

Asthma Assessment

Changes in the 2007 Guidelines

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Asthma

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Resources

Full Report:

<http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>

Summary:

<http://www.nhlbi.nih.gov/guidelines/asthma/asthsumm.htm>

Evidence tables:

http://www.nhlbi.nih.gov/guidelines/asthma/evid_bls.htm

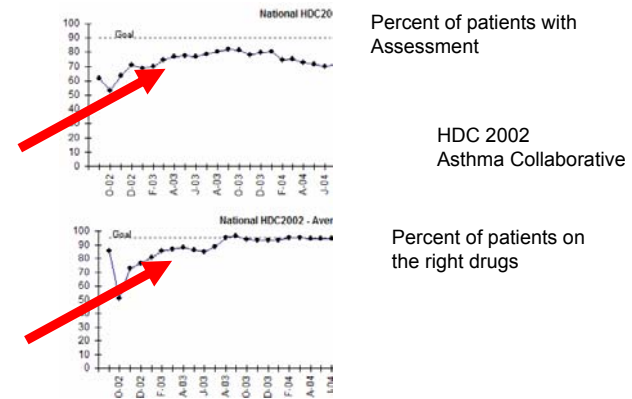
2

Focus for today:
Role of asthma assessment to guide treatment

- Important to discuss this because the 2007 Asthma guidelines changed the vocabulary of assessment.
- There are other critical components we won't cover.
 - Education
 - Environmental Control
 - Acute management

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Why is assessment important? It drives quality care.



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EPR-2 (1997) Asthma Guidelines

- Asthma Assessment and Monitoring Tied to Severity



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FIGURE 3-4b. STEPWISE APPROACH FOR MANAGING ASTHMA IN ADULTS AND CHILDREN OLDER THAN 5 YEARS OF AGE: TREATMENT

Preferred treatments are in bold print.

	Long-Term Control	Quick Relief	Education
STEP 4 Severe Persistent	<p>Daily medications:</p> <ul style="list-style-type: none"> ■ Anti-inflammatory: inhaled corticosteroid (high dose) <p>AND</p> <ul style="list-style-type: none"> ■ Long-acting bronchodilator: either long-acting inhaled beta₂-agonist, sustained-release theophylline, or long-acting beta₂-agonist tablets <p>AND</p> <ul style="list-style-type: none"> ■ Corticosteroid tablets or syrup long term (make repeat attempts to reduce systemic steroids and maintain control with high dose inhaled steroids) 	<ul style="list-style-type: none"> ■ Short-acting bronchodilator: inhaled beta₂-agonists as needed for symptoms. ■ Intensity of treatment will depend on severity of exacerbation; see component 3-Managing Exacerbations. ■ Use of short-acting inhaled beta₂-agonists on a daily basis, or increasing use, indicates the need for additional long-term-control therapy. 	<p>Steps 2 and 3 actions plus:</p> <ul style="list-style-type: none"> ■ Refer to individual education/counseling
STEP 3 Moderate Persistent	<p>Daily medication:</p> <ul style="list-style-type: none"> ■ Either Anti-inflammatory: inhaled corticosteroid (medium dose) 	<ul style="list-style-type: none"> ■ Short-acting bronchodilator: inhaled beta₂-agonists as needed for symptoms. ■ Intensity of treatment will depend on severity of 	<p>Step 1 actions plus:</p> <ul style="list-style-type: none"> ■ Teach self-monitoring ■ Refer to group education if available ■ Review and update self-

There were problems with severity

How do you classify the severity of a 45 year old individual when her moderate persistent asthma becomes mild intermittent in response to treatment? (She will develop moderate persistent asthma after a few months off controller drug.)

Moderate persistent?
Mild intermittent?

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There were problems with severity

2 yr old on Singular whose father had asthma. 2 rounds of oral steroids for “wheezy bronchitis” in the past 6 months. Usually though, has no wheezing and only occasional albuterol use (once or twice a month.)

What severity?
What treatment?

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There were problems with severity

25 year old with no symptoms as long as she takes her inhaled corticosteroid

(but she had a 8-hr ER visit 2 months ago because of a “severe asthma attack.” Ultimately was sent home with oral steroids.)

What severity?
What treatment?

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EPR-3 (2007) Asthma Guidelines: Severity vs. Control

Use asthma SEVERITY to select initial treatment for a person people not on a controller drug.

Once a person is on a controller drug use CONTROL to guide ongoing treatment (stepping up and down as appropriate)

Similar to HDC
“Underlying Severity”

Similar to HDC
“Current Severity”

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Impact of asthma on quality of life and lung function now

Assessing Asthma Severity

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

Potential impact of current impairment on future risk for exacerbations and loss of lung function / lung growth.

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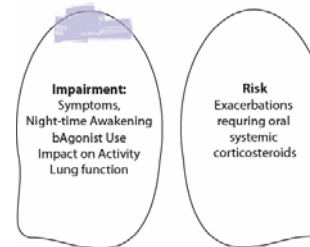
Infrequent symptoms

=

intermittent asthma

Started with a “rescue” bronchodilator

Assessing Asthma Severity



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Assessing Asthma Severity

Frequent symptoms/
poor lung function

=

persistent
asthma

Started with a
"rescue"
bronchodilator and
a "controller" drug

(Dose depends on
intensity of symptoms)

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

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Assessing Asthma Severity

Asthma risk and
infrequent or no
oral steroids

= Intermittent
asthma

Started with a
"rescue"
bronchodilator

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

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Assessing Asthma Severity

Asthma dx or risk
and multiple oral
steroids

= persistent
asthma

Started with a
"rescue"
bronchodilator
and a controller
drug

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

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EPR-3 :Severity is used to initiate treatment.

Severity

Impairment:
Symptoms
Night-awakenings
Abnormal spirometry
Activity Interruptions
SABA Use

Risk:
Exacerbations
requiring oral systemic
corticosteroids

Loss of lung function
Impaired lung growth
Drug side effects

Patients of any
severity can have
severe episodes

~~Mild Intermittent~~
Mild Persistent
Moderate Persistent
Severe Persistent

Intermittent
Persistent

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Assessing the Impairment and Risk domains of SEVERITY

Severity: the intrinsic intensity of the disease process.

Severity is measured most easily and directly in a patient not receiving long-term-control therapy.

EPR3: Severity and control, impairment and risk in 3 age ranges

The table 'Classification of Asthma Severity' is organized into three main sections based on age groups: Children 0-4 years, Children 5-11 years, and Youths >12 years. Each section defines four severity levels: Intermittent, Mild, Moderate, and Severe. The criteria are based on symptoms (daytime awakenings, nighttime awakenings, short-acting beta₂ agonist use, and interference with normal activity) and impairment (lung function, measured by FEV₁, FEV₁/FVC, and spirometry). A 'Risk' section at the bottom indicates the frequency of exacerbations requiring oral systemic corticosteroids (0-1/year for intermittent, ≥2/year for persistent) and notes that severity and interval since last exacerbation fluctuate over time. A red box highlights that 'Some degree of persistent asthma' is present in the moderate and severe categories across all age groups.

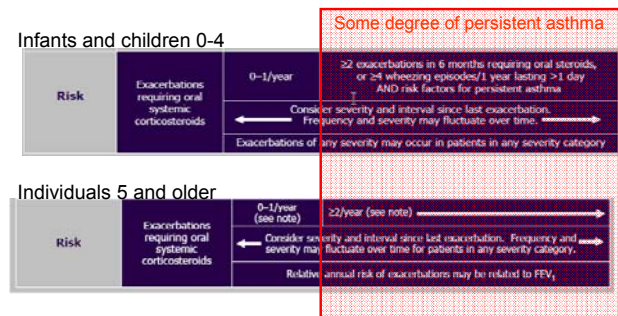
Many of the severity components in the impairment domain are similar for all ages

Impairment Domain		Age	Intermittent	Mild	Moderate	Severe
Symptoms		All	≤ 2 days/week	> 2 days/week but not daily	Daily	Throughout the day
Nighttime Awakenings		0-4 5 and older	0 ≤ 2x/month	1-2x/month 3-4x/month	3-4x/month >1x/week but not nightly	> 1x/week Often 7x/week
Short-acting beta ₂ agonist use for symptom control (not prevention of EIB)		All	≤ 2 days/week	> 2 days/week but not daily	Daily	Several times a day
Interference with normal activity		All	None	Minor limitation	Some limitation	Extremely limited
Lung Function		5-11	Normal FEV ₁ between exacerbations FEV ₁ >80% predicted	FEV ₁ >80% Predicted	FEV ₁ 60-80% Predicted	FEV ₁ <60% Predicted
Normal FEV ₁ /FVC:		8-19 yr 85% 20-39 yr 80% 40-59 yr 75% 60-80 yr 70%	FEV ₁ /FVC >85% Normal FEV ₁ Between exacerbations	FEV ₁ /FVC >80%	FEV ₁ /FVC 75-80%	FEV ₁ /FVC <75%
		12 and older	FEV ₁ >80% Predicted	FEV ₁ >80% Predicted	FEV ₁ >60% but <80% predicted	FEV ₁ <60% Predicted
			FEV ₁ >80% Predicted	FEV ₁ /FVC normal	FEV ₁ /FVC Normal	FEV ₁ /FVC Reduced > 5%

Night symptoms translate into greater impairment in young children

Spirometry should start at age 5.

The risk component of severity also varies by age



Severity after treatment begins may be useful for population-level evaluations

- Classifying severity in patients after asthma becomes well controlled, by lowest level of treatment required to maintain control.*

Classification of Asthma Severity				
to maintain control (See figure 4-5 for treatment steps.)	Step 1	Mild Step 2	Moderate Step 3 or 4	Severe Step 5 or 6

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

*Notes:

- For population based evaluations, clinical research, or characterization of a patient's overall asthma severity after control is achieved. For clinical management, the focus is on monitoring the level of control (See figure 3-5c.), not the level of severity, once treatment is established.

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Patients on a controller med

Assessing the Impairment and Risk domains of Current Control

Control: Degree to which current impairment and future risk are minimized.

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EPR-3 (2007) Asthma Guidelines: Severity vs Control

Use asthma severity to select initial treatment for a person people not on a controller drug.

Once a person is on a controller drug use control to guide ongoing treatment (stepping up and down as appropriate)

Similar to HDC
"Underlying Severity"

Similar to HDC
"Current Severity"

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Assessing Asthma Control of a person on a controller med

Impact of current treatment on quality of life and lung function.

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

Impact of current treatment on risk for

- Exacerbations
- Loss of lung function / growth
- Adverse effects

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Assessing Asthma Control of a person on a controller med

Infrequent symptoms
=
"Well controlled"

Stay where you are or step down

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

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Assessing Asthma Control of a person on a controller med

Frequent symptoms
or
poor lung function
=
"Not well controlled"
or
"Very poorly controlled"

Step up treatment

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

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Assessing Asthma Control of a person on a controller med

Rare ER visits / oral steroid use
=
"Well Controlled"

Stay where you are or step down

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

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Assessing Asthma Control of a person on a controller med

Multiple ER / oral steroid use
=
"Not well controlled"

Step up treatment

Impairment:
Symptoms,
Night-time Awakening
bAgonist Use
Impact on Activity
Lung function

Risk
Exacerbations
requiring oral
systemic
corticosteroids

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EPR-3 : When a person is on a controller drug the emphasis changes to assessment of control.

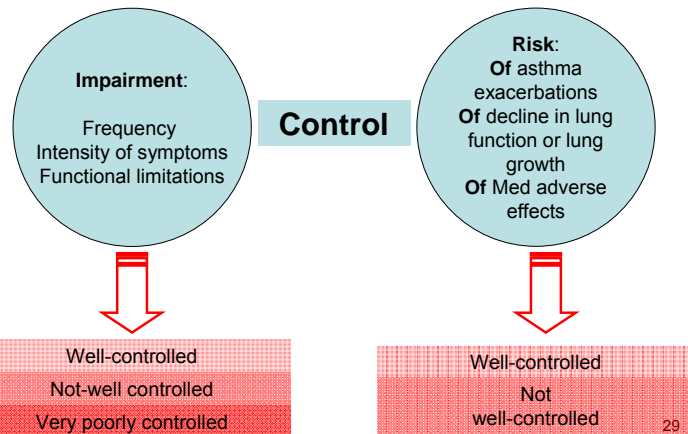


FIGURE 4-7. ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN YOUTHS ≥12 YEARS OF AGE AND ADULTS

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	1-2x/week	≥4x/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
Risk	Validated questionnaires ATAQ ACQ ACT	0 ≤0.75* ≥20	1-2 ≥1.5 16-19	3-4 N/A ≤15
	Exacerbations requiring oral systemic corticosteroids	0-1/year		≥2/year (see note)
	Progressive loss of lung function Treatment-related adverse effects	Evaluation requires long-term follow-up care		

Validated tools with measured score

Asthma Control Test (ACT)

- In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?
All of the time (1) Most of the time (2) Some of the time (3) A little of the time (4) None of the time (5)
- During the past 4 weeks, how often have you had shortness of breath?
More than once a day (1) Once a day (2) 3 to 6 times a week (3) Once or twice a week (4) Not at all (5)
- During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?
4 or more nights a week (1) 2 or 3 nights a week (2) Once a week (3) Once or twice (4) Not at all (5)
- During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?
3 or more times per day (1) 1 or 2 times per day (2) 2 or 3 times per week (3) Once a week or less (4) Not at all (5)
- How would you rate your asthma control during the past 4 weeks?
Not controlled at all (1) Poorly controlled (2) Somewhat controlled (3) Well controlled (4) Completely controlled (5)

Components of Control	Classification of Asthma Control (≥12 years of age)		
	Well Controlled	Not Well Controlled	Very Poorly Controlled
Symptoms	≤2 days/week	>2 days/week	Throughout the day
Validated questionnaires ATAQ ACQ ACT	0 ≤0.75* ≥20	1-2 ≥1.5 16-19	3-4 N/A ≤15

Asthma Therapy Assessment Questionnaire (ATAQ)

INSTRUCTIONS: Check 1 answer to each question and enter point value (0 or 1) on line.

- In the past 4 weeks, did you:
 - Miss any work, school, or normal daily activity because of your asthma? Yes (1) No (0) Unsure (1)
 - Wake up at night because of asthma? Yes (1) No (0) Unsure (1)
 - Believe that your asthma was well controlled? Yes (0) No (1) Unsure (1)
- Do you use an inhaler for quick relief from asthma symptoms? Yes No Unsure
 (If Yes) In the past 4 weeks, what was the highest number of puffs in 1 day you took of the inhaler?
 0 puffs (0) 9 to 12 puffs (1)[†]
 1 to 4 puffs (0) More than 12 puffs (1)
 5 to 8 puffs (1)[†] Enter score

Components of Control	Classification of Asthma Control (≥12 years of age)			
	Well Controlled	Not Well Controlled	Very Poorly Controlled	
Symptoms	≤2 days/week	>2 days/week	Throughout the day	
Validated questionnaires ATAQ ACQ ACT	0 ≤0.75* ≥20	1-2 ≥1.5 16-19	3-4 N/A ≤15	
Impairment	FEV ₁ or peak flow	>80% predicted/ personal best	60-80% predicted/ personal best	<60% predicted/ personal best

Like Severity, there are 3 age-based control tables

Components of Control		Classification of Asthma Control (Youths ≥12 years of age and adults)		
		Well-Controlled	Not Well-Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime awakening	≤2x/month	1-3x/week	≥4x/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	0	1-2	3-4
	ACQ	≤0.75*	≥1.5	N/A
	ACT	≥20	16-19	≤15
Risk	Exacerbations	0-1/year	≥2/year (see note)	
	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.		

Despite 3 age ranges, the components of control can fit on one page

Impairment Domain

	Age	Well Controlled	Not Well Controlled	Very Poorly Controlled
Symptoms	0-4 12 and older	≤ 2 days/week	> 2 days/week	Throughout the day
	5-11	≤ 2 days/week but not more than once a day	>2 days/week or multiple times on ≤ 2 days / week	
Nighttime Awakenings	0-4 5 and older	1x/month	>1x / month	> 1x/week
	12 and older	<1x/month	> 2x/month	≥ 2x/wk
Interference with normal activity	0-4 5 and older	None	Some limitation	Extremely limited
	12 and older	<2x/month	1-3x / week	≥ 4x/wk
Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	All Ages	≤ 2 days/week	> 2 days/week	Several times a day
FEV ₁ or Peak Flow	12 and older	>80% predicted/ personal best	60-80% predicted / personal best	<60% predicted / personal best
FEV ₁ /FVC	5-11	>80%	75-80%	<75%
Validated Questionnaires				
		0	1-2	3-4
	12 and Older	<0.75	≥ 1.5	NA
		>20	16-19	≤15

Despite 3 age ranges, the components of control can fit on one page

Risk Domain

	Age	Well Controlled	Not Well Controlled	Very Poorly Controlled
Exacerbations requiring oral systemic corticosteroids	0-4	0-1 / year	2-3/year	> 3 / year
	5 and older		≥ 2 / yr	
	All	Consider severity and interval since last exacerbation.		
	5 and older	At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (e.g., 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.		
Reduction in lung growth	5-11		Evaluation requires long-term followup care	
Progressive Loss of Lung function	12 and older		Evaluation requires long-term followup care	
Treatment-related adverse effects	All Ages		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.	

* 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 (e.g., 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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Some last comments about Assessment and Monitoring

- Jim Stout study: Up to 1/3 of kids under diagnosed - need for PFTs 5+
- Monitoring is important, doesn't matter if it occurs through peak flow or symptom monitoring.
- FEV1 predicts future risk, FEV1/FVC better describes current impairment in kids.

age 5 to 11

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Your turn

- Applying the concepts of impairment and risk to the examples we started with.

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2 yr old on Singular whose father had asthma. 2 rounds of oral steroids for “wheezy bronchitis” in the past 6 months. Usually though, has no wheezing and only occasional albuterol use (once or twice a month.)

What control?

FIGURE 3-5a. ASSESSING ASTHMA CONTROL IN CHILDREN 0-4 YEARS OF AGE

Components of Control		Classification of Asthma Control (Children 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/year	2-3/year	>3/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.		

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

Notes:

- 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.

2 yr old on Singular whose father had asthma. 2 rounds of oral steroids for “wheezy bronchitis” in the past 6 months. Usually though, has no wheezing and only occasional albuterol use (once or twice a month.)

What control?

FIGURE 3-5a. ASSESSING ASTHMA CONTROL IN CHILDREN 0-4 YEARS OF AGE

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	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/year	2-3/year	>3/year
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Key: EIB, exercise-induced bronchospasm; ICU, intensive care unit

Notes:

- 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.

25 year old with no symptoms as long as she takes her inhaled corticosteroid (but she had a 8-hr ER visit 2 months ago because of a “severe asthma attack” – ultimately was sent home with oral steroids.)

What control?

FIGURE 3-5c. ASSESSING ASTHMA CONTROL IN YOUTHS ≥12 YEARS OF AGE AND ADULTS

Components of Control		Classification of Asthma Control (Youths ≥12 years of age and adults)		
		Well-Controlled	Not Well-Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime awakening	≤2x/month	1-3x/week	>4x/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			
Risk	ATAQ, ACC, ACT	0-80.75* ≥20	1-2 ≤1.5 16-19	3-4 N/A ≥15
	Exacerbations	0-1/year (see note) ≥2/year (see note)		
	Progressive loss of lung function	Consider severity and interval since last exacerbation 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.			

*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. See figure 3-8 for full name and source of ATAQ, ACC, ACT.

Notes:

- 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.

25 year old with no symptoms as long as she takes her inhaled corticosteroid (but she had a 8-hr ER visit 2 months ago because of a “asthma asthma attack” – ultimately was sent home with oral steroids.)

What control?

FIGURE 3–5c. ASSESSING ASTHMA CONTROL IN YOUTHS ≥12 YEARS OF AGE AND ADULTS

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	Nighttime awakenings	≤2x/month	1–3x/week	≥4x/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
Risk	Validated Questionnaires ATAQ ACQ ACT	0 ≤0.75* ≥0.75	1–2 ≥1.5 16–19	3–4 N/A ≥5
	Exacerbations	0–1/year	≥2/year (see note)	
	Progressive loss of lung function	Evaluation requires long-term follow-up 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.		

*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. See figure 3-8 for full name and source of ATAQ, ACQ, ACT.

Notes:
 ■ 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.

Selecting medications based on Severity and Control.

The type, amount, and scheduling of medication is dictated by asthma severity for initiating therapy and the level of asthma control for adjusting therapy (Evidence A).

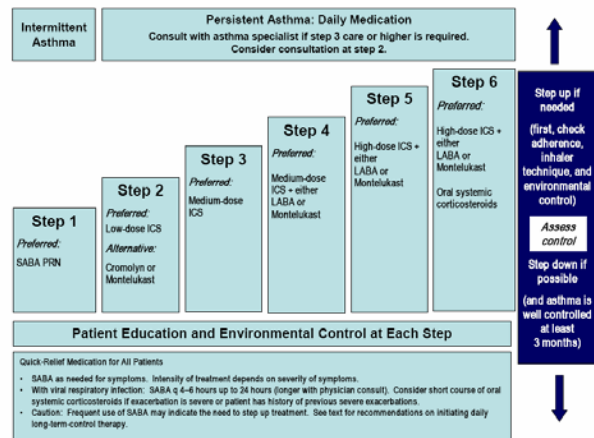
There are age and step-specific treatment recommendations

Components of Severity	Classification of Asthma Severity (5–11 years of age)			
	Intermittent	Mild	Moderate	Severe
Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
Nighttime awakenings	≤2x/month			
Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week			
Interference with normal activity	None			
Lung function	• Normal FEV ₁ between exacerbation • FEV ₁ >80% predicted • FEV ₁ /FVC >80%			
Risk	Exacerbations requiring oral systemic corticosteroids 0–1/year (see frequency)			
Recommended Step for Initiating Therapy (See figure 4-1b for treatment steps.)		Recommended Action for Treatment (See figure 4-1a for treatment steps.)		
Step In 2–6 weeks, accordingly.		<ul style="list-style-type: none"> • Maintain current treatment. • Regular follow-up every 1–6 months. • Consider step down if well controlled for at least 3 months. 		

Medications are stepped up and down based on impairment and future risk.

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
Risk	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
	Exacerbations requiring oral systemic corticosteroids	0–1/year	2–3/year	>3/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 (See figure 4-1a for treatment steps.)		<ul style="list-style-type: none"> • Maintain current treatment. • Regular follow-up every 1–6 months. • Consider step down if well controlled for at least 3 months. • 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. • 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. 		

FIGURE 4-1a. 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

Preferred Asthma Controller by age and step

Preferred Stepwise Asthma Treatments: EPR-3 Pre-Publication

	0-4	5-11	12+
Step One	Short-acting Beta Agonist PRN		
Step Two	Low-Dose ICS		
Step Three	Medium-dose ICS	Either Low Dose ICS and (alphabetical) LABA LTRA Theophylline *	Either Low Dose ICS and LTBA
		or Medium-dose ICS	
Step Four	Medium-dose ICS and		
	either LABA or Montelukast	LABA	
Step Five	High-dose ICS and		
	LABA or Montelukast	LABA	LABA Consider omalizumab
Step Six	High-dose ICS and systemic oral corticosteroids and		
	LABA or Montelukast	LABA	and Consider omalizumab

ICS - Inhaled Corticosteroid LABA - Long Term Beta Agonist LTRA - Leukotriene Antagonist

* To date, studies have not shown a reduction in significant asthma exacerbations from the addition of LABA to ICS treatment in children (Bisgaard 2003).

Two medication issues to talk about before we are done

When do you start a controller drug in a young child (younger than 5)?

4+ episodes of wheezing in the past year
Lasted more than 1 day
and affected sleep

AND

Parental history of asthma,
A physician diagnosis of atopic dermatitis
Evidence of sensitization to aeroallergens

OR (2) two of the following:

Evidence of sensitization to foods
≥4 percent peripheral blood eosinophilia
wheezing apart from colds

(Evidence A).

Unchanged from the EPR-2 Update

Are long-Action Beta Agonists like salmeterol safe?

Salmeterol or formoterol **in addition** to not well controlled on low- or medium-dose ICS **improves lung function, decreases symptoms, and reduces exacerbations and use of SABA** in most patients.

A large clinical trial comparing daily treatment with salmeterol or placebo added to usual asthma therapy (Nelson et al. 2006) resulted in an **increased risk of asthma-related deaths** in patients treated with salmeterol (13 deaths out of 13,176 patients). In addition, **increased numbers of severe asthma exacerbations** were noted in formoterol trials, particularly in the higher doses. Thus the FDA determined that a **Black Box warning** was warranted on all preparations containing a LABA.

The **beneficial effects of LABA should be weighed against the increased risk** for severe exacerbations, although uncommon, associated with the daily use of LABAs.

For patients who have asthma not sufficiently controlled with ICS alone, **the option to increase the ICS dose should be given equal weight to the option of the addition of a LABA to ICS.**

LABAs are **not to be used as monotherapy** for long-term control. Patients should be instructed not to stop ICS therapy while taking salmeterol or formoterol even though their symptoms may significantly improve.

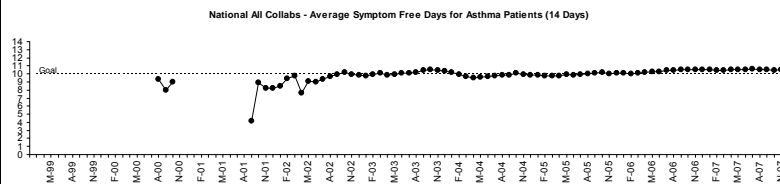
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A key question for today: do we need to change the Core BPHC Asthma Collaborative Measures in light of 2007 Asthma Guidelines?

- Would depend on an expert panel.
- ~~Severity~~ **Asthma** Assessment at each visit.
- Symptom-free Days
- Anti-inflammatory use in patients with any degree of ~~(underlying)~~ persistent asthma
- Self-management Goal-setting

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Symptom-free days an outcome measure



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- 2007 Asthma Guidelines Key Points and Differences.pdf
- Guidelines are 400+ pages long
- Most of the chapters include sections that point out the key points and changes
- I've extracted those key points and changes.

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