Using the Stepwise Approach in Asthma Management

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Objectives

- Understand specific measures to assess severity and control in initiating or adjusting therapy
  - Five components associated with assessing impairment
  - Component of assessing risk
- Using a problem-based approach, demonstrate appropriate use of the stepwise management of asthma

NAEPP, EPR 3, 2007

Historical Perspective

- The National Asthma Education and Prevention Program--March 1989
- First guidelines—1991
- Every five years
  - EPR 2, 1997
  - EPR 2 Update, 2002
  - EPR 3, 2007
- Evidence based

Asthma Severity

- Assessed on initial visit
- Classifying asthma severity is based on the intensity of the disease process
  - Impairment
  - Risk

(McNeily et al., n. d., p. B-34)

Impairment

- Frequency and intensity of symptoms and functional limitations the patient is experiencing currently or has recently experienced

  (U. S. Department of Health and Human Services [USD HHS], 2007, p. 2)

- Evaluation of what has occurred in last 2-4 weeks, short term

Risk

- The likelihood of either asthma exacerbations, progressive decline in lung function (or for children, lung growth), or risk of adverse effects of medication

(USD HHS, 2007, p. 2)

- More of a global assessment
- Long term, over the last 6-12 months
- Future risk

Evaluating Impairment

- Symptoms
- Activity
- Lung Function
- SABA Use (short-acting beta agonist)
- Awakenings

(McNeily et al., n.d., p. B-35)

Symptoms

- How often does the patient experience asthma symptoms (cough, wheezing, shortness of breath, chest tightness)?
  - Less than two days a week
  - More than two days a week, but not daily
  - Daily
  - Throughout the day

(USD HHS, 2007, p. 43)

Activity

- How often does an asthma attack interrupt the daily activity of the patient?
  - Never
  - Minor limitation
  - Some limitation
  - Extreme limitation

(USD HHS, 2007, p. 43)

Lung Function

- What is the patient's current lung function (peak expiratory flow, FEV1/FVC)?
  - Intermittent: FEV1 >80% predicted, FEV1/FVC normal, normal FEV1 between exacerbations
  - Mild Persistent: FEV1 >80% predicted, FEV1/FVC normal
  - Moderate Persistent: FEV1 >60% but less than 80% of predicted, FEV1/FVC reduced by 5%
  - Severe Persistent: FEV1 <60% of predicted, FEV1/FVC reduced by 5%
- Normal FEV1/FVC changes with age

(USD HHS, 2007, p. 43)

SABA Use

- How often do you use your quick relief inhaler such as albuterol to control asthma (do not include use for exercise induced bronchospasm)?
  - Less than twice a week
  - More than twice a week, but not daily, and not more than once a day
  - Daily
  - Several times throughout the day

(USD HHS, 2007, p. 43)

Awakenings

- How often does the patient experience asthma symptoms enough to cause them to wake from sleep at night?
  - Twice a month or less
  - Three to four times a month
  - More than once a week, but not nightly
  - Often seven nights a week

(USD HHS, 2007, p. 43)

Evaluating Risk

- In the last year, how many times has the patient's asthma required treatment with oral steroids?
  - Intermittent:none or once in the last year
  - Mild persistent: two times
  - Moderate/Severe persistent: three times or more

(McNeily et al., n. d., B-35)

- Consider last exacerbation for severity
- How long it has been since the last exacerbation?

(USD HHS, 2007, p. 43)

Classify Severity

- Classifications
  - Intermittent
  - Mild persistent
  - Moderate persistent
  - Severe persistent
- Use the classification in which the most severe clinical feature is identified

(McNeily et al., n. d., p. B-34;

Fanta, Stieb, Carter, & Haver, 2007, p. 79)

Components of Severity		Classification of Asthma Severity (0–4 years of age)			
			Persistent		
		Intermittent	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/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 figure 4–1a 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 diagnoses.			

Components of Severity		Classification of Asthma Severity (5–11 years of age)			
			Persistent		
		Intermittent	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	• Normal FEV_1 between exacerbations • FEV_1 >80% predicted • FEV_1/FVC >85%	• FEV_1 = >80% predicted • FEV_1/FVC >80%	• FEV_1 = 60–80% predicted • FEV_1/FVC = 75–80%	• FEV_1 <60% predicted • FEV_1/FVC <75%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year (see note)	≥2/year (see note) →		
		← 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 (See figure 4–1b for treatment steps.)		Step 1	Step 2	Step 3, medium-dose ICS option and consider short course of oral systemic corticosteroids	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.			

ASTHMA MANAGEMENT—YOUTHS ≥12 YEARS OF AGE & ADULTS (part 1 of 2)

Classifying Asthma Severity and Initiating Treatment In Youths ≥12 Years of Age and Adults

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)			
			Persistent		
		Intermittent	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	≤2×/month	3–4×/month	>1×/week but not nightly	Often 7×/week
	Short-acting β_2-agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily and not more than 1× on any day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	• Normal FEV_1 between exacerbations • FEV_1 >80% predicted • FEV_1/FVC normal	• FEV_1 >80% predicted • FEV_1/FVC normal	• FEV_1 >60% but <80% predicted • FEV_1/FVC reduced 5%	• FEV_1 <60% predicted • FEV_1/FVC reduced >5%
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_1			
Recommended Step for Initiating Treatment		Step 1	Step 2	Step 3	Step 4 or 5
				and consider short course of oral systemic corticosteroids	
		In 2 to 6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.			

EIB = exercise-induced bronchospasm; FEV_1 = forced expiratory volume in 1 second; FVC = forced vital capacity.

Adapted from National Asthma Education and Prevention Program. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007.* U.S. Department of Health and Human Services. Available at: http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf. Accessed on: September 21, 2007.

Asthma Control

- Assessed on follow-up visits
- Utilize same criteria
  - Impairment (SALSA)
  - Risk
- Classification
  - Well controlled
  - Not well controlled
  - Very poorly controlled

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/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.)		• Maintain current treatment. • Regular followup 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.

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%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year	≥2/year (see note)	
		Consider severity and interval since last exacerbation		
	Reduction in lung growth	Evaluation requires long-term followup.		
	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 4–1b for treatment steps.)		• Maintain current step. • Regular followup every 1–6 months. • Consider step down if well controlled for at least 3 months.	• Step up at least 1 step and • Reevaluate in 2–6 weeks. • For side effects: consider alternative treatment options.	• Consider short course of oral systemic corticosteroids, • Step up 1–2 steps, and • Reevaluate in 2 weeks. • For side effects, consider alternative treatment options.

ASTHMA MANAGEMENT—YOUTHS ≥12 YEARS OF AGE & ADULTS (part 2 of 2)

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	≤2×/month	1–3×/week	≥4×/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting β_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/year**	**≥2/year**	
		Consider severity and interval since last exacerbation		
	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.		
Recommended Action for Treatment		• Maintain current step • Regular follow-ups every 1 to 6 months to maintain control • Consider step down if well controlled for at least 3 months	• Step up 1 step and • Reevaluate in 2 to 6 weeks • For side effects, consider alternative treatment options	• Consider short course of oral systemic corticosteroids • Step up 1 to 2 steps and • Reevaluate in 2 weeks • For side effects, consider alternative treatment options

ACQ = Asthma Control Questionnaire®; ACT = Asthma Control Test™; ATAQ = Asthma Therapy Assessment Questionnaire®; EIB = exercise-induced bronchospasm; FEV_1 = forced expiratory volume in 1 second.

*Questionnaires do not assess lung function or the risk domain.

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

Adapted from National Asthma Education and Prevention Program. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007.* U.S. Department of Health and Human Services. Available at: http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf. Accessed on: September 21, 2007.

Stepwise Approach

- Six steps to asthma management
- Lowest level of treatment required to maintain control
- Used to adjust therapy to appropriate level
  - Step up if necessary to gain control (aggressive)
    - Prior to stepping up therapy, assess for adherence to treatment plan, technique with medication delivery, environmental factors, and co-morbid conditions
  - Step down if possible if control maintained for at least three months

FIGURE 4–1a. STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 0–4 YEARS OF AGE

Intermittent Asthma

Persistent Asthma: Daily Medication

Consult with asthma specialist if step 3 care or higher is required.
Consider consultation at step 2.

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

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 4–6 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. See text for recommendations on initiating daily long-term-control therapy.

FIGURE 4–1b. STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 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, 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 corticosteroid

Alternative:

High-dose ICS + either LTRA or Theophylline + oral systemic corticosteroid

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)

Each step: Patient education, environmental control, and management of comorbidities.

Steps 2–4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma (see notes).

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) generally indicates inadequate control and the need to step up treatment.

Stepwise Approach for Managing Asthma in Youths ≥12 Years of Age and Adults

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, Nedocromil, 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 corticosteroid AND Consider Omalizumab for patients who have allergies	**Step up if needed** (first, check adherence, environmental control, and comorbid conditions) ***Assess control*** **Step down if possible** (and asthma is well controlled at least 3 months)

Each Step: Patient education, environmental control, and management of comorbidities
Steps 2–4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma.

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 for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment

EIB = exercise-induced bronchospasm; ICS = inhaled corticosteroid; LABA = inhaled long-acting β_2-agonist; LTRA = leukotriene receptor antagonist; SABA = inhaled short-acting β_2-agonist.

* Preferred therapy is based on *Expert Panel Report 2* from 1997.

Adapted from National Asthma Education and Prevention Program. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007*. U.S. Department of Health and Human Services. Available at: http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf. Accessed on: September 21, 2007.

Case One: Seth

- Seth is a four year old boy who lives in West Haven, UT
- He is seen by his primary care physician as a follow-up appointment following a hospitalization two weeks ago. He was hospitalized for difficulty breathing.
- Since his discharge from the hospital, his mother reports coughing as his only symptom. He experiences coughing about three days a week. Nebulized albuterol has provided some relief from those coughing episodes.
- He woke one time last week coughing.
- There is no limitation on his normal activity.
- Seth was given a dose of oral systemic steroids at the time of his hospital admission.

(Anonymous 1, 2013)

Based on the assessment of impairment and risk according to the EPR-3 guidelines, Seth's asthma severity should be classified as:

a. Intermittent (Step 1)

b. Mild persistent (Step 2)

c. Moderate persistent (Step 3)

d. Severe persistent (Step 3)

Components of Severity		Classification of Asthma Severity (0–4 years of age)			
			Persistent		
		Intermittent	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/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 figure 4–1a 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 diagnoses.			

Case One Continued…

- At the time of his last visit, Seth's asthma was classified as mild persistent asthma.
- His primary care physician chose to put Seth on Singulair. He is being seen for his follow-up visit in the clinic.
- His mother reports he is coughing two to three times/week.
- He has had one nighttime awakening in the last month.
- There is no limitation to his activity.
- It has been one year since his hospitalization and dose of oral steroids.

(Anon, 2013)

Based on the assessment of impairment and risk, according to the EPR-3 guidelines, Seth's asthma is currently

a. Well controlled

b. Not well controlled

c. Poorly controlled

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/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.)		• Maintain current treatment. • Regular followup 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

Intermittent Asthma

Persistent Asthma: Daily Medication

Consult with asthma specialist if step 3 care or higher is required.
Consider consultation at step 2.

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

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 4–6 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. See text for recommendations on initiating daily long-term-control therapy.

Before stepping up…

- Inhaler technique
- Compliance
- Environment

(Asthma Initiative of Michigan, 2007)

EPR guidelines are meant to assist, not replace your existing asthma management approach.

Case Two: Sydney

- Sydney is a 6 year old female who lives in Clinton, UT.
- She was diagnosed with asthma one year ago. Upper respiratory infections, and allergens are triggers for her. She has been treated on Advair HFA 115/21 for the last three months. She is being seen for a follow-up visit.
- Her mother has not noticed any symptoms in the last two to four months.
- She has had no nighttime awakenings.
- She used her albuterol nebulizer 3x morning and night during the week last week while she was also suffering cold symptoms. This was not due to relieving symptoms, but rather because her peak flow was 160 when measured. Predicted peak flow is 200 lpm.
- She has been treated with oral steroids twice in the last year.

(Anonymous 2, 2013)

FIGURE 4–1b. STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 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, 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 corticosteroid

Alternative:

High-dose ICS + either LTRA or Theophylline + oral systemic corticosteroid

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)

Each step: Patient education, environmental control, and management of comorbidities.

Steps 2–4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma (see notes).

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) generally indicates inadequate control and the need to step up treatment.

Based on the assessment of impairment and risk, according to the EPR-3 guidelines, Sydney's asthma is currently

a. Well controlled

b. Not well controlled

c. Poorly controlled

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%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year	≥2/year (see note)	
		Consider severity and interval since last exacerbation		
	Reduction in lung growth	Evaluation requires long-term followup.		
	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 4–1b for treatment steps.)		• Maintain current step. • Regular followup every 1–6 months. • Consider step down if well controlled for at least 3 months.	• Step up at least 1 step and • Reevaluate in 2–6 weeks. • For side effects: consider alternative treatment options.	• Consider short course of oral systemic corticosteroids, • Step up 1–2 steps, and • Reevaluate in 2 weeks. • For side effects, consider alternative treatment options.

Case Three: Cindy

- 26 year old female
- Has been taking a medium-dose ICS and LTRA for the last two years
- Presents for a follow-up appointment.
- Denies any daytime or nighttime symptoms for the last 4-5 months
- She has not required oral steroids in the last year.

Today her asthma severity is:

a. Intermittent (Step 1)
b. Mild persistent (Step 2)
c. Moderate persistent (Step 3 or 4)
d. Severe persistent (Step 5 or 6)

Stepwise Approach for Managing Asthma in Youths ≥12 Years of Age and Adults

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, Nedocromil, 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 corticosteroid AND Consider Omalizumab for patients who have allergies	**Step up if needed** (first, check adherence, environmental control, and comorbid conditions) ***Assess control*** **Step down if possible** (and asthma is well controlled at least 3 months)

Each Step: Patient education, environmental control, and management of comorbidities
Steps 2–4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma.

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 for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment

EIB = exercise-induced bronchospasm; ICS = inhaled corticosteroid; LABA = inhaled long-acting β_2-agonist; LTRA = leukotriene receptor antagonist; SABA = inhaled short-acting β_2-agonist.

* Preferred therapy is based on *Expert Panel Report 2* from 1997.

Adapted from National Asthma Education and Prevention Program. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007*. U.S. Department of Health and Human Services. Available at: http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf. Accessed on: September 21, 2007.

Based on the assessment of impairment and risk, according to the EPR-3 guidelines, Cindy should:

a. Step up

b. Step down

c. Maintain current therapy

Key Educational Messages

- Basic facts about asthma
  - Normal airways v. airways in those with asthma
  - What happens to the airways during an asthma attack

Key Educational Messages

- Role of medications
  - Long-term control medications
    - Prevent symptoms
    - Reduce inflammation
    - Must be taken daily
    - No quick relief
  - Quick relief medications
    - Relax smooth muscle
    - Provides relief fast
    - Not long-term asthma control
    - Increased use means need for increasing long-term control medications

Key Educational Messages

- Patient skills
  - Taking medications correctly
    - Technique, return demonstration
    - Use devices as prescribed (spacers, holding chambers)
  - Self-monitoring
    - Assess asthma control
    - Monitor symptoms, PEF measurements
    - Recognize early signs and symptoms
  - Use a written asthma action plan
    - Daily actions to control asthma
    - Adjust medication in response to worsening symptoms
  - Seek medical care when appropriate

Let's Check It

- What are the five main components of impairment?
- What is the major component of risk?
- What are the four classifications of asthma severity? Can you properly classify a patient into one of the four?
- What are the three classifications of asthma control?
- How do we use the stepwise approach to adjust therapy?

References

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