

NATIONAL HEART, LUNG, AND BLOOD INSTITUTE  
NATIONAL ASTHMA EDUCATION AND PREVENTION PROGRAM

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# ASTHMA GUIDELINES AT A GLANCE

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MAINTAIN CONTROL WITH REGULAR CARE





## THE ASTHMA CONTROL APPROACH

“EVEN PATIENTS WHO HAVE ASTHMA THAT IS WELL CONTROLLED AT THE TIME OF A CLINICAL ASSESSMENT MUST BE MONITORED OVERTIME, FOR THE PROCESSES UNDERLYING ASTHMA CAN VARY IN INTENSITY OVERTIME, AND TREATMENT SHOULD BE ADJUSTED ACCORDINGLY.”

—NHLBI/NAEPP

2007 ASTHMA GUIDELINES:  
A TREATMENT APPROACH THAT FOCUSES ON ACHIEVING  
AND MAINTAINING CONTROL

VARIABILITY OF ASTHMA

Because of the variability of the disease, asthma severity should be considered when initiating treatment, but from that point on the focus should be on monitoring for asthma control.

ASTHMA CONTROL

Once treatment is initiated, the ongoing focus should be on achieving and maintaining control through a stepwise approach.

*ICSs\* are part of a preferred treatment across all age groups.*

*When stepping up treatment, combination therapy is recommended, and LABAs† are the preferred agents to combine with an ICS in patients  $\geq 12$  years of age.*

ASTHMA ASSESSMENTS

For both assessing control and determining severity, three age groups have been established and the domains of current impairment and future risk should be considered.

\*Inhaled corticosteroids. †Long-acting inhaled beta<sub>2</sub>-agonists

DETERMINE SEVERITY WHEN INITIATING THERAPY.

PATIENTS BIRTH—4 YEARS OF AGE

COMPONENTS OF SEVERITY		CLASSIFICATION OF ASTHMA SEVERITY (Birth—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
	SABA* USE FOR SYMPTOM CONTROL (NO 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/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 Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time. Exacerbations of any severity may occur in patients in any severity category		
RECOMMENDED STEP FOR INITIATING THERAPY See bar chart on the following page for treatment steps.		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 diagnosis.			

\*Short-acting inhaled beta<sub>2</sub>-agonist. †Exercise-induced bronchospasm.

ONCE CONTROL IS ACHIEVED, CONTINUE  
TO ASSESS CONTROL ON AN ONGOING BASIS.

( EVERY 1 TO 6 MONTHS )

COMPONENTS OF CONTROL		CLASSIFICATION OF ASTHMA CONTROL (Birth—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
	SABA* USE FOR SYMPTOM CONTROL (NOT PREVENTION OF EIB†)	≤2days/week	>2days/week	several times per day
RISK	EXACERBATIONS REQUIRING ORAL SYSTEMIC CORTICOSTEROIDS	0–1/year	2–3/year	>3/year
	TREATMENT-RELATED ADVERSE AFFECTS	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.		

\*Short-acting inhaled beta<sub>2</sub>-agonist. †Exercise-induced bronchospasm.

## TAKE A STEPWISE TREATMENT APPROACH.

PATIENTS BIRTH—4 YEARS OF AGE

### INTERMITTENT ASTHMA

**STEP 1**  
PREFERRED  
SABA\* PRN

**STEP 2**  
PREFERRED  
Low-dose ICS†  
ALTERNATIVE  
Cromolyn or  
montelukast

**STEP 3**  
PREFERRED  
Medium-dose  
ICS

**STEP 4**  
PREFERRED  
Medium-dose  
ICS + either  
LABA‡ or  
montelukast

**STEP 5**  
PREFERRED  
High-dose ICS  
+ either LABA  
or montelukast

**STEP 6**  
PREFERRED  
High-dose ICS  
+ either LABA  
or montelukast  
Oral systemic  
corticosteroids

**PERSISTENT ASTHMA: DAILY MEDICATION**  
Consult with asthma specialist if Step 3 care or higher is required.  
Consider consultation at Step 2.

STEP UP IF NEEDED  
(First, check  
adherence, inhaler  
technique, and  
environmental  
control.)

ASSESS  
CONTROL

STEP DOWN IF POSSIBLE  
(and asthma is  
well controlled at  
least 3 months).

### PATIENT EDUCATION AND ENVIRONMENTAL CONTROL AT EACH STEP

#### Quick-Relief Medication for All Patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms.
- With viral respiratory infection: SABA q 4 to 6 hours up to 24 hours (longer with physician consult).
- Consider short course of oral systemic corticosteroids if exacerbation is severe or patient has history of previous severe exacerbations.
- Caution: Frequent use of SABA may indicate the need to step up treatment.

\*Short-acting inhaled beta<sub>2</sub>-agonist. †inhaled corticosteroid. ‡Long-acting inhaled beta<sub>2</sub>-agonist.

Reevaluate treatment within 2 to 6 weeks and adjust therapy as appropriate.

Once patient's asthma is under control, continue to assess control on an ongoing basis (every 1 to 6 months).

Patient's asthma should be well controlled for at least 3 months before stepping down therapy.

AT STEPS 2 TO 6, ICS THERAPY IS RECOMMENDED—  
THE NIH<sup>S</sup>-PREFERRED TREATMENT FOR YOUR PATIENTS  $\leq 4$  YEARS OF AGE.



DETERMINE SEVERITY WHEN INITIATING THERAPY.

PATIENTS 5—11 YEARS OF AGE

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
	SABA* USE FOR SYMPTOM CONTROL (NOT PREVENTION OF EIB <sup>1</sup> )	≤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"> <li>• Normal FEV<sub>1</sub><sup>†</sup> between exacerbations</li> <li>• FEV<sub>1</sub> &gt;80% predicted</li> <li>• FEV<sub>1</sub>/FVC<sup>‡</sup> &gt;85%</li> </ul>	<ul style="list-style-type: none"> <li>• FEV<sub>1</sub> ⇒80% predicted</li> <li>• FEV<sub>1</sub>/FVC &gt;80%</li> </ul>	<ul style="list-style-type: none"> <li>• FEV<sub>1</sub> =60–80% predicted</li> <li>• FEV<sub>1</sub>/FVC =75–80%</li> </ul>	<ul style="list-style-type: none"> <li>• FEV<sub>1</sub> &lt;60% predicted</li> <li>• FEV<sub>1</sub>/FVC &lt;75%</li> </ul>
RISK	EXACERBATIONS REQUIRING ORAL SYSTEMIC CORTICOSTEROIDS	0–1/year	≥2/year		
		<p>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<sub>1</sub></p>			
RECOMMENDED STEP FOR INITIATING THERAPY See bar chart on the following page for treatment steps.		Step 1	Step 2	Step 3, medium-dose ICS <sup>††</sup> 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.			

\*Short-acting inhaled beta<sub>2</sub>-agonist. †Exercise-induced bronchospasm. ‡Forced expiratory volume in one second. §Forced vital capacity. †† Inhaled corticosteroid.

ONCE CONTROL IS ACHIEVED, CONTINUE  
TO ASSESS CONTROL ON AN ONGOING BASIS.

( EVERY 1 TO 6 MONTHS )

PATIENTS 5—11 YEARS OF AGE

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 per 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
	SABA* USE FOR SYMPTOM CONTROL (NOT PREVENTION OF EIB†)	≤2 days/week	>2 days/week	several times per day
	LUNG FUNCTION: FEV <sub>1</sub> ‡ OR PEAK FLOW FEV <sub>1</sub> /FVC§	>80% predicted/ personal best >80%	60–80% predicted/ personal best 75–80%	<60% predicted/ personal best <75%
RISK	EXACERBATIONS REQUIRING ORAL SYSTEMIC CORTICOSTEROIDS	0–1/year	≥2/year	
		Consider severity and interval since last exacerbation.		
	REDUCTION IN LUNG GROWTH	Evaluation requires long-term follow-up.		
	TREATMENT-RELATED ADVERSE AFFECTS	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.		

\*Short-acting inhaled beta<sub>2</sub>-agonist. †Exercise-induced bronchospasm. ‡Forced expiratory volume in one second. §Forced vital capacity.

## TAKE A STEPWISE TREATMENT APPROACH.

PATIENTS 5—11 YEARS OF AGE

### INTERMITTENT ASTHMA

### PERSISTENT ASTHMA: DAILY MEDICATION

Consult with asthma specialist if Step 4 care or higher is required.  
Consider consultation at Step 3.

**STEP 1**  
PREFERRED  
SABA\* PRN

**STEP 2**  
PREFERRED  
Low-dose ICS†  
  
ALTERNATIVE  
Cromolyn,  
LTRA‡, or  
nedocromil, or  
theophylline

**STEP 3**  
PREFERRED  
EITHER  
Low-dose ICS +  
either LABA§,  
LTRA, or  
theophylline  
  
OR  
Medium-dose  
ICS

**STEP 4**  
PREFERRED  
Medium-dose  
ICS + LABA  
  
ALTERNATIVE  
Medium-dose  
ICS + either  
LTRA or  
theophylline

**STEP 5**  
PREFERRED  
High-dose ICS  
+ LABA  
  
ALTERNATIVE  
High-dose  
ICS + either  
LTRA or  
theophylline

**STEP 6**  
PREFERRED  
High-dose ICS  
+ LABA + oral  
systemic  
corticosteroids  
  
ALTERNATIVE  
High-dose ICS +  
either LTRA or  
theophylline +  
oral systemic  
corticosteroids

STEP UP IF NEEDED  
(First, check  
adherence, inhaler  
technique,  
environmental  
control, and  
comorbid  
conditions.)

ASSESS  
CONTROL

STEP DOWN IF POSSIBLE  
(and asthma is  
well controlled at  
least 3 months).

### PATIENT EDUCATION, ENVIRONMENTAL CONTROL, AND MANAGEMENT OF COMORBIDITIES AT EACH STEP

Consider subcutaneous allergen immunotherapy for patients who have allergic asthma at Steps 2 through 4.

### Quick-Relief Medication for All Patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of oral systemic corticosteroids may be needed.
- Caution: Increasing use of SABA or use >2 days a week for symptom relief (not prevention of EIB††) indicates inadequate control and the need to step up treatment.

\*Short-acting inhaled beta<sub>2</sub>-agonist. †Inhaled corticosteroid. ‡Leukotriene receptor antagonist. §Long-acting inhaled beta<sub>2</sub>-agonist. ††Exercise-induced bronchospasm.

Reevaluate treatment within 2 to 6 weeks and adjust therapy as appropriate.

Once patient's asthma is under control, continue to assess control on an ongoing basis (every 1 to 6 months).

Patient's asthma should be well controlled for at least 3 months before stepping down therapy.

AT STEPS 2 TO 6, ICS THERAPY IS RECOMMENDED—  
THE NIH<sup>S</sup>-PREFERRED TREATMENT FOR YOUR PATIENTS 5—11 YEARS OF AGE.



DETERMINE SEVERITY WHEN INITIATING THERAPY.

PATIENTS ≥12 YEARS OF AGE

COMPONENTS OF SEVERITY		CLASSIFICATION OF ASTHMA SEVERITY (≥12 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
	SABA* USE FOR SYMPTOM CONTROL (NOT PREVENTION OF EIB <sup>†</sup> )	≤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"> <li>• Normal FEV<sub>f</sub> between exacerbations</li> <li>• FEV<sub>1</sub> &gt;80% predicted</li> <li>• FEV<sub>f</sub>/FVC<sup>‡</sup> normal</li> </ul>	<ul style="list-style-type: none"> <li>• FEV<sub>1</sub> &gt;80% predicted</li> <li>• FEV<sub>f</sub>/FVC normal</li> </ul>	<ul style="list-style-type: none"> <li>• FEV<sub>1</sub> &gt;60% but &lt;80% predicted</li> <li>• FEV<sub>f</sub>/FVC reduced 5%</li> </ul>	<ul style="list-style-type: none"> <li>• FEV<sub>1</sub> &lt;60% predicted</li> <li>• FEV<sub>f</sub>/FVC reduced &gt;5%</li> </ul>
RISK	EXACERBATIONS REQUIRING ORAL SYSTEMIC CORTICOSTEROIDS	0–1/year	≥2/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 <sub>1</sub> .		
RECOMMENDED STEP FOR INITIATING THERAPY See bar chart on the following page for treatment steps.		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.			

\*Short-acting inhaled beta<sub>2</sub>-agonist. †Exercise-induced bronchospasm. ‡Forced expiratory volume in one second. §Forced vital capacity.

ONCE CONTROL IS ACHIEVED, CONTINUE  
TO ASSESS CONTROL ON AN ONGOING BASIS.

( EVERY 1 TO 6 MONTHS )

PATIENTS ≥12 YEARS OF AGE

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	≥4x/week
	INTERFERENCE WITH NORMAL ACTIVITY	none	some limitation	extremely limited
	SABA <sup>†</sup> USE FOR SYMPTOM CONTROL (NOT PREVENTION OF EIB <sup>‡</sup> )	≤2 days/week	>2 days/week	several times per day
	LUNG FUNCTION: FEV <sub>1</sub> <sup>*</sup> OR PEAK FLOW	>80% predicted/personal best	60–80% predicted/personal best	<60% predicted/personal best
	VALIDATED QUESTIONNAIRES: ATAQ <sup>§</sup> ACQ <sup>¶</sup> ACT <sup>¶¶</sup>	0 ≤0.75 <sup>¶</sup> ≥20	1–2 ≥1.5 16–19	3–4 N/A ≤15
RISK	EXACERBATIONS REQUIRING ORAL SYSTEMIC CORTICOSTEROIDS	0–1/year	≥2/year	
		Consider severity and interval since last exacerbation.		
	PROGRESSIVE LOSS OF LUNG FUNCTION	Evaluation requires long-term follow-up.		
	TREATMENT-RELATED ADVERSE AFFECTS	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.		

\*Forced expiratory volume in 1 second/forced vital capacity ratio. Normal FEV<sub>1</sub>/FVC ratio by age:

8–19 yr=85%; 20–39 yr=80%; 40–59 yr=75%; 60–80 yr= 70%.

<sup>†</sup>Short-acting inhaled beta<sub>2</sub>-agonist.

<sup>‡</sup>Exercise-induced bronchospasm.

<sup>§</sup>Asthma Therapy Assessment Questionnaire.

<sup>¶</sup>Asthma Control Questionnaire.

<sup>¶¶</sup>Asthma Control Test<sup>™</sup>

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

## TAKE A STEPWISE TREATMENT APPROACH.

PATIENTS  $\geq 12$  YEARS OF AGE

### INTERMITTENT ASTHMA

**STEP 1**  
PREFERRED  
SABA\* PRN

**STEP 2**  
PREFERRED  
Low-dose ICS†  
  
ALTERNATIVE  
Cromolyn,  
LTRA‡, or  
theophylline

**STEP 3**  
PREFERRED  
Low-dose ICS +  
LABA§  
  
OR  
Medium-dose  
ICS  
  
ALTERNATIVE  
Low-dose ICS +  
either LTRA,  
theophylline,  
or zileuton

**STEP 4**  
PREFERRED  
Medium-dose  
ICS + LABA  
  
ALTERNATIVE  
Medium-dose  
ICS + either  
LTRA,  
theophylline,  
or zileuton

**STEP 5**  
PREFERRED  
High-dose ICS  
+ LABA  
  
AND  
Consider  
omalizumab  
for patients  
who have  
allergies

**STEP 6**  
PREFERRED  
High-dose ICS  
+ LABA + oral  
systemic  
corticosteroids  
  
AND  
Consider  
omalizumab  
for patients  
who have  
allergies

**PERSISTENT ASTHMA: DAILY MEDICATION**  
Consult with asthma specialist if Step 4 care or higher is required.  
Consider consultation at Step 3.

STEP UP IF NEEDED  
(First, check  
adherence, inhaler  
technique,  
environmental  
control, and  
comorbid  
conditions.)

ASSESS  
CONTROL

STEP DOWN IF POSSIBLE  
(and asthma is  
well controlled at  
least 3 months).

### PATIENT EDUCATION, ENVIRONMENTAL CONTROL, AND MANAGEMENT OF COMORBIDITIES AT EACH STEP

Consider subcutaneous allergen immunotherapy for patients who have allergic asthma at Steps 2 through 4.

### Quick-Relief Medication for All Patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of oral systemic corticosteroids may be needed.
- Use of SABA >2 days a week or symptom relief (not prevention of EIB<sup>¶</sup>) generally indicates inadequate control and the need to step up treatment.

\*Short-acting inhaled beta<sub>2</sub>-agonist. †Inhaled corticosteroid. ‡Leukotriene receptor antagonist. §Long-acting inhaled beta<sub>2</sub>-agonist. ¶Exercise-induced bronchospasm.

Reevaluate treatment within 2 to 6 weeks and adjust therapy as appropriate.

Once patient's asthma is under control, continue to assess control on an ongoing basis (every 1 to 6 months).

Patient's asthma should be well controlled for at least 3 months before stepping down therapy.

RECOMMEND COMBINATION MAINTENANCE THERAPY WITH AN ICS PLUS LABA AT STEPS 3 TO 6 OR MONOTHERAPY WITH AN ICS AT STEP 2—THE NIH<sup>S</sup>-PREFERRED TREATMENT FOR YOUR PATIENTS  $\geq 12$  YEARS OF AGE.



## IT'S ALL ABOUT ASTHMA CONTROL

### THE NIH ASTHMA GUIDELINES ON ED\* DISCHARGE:

The expert panel concludes that initiating ICS therapy (e.g., providing a 1- to 2-month supply) at discharge from the ED should be considered for appropriate patients with asthma.

The opinion of the expert panel is that the initiation (and continuation) of ICS therapy at ED discharge can be an important effort to bridge the gap between emergency and primary care for asthma.

For more information about this and other topics and to access the 2007 NHLBI/NAEPP Guidelines for the Diagnosis and Management of Asthma [EPR-3], visit [www.nhlbi.nih.gov/guidelines/asthma](http://www.nhlbi.nih.gov/guidelines/asthma).

Reference: 1. National Heart, Lung, and Blood Institute. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007*. Bethesda, Md: National Institutes of Health; August 2007. NIH Publication 07-4051.



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