or peak flow measures. Symptom assessment for longer periods should reflect a global assessment, such as inquiring whether the patient's asthma is better or worse since the last visit.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (eg, requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate poorer disease control. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have not-well-controlled asthma, even in the absence of impairment levels consistent with not-well-controlled asthma.
- Validated questionnaires for the impairment domain (the questionnaires do not assess lung function or the risk domain)
 - ATAQ = Asthma Therapy Assessment Questionnaire (See sample in "Component 1: Measures of Asthma Assessment and Monitoring.")
 - ACQ = Asthma Control Questionnaire (user package may be obtained at www.qoltech.co.uk or juniper@qoltech.co.uk)
 - ACT = Asthma Control Test™ (See sample in "Component 1: Measures of Asthma Assessment and Monitoring.")
 - Minimal Important Difference: 1.0 for the ATAQ; 0.5 for the ACQ; not determined for the ACT
- Before step up in therapy:
 - Review adherence to medication, inhaler technique, environmental control, and comorbid conditions
 - If an alternative treatment option was used in a step, discontinue and use the preferred treatment for that step

*ACQ values of 0.76–1.4 are indeterminate regarding well-controlled asthma.

Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second; ICU, intensive care unit
The Asthma Control Test is a trademark of QualityMetric Incorporated.

Youths ≥12 Years of Age and Adults (cont.)

TABLE 3: Stepwise Approach for Managing Asthma in Youths ≥12 Years of Age and Adults¹

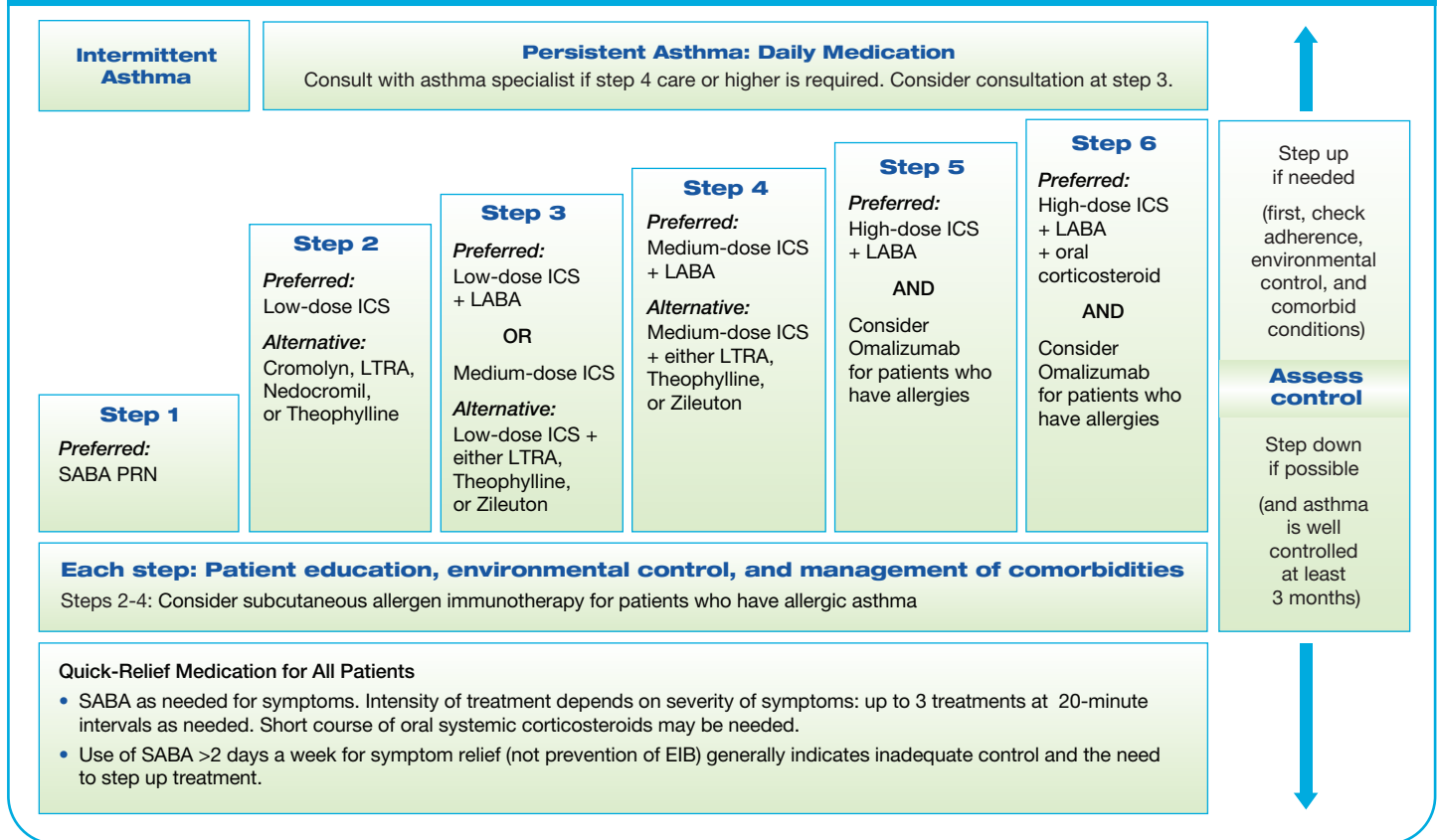


Table 3 Notes

- 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.

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Key: ICS, inhaled corticosteroid; LABA, inhaled long-acting beta₂-agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta₂-agonist

Children 5-11 Years of Age

TABLE 4: Classifying Asthma Severity and Initiating Treatment in Children 5-11 Years of Age¹

Assessing severity and initiating treatment in children who are not currently taking long-term control medications

Components of Severity		Classification of Asthma Severity (5-11 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3-4x/month	>1x/week but not nightly	Often 7x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> • Normal FEV₁ between exacerbations • FEV₁ >80% predicted • FEV₁/FVC >85% 	<ul style="list-style-type: none"> • FEV₁ = >80% predicted • FEV₁/FVC >80% 	<ul style="list-style-type: none"> • FEV₁ = 60%-80% predicted • FEV₁/FVC = 75%-80% 	<ul style="list-style-type: none"> • FEV₁ <60% predicted • FEV₁/FVC <75%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1 per year	≥2 per year		
		← Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. →			
		Relative annual risk of exacerbations may be related to FEV ₁ .			
Recommended Step for Initiating Therapy		Step 1	Step 2	Step 3, medium-dose ICS option	Step 3, medium-dose ICS option, or Step 4
		and consider short course of oral systemic corticosteroids			
In 2-6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.					

Table 4 Notes

- The stepwise approach is meant to assist, not replace, the clinical decision-making required to meet individual patient needs.
- Level of severity is determined by both impairment and risk. Assess impairment domain by patient's/caregiver's recall of the previous 2–4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and intense exacerbations (eg, requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; ICS, inhaled corticosteroids; ICU, intensive care unit

Children 5-11 Years of Age (cont.)

TABLE 5: Assessing Asthma Control and Adjusting Therapy in Children 5-11 Years of Age¹

Components of Control		Classification of Asthma Control (5-11 years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week but not more than once on each day	>2 days/week or multiple times on ≤2 days/week	Throughout the day
	Nighttime awakenings	≤1x/month	≥2x/month	≥2x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
	Lung function FEV ₁ or peak flow FEV ₁ /FVC	>80% predicted/personal best >80%	60-80% predicted/personal best 75-80%	<60% predicted/personal best <75% predicted
Risk	Exacerbations requiring oral systemic corticosteroids	0-1 per year	≥2 per year	
		Consider severity and interval since last exacerbation		
	Reduction in lung growth	Evaluation requires long-term followup care		
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action for Treatment		<ul style="list-style-type: none"> • Maintain current step. • Regular followup every 1-6 months. • Consider step down if well controlled for at least 3 months. 	<ul style="list-style-type: none"> • Step up 1 step and • Reevaluate in 2-6 weeks. • For side effects, consider alternative treatment options. 	<ul style="list-style-type: none"> • Consider short course of oral systemic corticosteroids, • Step up 1-2 steps, and • Reevaluate in 2 weeks. • For side effects, consider alternative treatment options.

Table 5 Notes

- The stepwise approach is meant to assist, not replace, the clinical decision-making required to meet individual patient needs.
- The level of control is based on the most severe impairment or risk category. Assess impairment domain by patient's/caregiver's recall of previous 2-4 weeks and by spirometry or peak flow measures. Symptom assessment for longer periods should reflect a global assessment such as inquiring whether the patient's asthma is better or worse since the last visit.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (eg, requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate poorer disease control. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.
- Before step up in therapy:
 - Review adherence to medications, inhaler technique, environmental control, and comorbid conditions.
 - If an alternative treatment option was used in a step, discontinue it and use preferred treatment for that step.

Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; ICU, intensive care unit

Children 5-11 Years of Age (cont.)

TABLE 6: Stepwise Approach for Managing Asthma in Children 5-11 Years of Age¹

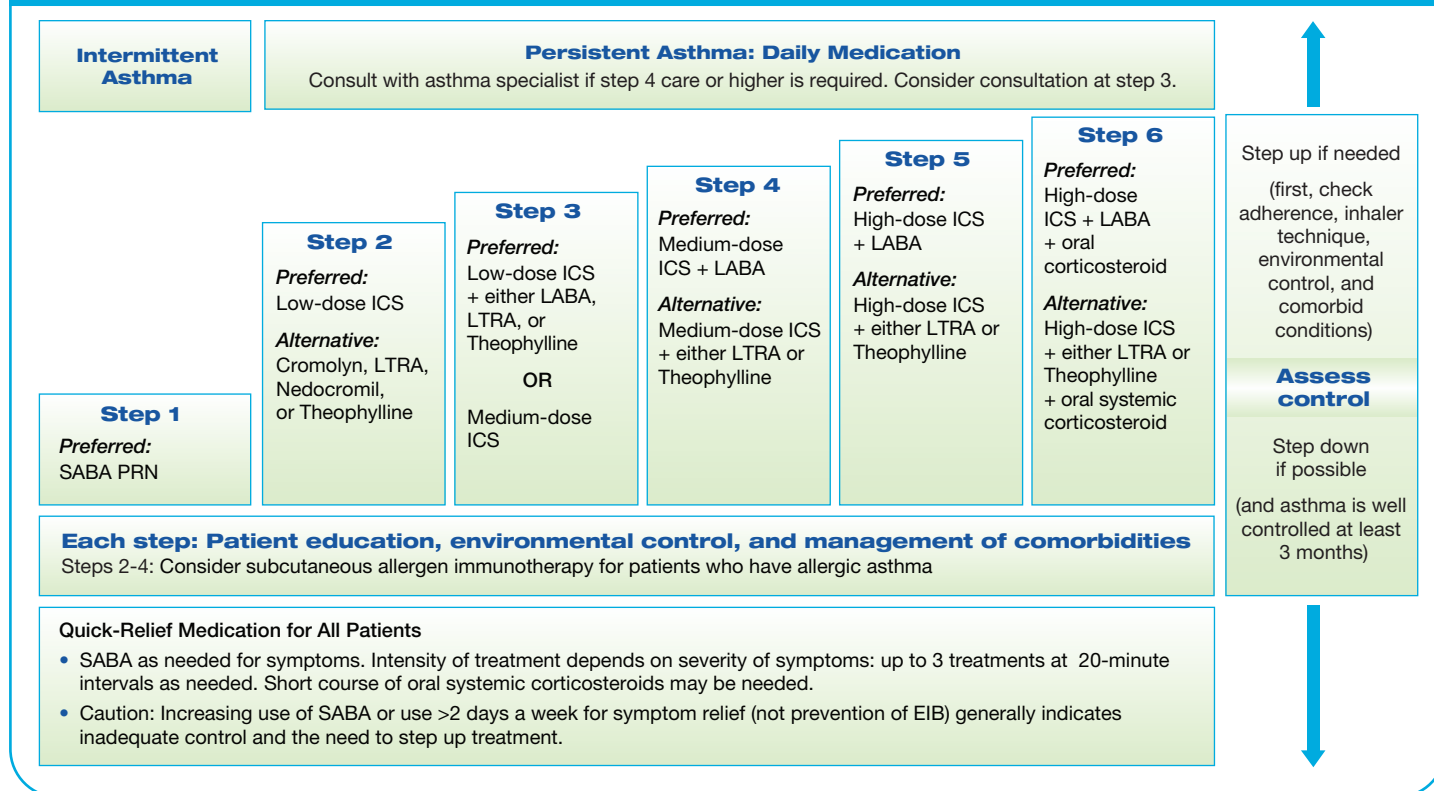


Table 6 Notes

- 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.

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Key: ICS, inhaled corticosteroid; LABA, inhaled long-acting beta₂-agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta₂-agonist

Children 0-4 Years of Age

TABLE 7: Classifying Asthma Severity and Initiating Treatment in Children 0-4 Years of Age¹

Assessing severity and initiating treatment in children who are not currently taking long-term control medications

Components of Severity		Classification of Asthma Severity (0-4 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	0	1-2x/month	3-4x/month	>1x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
Risk	Exacerbations requiring oral systemic corticosteroids	0-1/per year	≥2 exacerbations in 6 months requiring oral systemic corticosteroids, or ≥4 wheezing episodes/1 year lasting >1 day AND risk factors for persistent asthma.		
		<p style="text-align: center;">← Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time. →</p> <p style="text-align: center;">Exacerbations of any severity may occur in patients in any severity category.</p>			
Recommended Step for Initiating Therapy		Step 1	Step 2	Step 3 and consider short course of oral systemic corticosteroids	
		In 2-6 weeks, depending on severity, evaluate level of asthma control that is achieved. If no clear benefit is observed in 4-6 weeks, consider adjusting therapy or alternative diagnoses.			

Table 7 Notes

- The stepwise approach is meant to assist, not replace, the clinical decision-making required to meet individual patient needs.
- Level of severity is determined by both impairment and risk. Assess impairment domain by patient's/caregiver's recall of previous 2–4 weeks. Symptom assessment for longer periods should reflect a global assessment such as inquiring whether the patient's asthma is better or worse since the last visit. Assign severity to the most severe category in which any feature occurs.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past 6 months, or ≥4 wheezing episodes in the past year, and who have risk factors for persistent asthma may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

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Key: EIB, exercise-induced bronchospasm

Children 0-4 Years of Age (cont.)

TABLE 8: Assessing Asthma Control and Adjusting Therapy in Children 0-4 Years of Age¹

Components of Control		Classification of Asthma Control (0-4 years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime awakenings	≤1x/month	>1x/month	>1x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
Risk	Exacerbations requiring oral systemic corticosteroids	0-1 per year	2-3 per year	>3 per year
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action for Treatment		<ul style="list-style-type: none"> • Maintain current step. • Regular followup every 1-6 months • Consider step down if well controlled for at least 3 months. 	<ul style="list-style-type: none"> • Step up 1 step and • Reevaluate in 2-6 weeks. • If no clear benefit in 4-6 weeks, consider alternative diagnoses or adjusting therapy. • For side effects, consider alternative treatment options. 	<ul style="list-style-type: none"> • Consider short course of oral systemic corticosteroids, • Step up 1-2 steps, and • Reevaluate in 2 weeks. • If no clear benefit in 4-6 weeks, consider alternative diagnoses or adjusting therapy. • For side effects, consider alternative treatment options.

Table 8 Notes

- The stepwise approach is meant to assist, not replace, the clinical decision-making required to meet individual patient needs.
- The level of control is based on the most severe impairment or risk category. Assess impairment domain by caregiver's recall of previous 2–4 weeks. Symptom assessment for longer periods should reflect a global assessment such as inquiring whether the patient's asthma is better or worse since the last visit.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (eg, requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate poorer disease control. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have not-well-controlled asthma, even in the absence of impairment levels consistent with not-well-controlled asthma.
- Before step up in therapy:
 - Review adherence to medications, inhaler technique, and environmental control.
 - If an alternative treatment option was used in a step, discontinue it and use preferred treatment for that step.

Key: EIB, exercise-induced bronchospasm; ICU, intensive care unit

Children 0-4 Years of Age (cont.)

TABLE 9: Stepwise Approach for Managing Asthma in Children 0-4 Years of Age¹

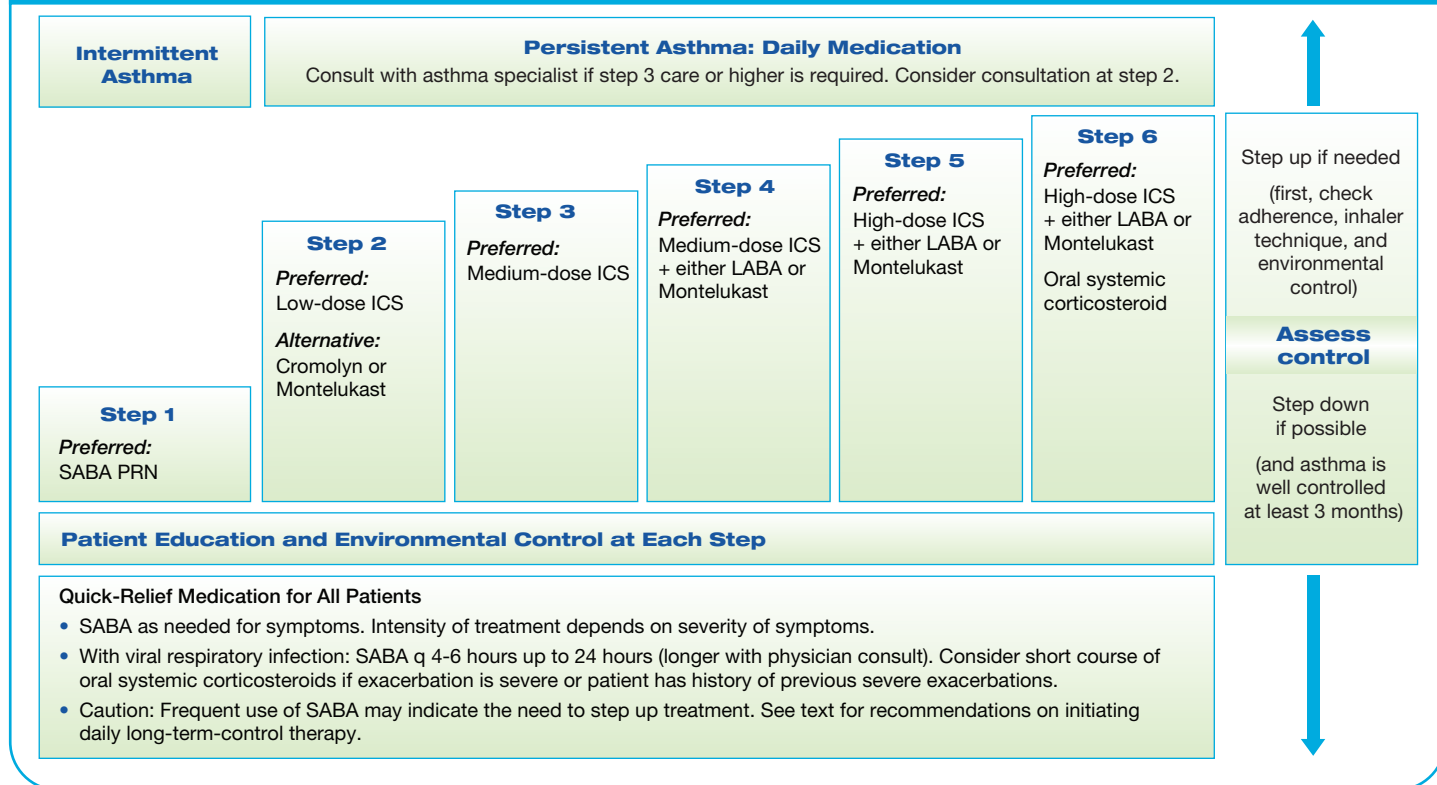


Table 9 Notes

- 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.

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Key: ICS, inhaled corticosteroid; LABA, inhaled long-acting beta₂-agonist; SABA, inhaled short-acting beta₂-agonist

Reference

- National Asthma Education and Prevention Program. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma*. National Institutes of Health, National Heart, Lung, and Blood Institute. August 2007. NIH publication 08-4051.



