

Asthma Management Starts with Asthma Screenings

**When you can't breathe, nothing else
matters.**

Respiratory Therapy and Asthma



Respiratory Therapists can follow Asthmatics in all places, situations and scenarios which include:

- Hospital ER's
- ICU's
- Clinics
- Breathmobiles
- Health Fairs.

Respiratory Therapy and Asthma

Preventative Care



Critical Care



Respiratory Therapy Responsibilities with Asthma

Preventative Care

Asthma Education
Self Management

Spirometry and
Pulmonary Function Tests

MDI and Equipment
Teaching

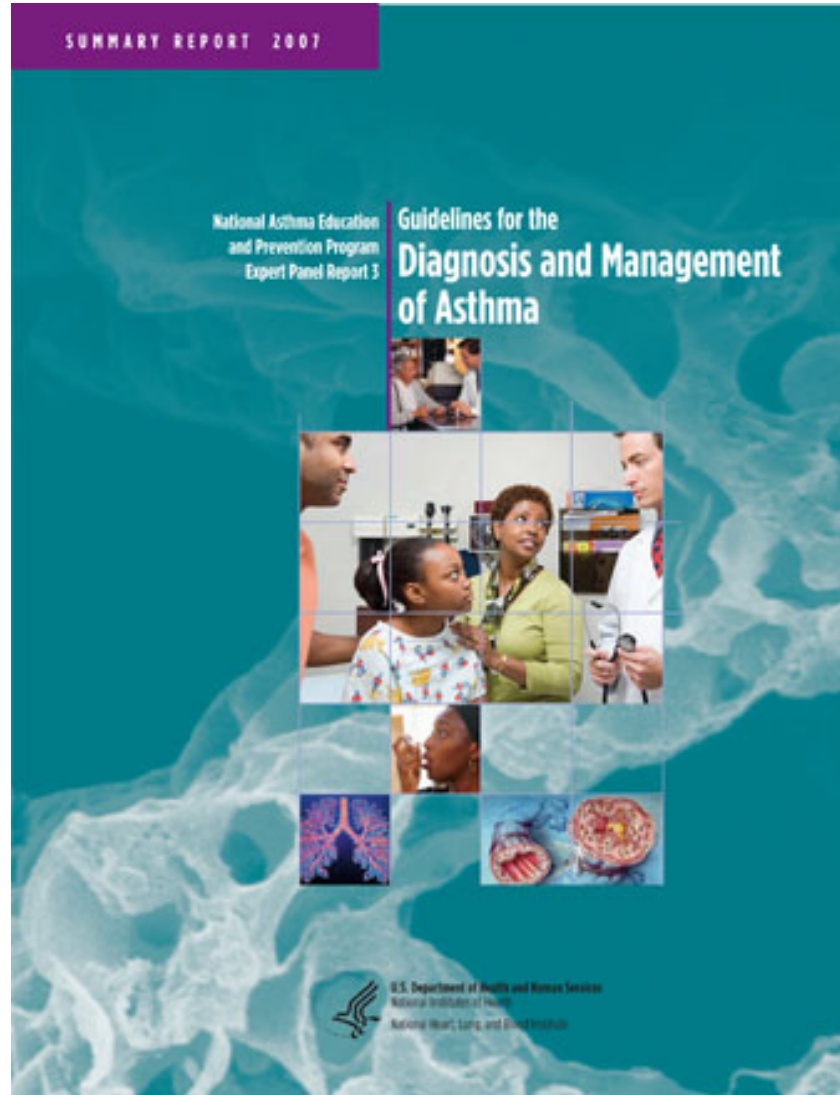
Critical Care

Breathing Treatments

Airway and Blood Gas
Management

Ventilator
Management

EPR 3



What is EPR 3?

“The EPR 3 Guidelines on Asthma was developed by an expert panel commissioned by the National Asthma Education and Prevention Program (NAEPP) Coordinating Committee (CC), coordinated by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health.”

EPR 3

440 pages



Introduction



Acknowledgements and Financial Disclosures



Acronyms and Abbreviations



Preface



Five Sections



Four Components of Asthma Management

1. Measures of assessment and monitoring, obtained by objective tests, physical examination, patient history and patient report, to diagnose and assess the characteristics and severity of asthma and to monitor whether asthma control is achieved and maintained
2. Education for a partnership in asthma care
3. Control of environmental factors and comorbid conditions that affect asthma
4. Pharmacologic therapy

Component #1

Measures of assessment and monitoring, obtained by objective tests, physical examination, patient history and patient report, to diagnose and assess the characteristics and severity of asthma and to monitor whether asthma control is achieved and maintained...

SCREENING

Goals of Asthma Screenings



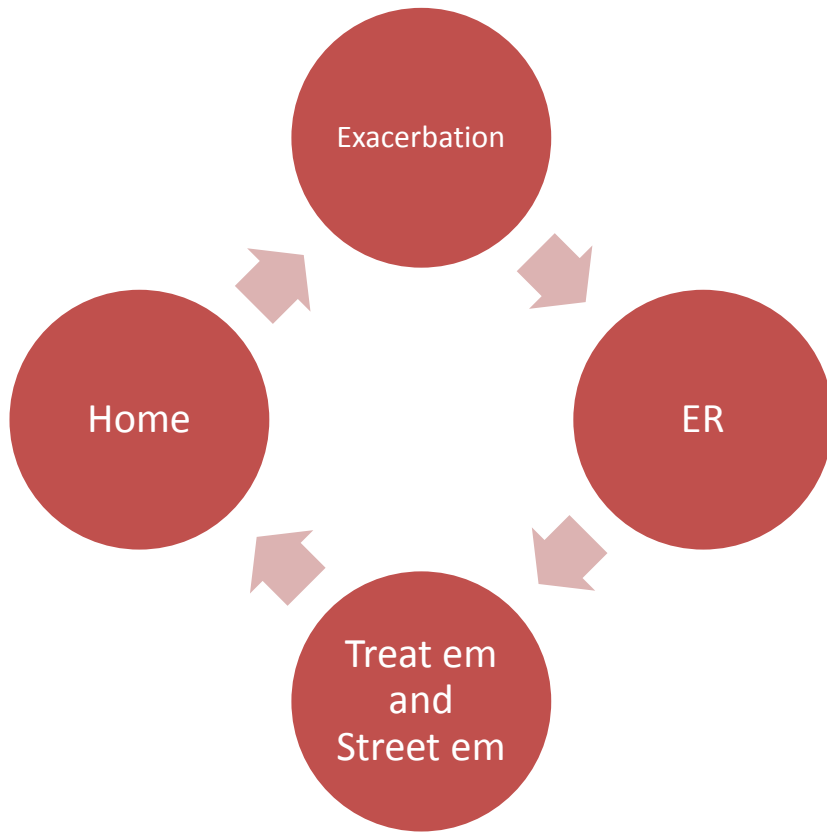
Collect Data for a Diagnosis
and Plan

Teach Patients to Self
Manage Asthma

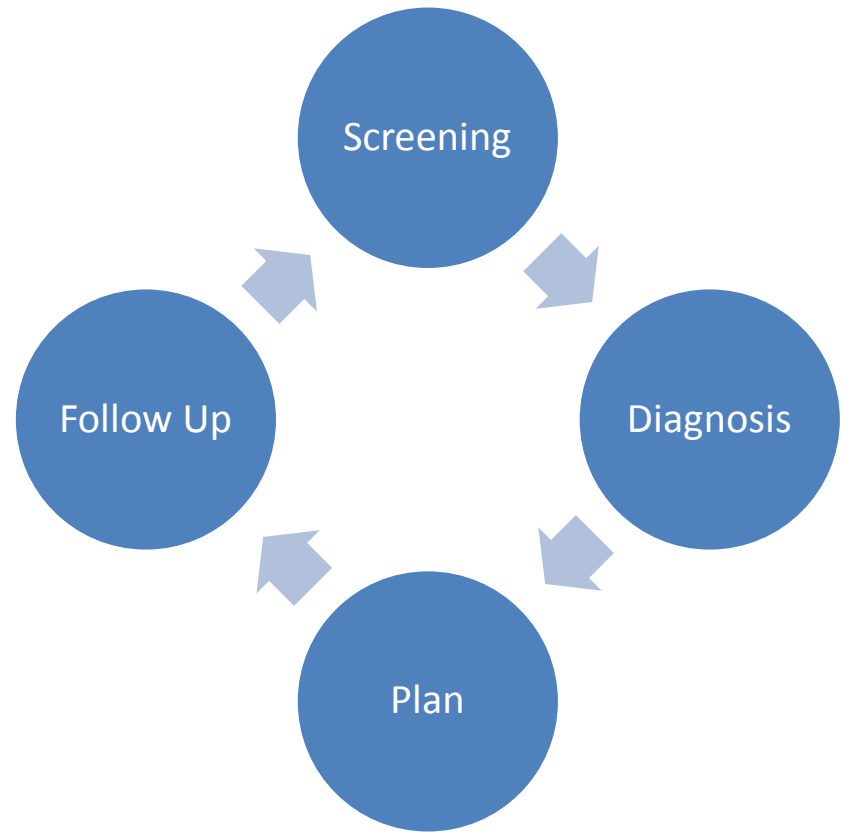
To follow up on Adherence
of Diagnosis and Plan

Asthma Management Starts with a Screening.

Common Asthma Cycle



Asthma Care Cycle

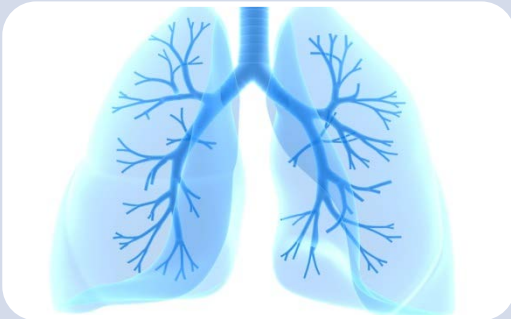


What is an Asthma Screening? What information is collected?

- History and Questionnaires
- Physical Assessment and Measurements



Questionnaires



Medical
History and
Information



SocioEconomic
History and
Information



Environmental
History and
Information

Medical History and Questionnaires

Severity and Control

- Frequency of Symptoms
- Night time Awakenings
- SABA use (Albuterol)
- Interference with normal activity
- Lung Function Results
- Exacerbation requiring oral Corticosteroids
- ATAQ, ACT, ACQ Validated Questionnaires

Asthma severity is the intrinsic intensity of the disease process and dictates which step to initiate treatment. Asthma control is the degree to which the goals of therapy are met (e.g., prevent symptoms/exacerbations, maintain normal lung function and activity levels).

The classification of severity or level of control is based on the most severe impairment or risk category in which any feature occurs.

Assess impairment domain by patient's recall of previous 2-4 weeks and/or 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 last visit.

Components of SEVERITY		Age (Years)	Classification of Asthma SEVERITY (Intermittent vs. Persistent)			
			Intermittent	Persistent		
		Mild		Moderate	Severe	
Impairment	Symptoms	All	≤ 2 days/week	> 2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	0-4	0	1-2x/month	3-4x/month	> 1x/week
		≥ 5	≤ 2x/month	3-4x/month	> 1x/week but not nightly	Often 7x/week
	SABA use for symptom control	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:					
	FEV ₁ (predicted) or PEF (personal best)	≥ 5	Normal FEV ₁ between exacerbations > 80%	> 80%	60-80%	< 60%
FEV ₁ /FVC	5-11	> 85%	> 80%	75-80%	< 60%	
	≥ 12	Normal	Normal	Reduced 5%	Reduced > 5%	
Risk	Exacerbations requiring oral corticosteroids	0-4	≤ 1x/year	≥ 2x in 6 months or ≥ 4 wheezing episodes/year lasting > 1 day AND risk factors for persistent asthma		
		5-11		≥ 2x/year		
		≥ 12		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 starting treatment	0-4	Step 1	Step 2	Step 3	Step 3	
	5-11				Step 3 or 4	
	≥ 12				Step 4 or 5	
	All	Consider short course of oral corticosteroids				
	All	In 2-6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly. For children 0-4 years old, if no clear benefit is observed in 4-6 weeks, stop treatment and consider alternative diagnosis or adjusting therapy.				

FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; PEF, peak expiratory flow; SABA, short-acting beta₂-agonist

Stepwise Approach for Managing Asthma Long Term

← Step UP if needed (first check inhaler technique, adherence, environmental control, and comorbid conditions) ASSESS CONTROL Step DOWN if possible (and asthma is well controlled for at least 3 months) →							
0-4 Years		Intermittent Asthma	Persistent Asthma: Daily Medication				
			Consult with asthma specialist if step 3 care or higher is required. Consider consultation at step 2.				
	Preferred	SABA as needed	Low-dose ICS	Medium-dose ICS	Medium-dose ICS + LABA or montelukast	High-dose ICS + LABA or montelukast	High-dose ICS + Oral corticosteroids + LABA or montelukast
	Alternative		Cromolyn or montelukast				
Patient education and environmental control at each step.							
Rescue Medication		<ul style="list-style-type: none"> SABA as needed for symptoms. Treatment intensity depends on symptom severity. With viral respiratory symptoms, SABA every 4-6 hours up to 24 hours (longer with physician consult). Consider short course of oral corticosteroids if exacerbation is severe or if patient has history of previous severe exacerbations. Frequent or increasing use of SABA may indicate inadequate control and the need to step up treatment. 					

Components of CONTROL		Age (Years)	Level of Asthma CONTROL		
			Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	0 – 4	≤ 2 days/week but ≤ 1x/day	> 2 days/week or multiple times on ≤ 2 days/week	Throughout the day
		5 – 11		> 2 days/week	
		≥ 12		> 2 days/week	
	Nighttime awakenings	0 – 4	≤ 1x/month	> 1x/month	> 1x/week
		5 – 11		≥ 2x/month	≥ 2x/week
		≥ 12		1–3x/week	≥ 4x/week
	Interference with normal activity	All	None	Some limitation	Extremely limited
	SABA use for symptoms	All	≤ 2 days/week	> 2 days/week	Several times per day
	Lung function				
	FEV ₁ (predicted) or PEF (personal best)	≥ 5	> 80%	60-80%	< 60%
FEV ₁ /FVC	5 – 11	> 80%	75-80%	< 75%	
Validated questionnaires					
ATAQ	≥ 12	0	1–2	3–4	
ACQ	≥ 12	≤ 0.75	≥ 1.5	n/a	
ACT	≥ 12	≥ 20	16–19	≤ 15	
Risk	Exacerbations requiring oral corticosteroids	0 – 4	≤ 1x/year	2-3x/year	> 3x/year
		5 – 11		≥ 2x/year	
		≥ 12		Consider severity and interval since last exacerbation	
	Reduction in lung growth	5 – 11		Evaluation requires long-term follow-up care	
	Loss of lung function	≥ 12		Evaluation requires long-term follow-up care	
Treatment-related adverse effects	All	Medication side effects can vary in intensity from none to very troublesome and worrisome.			
Recommended treatment actions	All	Maintain current step; regular follow-up at every 1–6 months; consider stepping down if well controlled for ≥ 3 months	Step up 1 step	Step up 1–2 steps and consider short course of oral corticosteroids	
			Before stepping up, 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.		
			Reevaluate the level of asthma control in 2–6 weeks and adjust therapy accordingly.		
			For side effects, consider alternative treatment options.		

ACQ, Asthma Control Questionnaire; ACT, Asthma Control Test; ATAQ, Asthma Therapy Assessment Questionnaire; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; PEF, peak expiratory flow; SABA, short-acting beta₂-agonist

Communicate with Your Child's Doctor About His/Her Asthma

Asthma also includes reactive airway disease, regular coughing, wheezing, or difficulty breathing with or without colds.

Your child's name: _____ Today's Date: _____

When was your child's last asthma visit? _____ If your child has never had an asthma visit, check here:

Please check one answer for each of the following questions. Your answers will help your doctor give you the best asthma care.

Questions 1-5 ask about how your child's asthma has been over the past 12 months, not just today. If your child has had asthma for less than 12 months, then think about how things have been since he/she started having breathing problems.

Over the past 12 months	Direction		
1. How has your child's asthma been?	Getting Better	Staying The Same	Getting Worse
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Over the past 12 months	Bothered		
2. How much have you been bothered by your child's asthma?	Not Bothered	Somewhat Bothered	Very Bothered
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Over the past 12 months	Risk				
<u>Before</u> today:	0	1	2	3	≥4
3. How many times has your child been to <u>urgent care</u> for asthma?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. How many times has your child been to the <u>emergency room</u> for asthma?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. How many times has your child been <u>hospitalized</u> for asthma?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. How many times has your child used <u>an oral steroid</u> (Orapred, steroid pill, steroid liquid or steroid syrup) for asthma? Don't include today.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FOR CLINICIAN USE ONLY:	Controlled	Partly Controlled	Mildly Uncontrolled	Moderately Uncontrolled	Severely Uncontrolled
Assign patient's <u>level of chronic asthma control</u> by looking at the box checked <u>farthest to the right</u> on questions 3-6. Match the box color to the level of asthma control in this section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Take Medicine	My child is not supposed to take a daily asthma medicine	All of the time 5-7 days/week	Most of the time 3-4 days/week	Some of the time 1-2 days/week	None of the time
7. How often do you give your child's <u>daily</u> asthma medicine when he/she feels fine? Daily asthma medicines include: Advair, Alvesco, Asmanex, Budesonide, Flovent, QVAR, Pulmicort, Singulair, Symbicort	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PLEASE TURN OVER

FOR CLINICIAN USE: If any of the answers in red <input type="checkbox"/> are selected, this may be consistent with poorly controlled and/or undertreated asthma. Further assessment and follow-up in 2-6 weeks is recommended.
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Pediatric Asthma Control & Communication Instrument

Asthma Symptoms

7. Over the **past week**, how many days has your child had asthma symptoms? For example:

- Cough
- Chest tightness
- Shortness of breath
- Sputum (spit, mucous, phlegm when coughing)
- Difficulty taking a deep breath
- Wheezy or whistling sound in the chest



Reliever use

8. Over the **past week**, how many days have you had to give your child medicine to quickly relieve asthma symptoms? For example:

- Albuterol
- Inhaler
- Spray
- Pump
- Machine
- Nebulizer



Attacks

9. Over the **past week**, how many days did your child have an asthma attack? For example:

- When it is harder for your child to breathe
- When you give your child more asthma medicine
- When the asthma medicine does not work



Activity Limitation

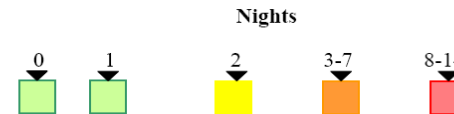
10. Over the **past week**, how much has asthma limited your child's activities?



Nighttime Symptoms

11. Now for this question, please answer about the **past 2 weeks**.

How many nights did **your child's asthma** keep your child from sleeping or wake him/her up in the past 2 weeks?



For clinician use only – Asthma Control Assignment
Assign patient's current level of asthma control by looking at box checked farthest to the right on questions 7-11 and match color of this box to level of asthma control in this section and circle and/or document in patient's chart



Physical Assessment and Measurements

- Vitals
- Breath Sounds (wheezing)
- Breathing pattern
- Spirometry
- Exhaled Nitric Oxide
- Allergy and Blood tests
- MDI Evaluation

Asthma is an Obstructive Disease and Limits Exhalation



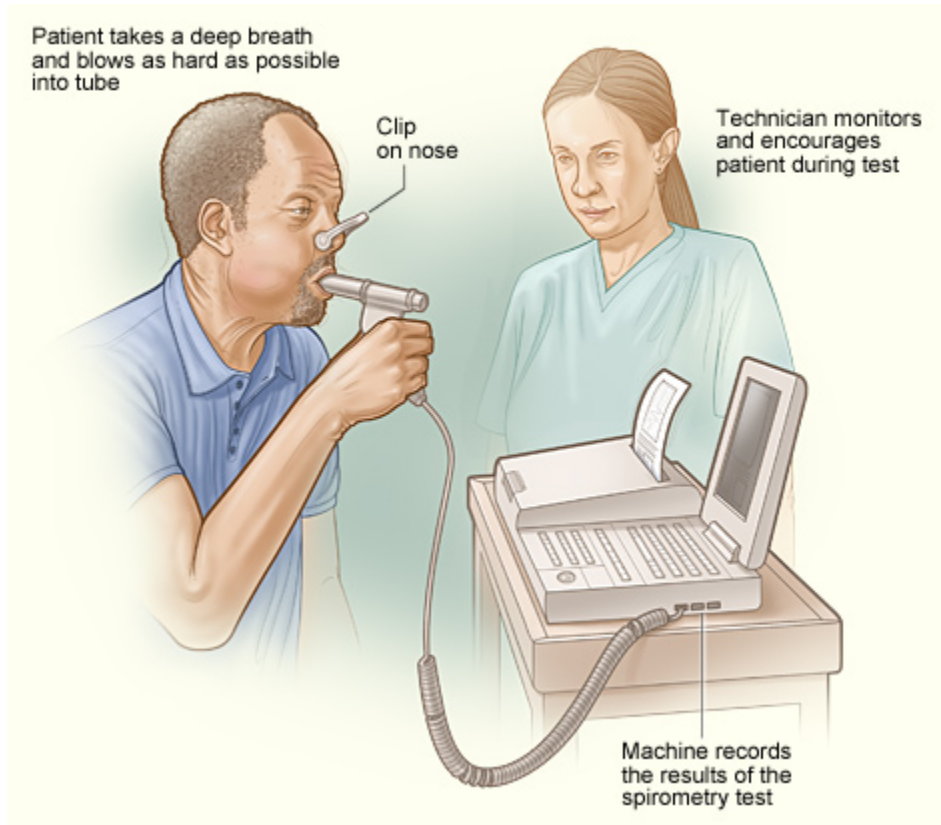
Spirometry

Is a Pulmonary Function Test (PFT), that measures lung function, specifically the amount (volume) and/or speed (flow) of air that can be inhaled and exhaled.

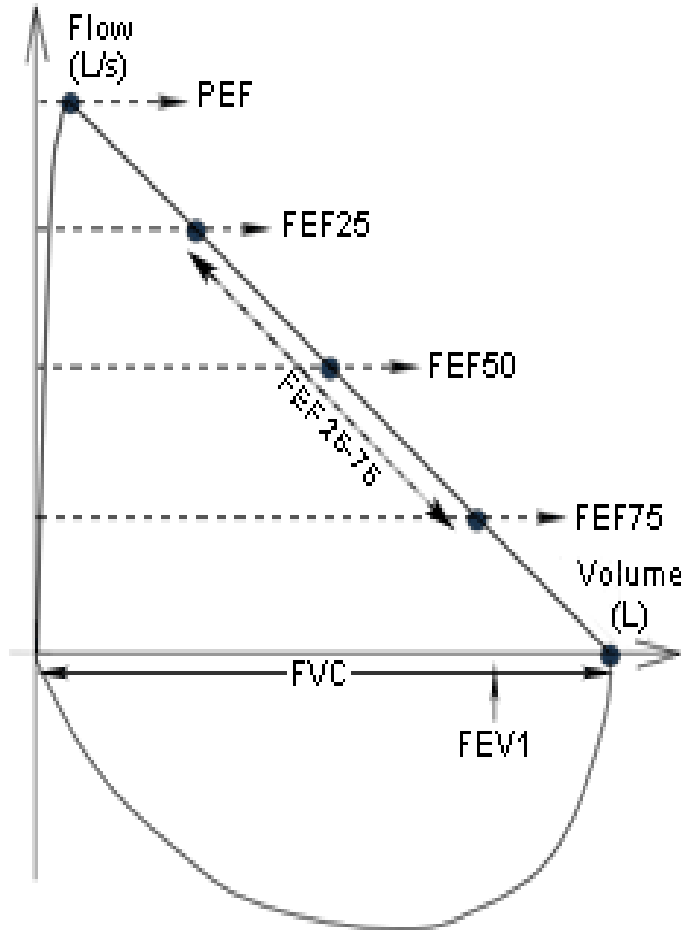
(Flow-Volume Loop.)

“Gold Standard of Asthma
Diagnosis”

Spirometry



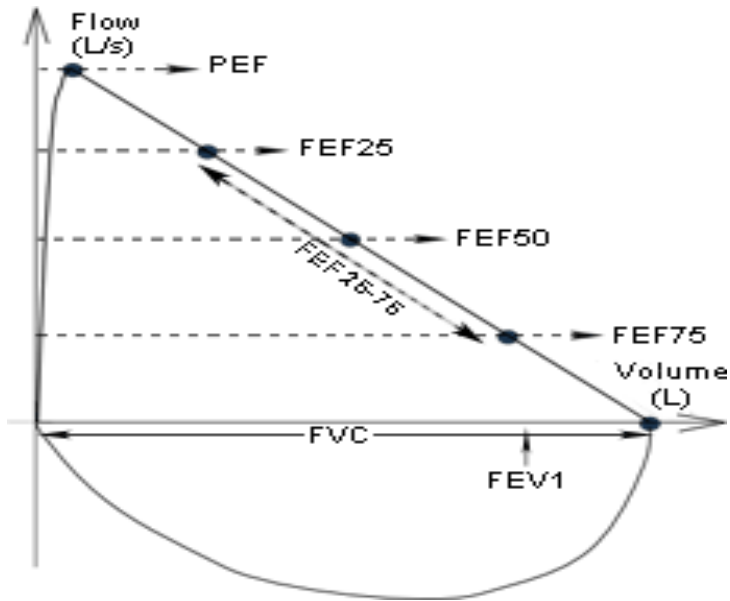
Flow Volume Loop



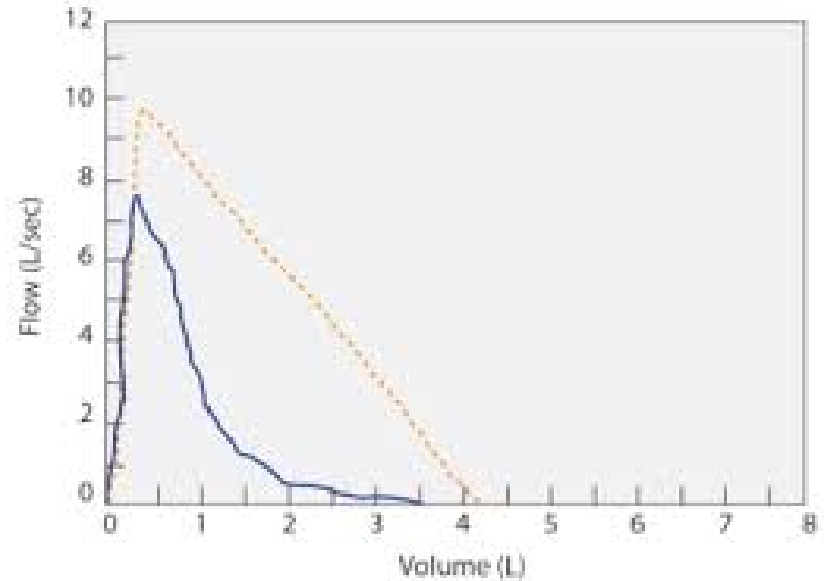
- **FVC:** The volume change of the lung between a full inspiration to total lung capacity and a maximal expiration to residual volume.
- **PEF :** Peak Expiratory Flow is the maximum flow generated during expiration performed with maximal force.
- **FEV1:** The FEV1 is the volume exhaled during the first second of a forced expiratory maneuver.
- **FEF 25-75% :** Forced Expiratory Flow of FEV1. Mid Expiratory Flow
- **FEV1%/FVC:** is the standard index for assessing airflow obstruction.

Flow-Volume Loops

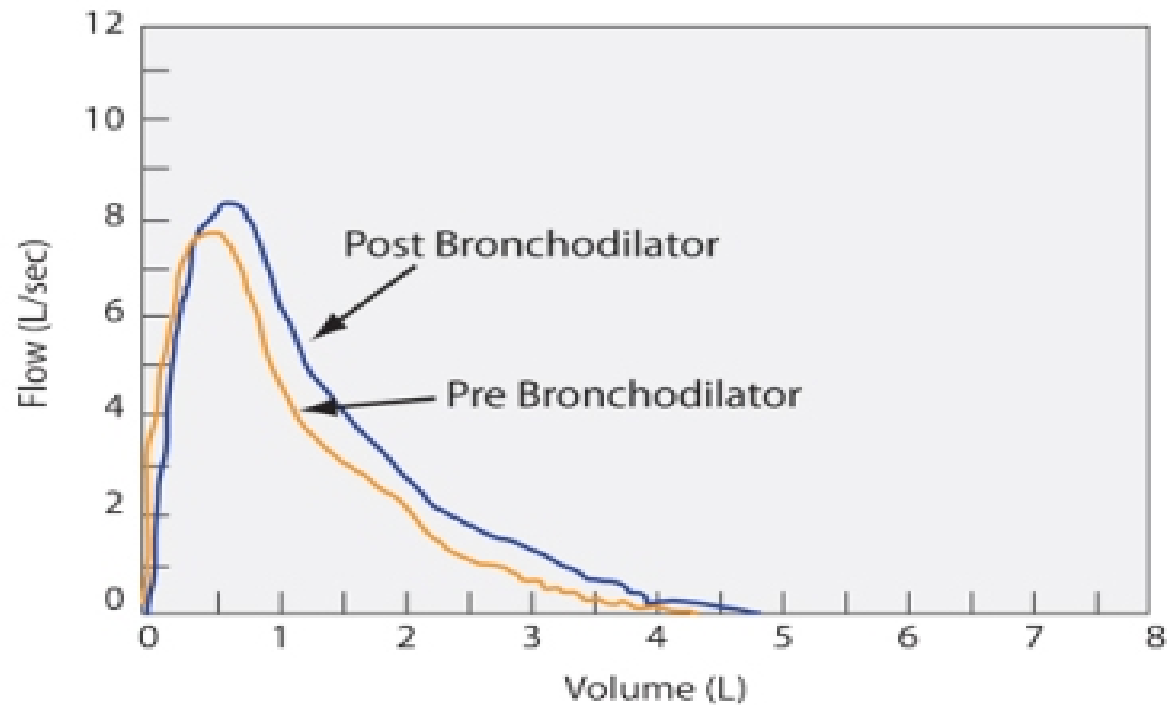
Normal



Normal Vs Asthmatic



Pre and Post Spirometry



Spirometry and Asthma

A patient with reactive airway disease or Asthma will have at least a 12% or 200 ml increase in FEV1 between the Pre and Post Spirometry tests.

Asthma Screening is collecting the pieces of the Asthma Puzzle



Completed Screenings

Completed
Questionnaires



Completed Physical
Assessment



Completed
Pulmonary Function
Tests



EPR 3 Asthma Management

Diagnose Asthma



Assess Severity



Initiate Medication and Demonstrate Use



Develop Written Asthma Action Plan



Schedule Follow up appointment



Allergy & Asthma Network
Mothers of Asthmatics

Respiratory Inhalers At a Glance ²⁰¹³

Allergy & Asthma Network Mothers of Asthmatics (AANMA) is a 501(c)(3) national nonprofit organization that provides award-winning patient education, advocacy and community outreach services. *Helping families breathe easier*
aanma.org 800.878.4403

DC = DOSE COUNTER
A = ASTHMA
C = COPD

Short-acting bronchodilators relax tight muscles in airways and offer quick relief of symptoms such as coughing, wheezing and shortness of breath for 3-6 hours

ProAir[®] HFA
albuterol sulfate
A
DC



Proventil[®] HFA
albuterol sulfate
A



Ventolin[®] HFA
albuterol sulfate
A
DC



Xopenex HFA[®]
levalbuterol tartrate
A



Long-acting bronchodilators relax tight muscles in airways and offer lasting relief of symptoms such as coughing, wheezing and shortness of breath for at least 12 hours

Arcapta[™] Neohaler[™]
indacaterol inhalation powder
C



Foradil[®] Aerolizer[®]
formoterol fumarate inhalation powder
A C



Serevent[®] Diskus[®]
salmeterol xinafoate inhalation powder
A C
DC



Inhaled corticosteroids reduce and prevent swelling of airway tissue; they do not relieve sudden symptoms of coughing, wheezing or shortness of breath

Asmanex[®] Twisthaler[®]
110 mcg
220 mcg
mometasone furoate inhalation powder
A
DC



Alvesco[®] HFA
80 mcg
160 mcg
ciclesonide
A
DC



Flovent[®] Diskus[®]
50 mcg
100 mcg
250 mcg
fluticasone propionate inhalation powder
A
DC



Flovent[®] HFA
44 mcg
110 mcg
220 mcg
fluticasone propionate
A
DC



Pulmicort Flexhaler[®]
90 mcg
180 mcg
budesonide inhalation powder
A
DC



QVAR[®] (HFA)
40 mcg
80 mcg
beclomethasone dipropionate
A C



Combination medications contain both long-acting bronchodilator and inhaled corticosteroid

Advair Diskus[®]
100/50
250/50
500/50
fluticasone propionate and salmeterol inhalation powder
A C
DC



Advair[®] HFA
45/21
115/21
230/21
fluticasone propionate and salmeterol
A
DC



Breo[™] Ellipta[™]
100/25 mcg
fluticasone furoate and vilanterol
C
DC



Dulera[®]
100/5
200/5
mometasone furoate and formoterol fumarate
A
DC



Symbicort[®] (HFA)
80/4.5
160/4.5
budesonide and formoterol fumarate dihydrate
A C
DC



Anticholinergics relieve cough, sputum production, wheeze and chest tightness associated with chronic lung diseases

Atrovent[®] HFA
tiotropium bromide
C
DC



Combivent[®] Respimat[®]
ipratropium bromide and albuterol
C
DC



Spiriva[®] HandiHaler[®]
tiotropium bromide inhalation powder
C



Tudorza[™] Pressair[™]
acetylcholinesterase inhibitor inhalation powder
C
DC



Reviewed by Dennis Williams, PharmD

Controller Medicines

Take the medicine(s) circled below **every day** even when feeling well.

Take _____ puffs _____ times a day **every day**.

Take ____ Singulair pill(s) or packet **every day**.

Flovent	Pulmicort Respules	Advair	QVAR	Singulair	Dulera
44 	.25 	100 	40 	4 	100 
110 	.50 	250 	80 	5 	200 
220 		500 		10 	

Using a spacer is the best way to get medicine into the lungs and avoid side effects.
Please use the spacer circled below with your inhaler.



[Provider Name/Address/Phone]

Patient Name: _____

Date of Birth: _____

Parent Name: _____

Phone: _____

Cell Phone: _____



MY ASTHMA ACTION PLAN

Use traffic light colors to help control asthma.

Asthma Severity Classification Mild Intermittent Symptoms \leq 2/days/wk; \leq 2 nights/mo. Mild Persistent: Symptoms $>$ 2 days/wk; 3-4 nights/mo. Moderate Persistent Symptoms daily; \geq 5 nights/mo. Severe Persistent Symptoms continual; frequent nights

GREEN = GO!

I Feel Good

- Breathing is good, and
- No cough or wheeze, and
- Can work or play as normal, and

Peak Flow Number is: _____ to _____
80% to 100%



Every-Day Medicines for Long-Term Control & Prevention at home

Medicine	How Much	When

At 5 to 20 minutes before sports or hard play take:

Albuterol _____ sprays, using spacer

YELLOW = TAKE ACTION

I Don't Feel Good



- Congested or Tight Chest or,
- Cough or,
- Wheezing or, Short of breath or fast breathing.

or... Peak Flow Number is: _____ to _____
50% to 70%

Continue the Green Zone Every-Day Medicine, and Start Quick-Relief Medicine (Albuterol) at home or school to stop your asthma from getting worse.

1. Start albuterol (inhaler with spacer, or by machine) now: 1 spray; then wait 1 minute and repeat.
2. If not improved in 30 minutes, repeat albuterol _____ sprays.
3. If improved, then _____ sprays every _____ hours, as needed.

If not improved after taking albuterol _____ times, or if still in Yellow Zone after _____ days, then start _____ And Phone Your Doctor: _____

RED = URGENT-EMERGENCY!

I Feel Awful

- Medicine is not helping or,
- Working hard to breathe or,
- Uncontrolled cough or,
- Severe chest tightness/congestion or,
- Trouble talking or walking (EMERGENCY) or,
- Blue lips/nails or drowsy (EMERGENCY)



or... Peak Flow Number is: _____ to _____
0% to 40%

Take Quick-Relief Medicine and get help from a doctor, NOW!

1. Take albuterol right away: _____ sprays or by machine and
2. Start oral steroid: _____ mg, and
3. Repeat albuterol _____ sprays or by machine, if necessary, AND

Go To Emergency Room / Call 911 or go to your doctor or clinic NOW. Do Not Wait!

If you go to the Emergency Room, make appointment with your doctor the next day.

Authorization and Disclaimer from Parent/Guardian: I request that the school assist my child with the above asthma medications and the Asthma Action Plan in accordance with state laws and regulations. Yes No

My child may carry and self-administer asthma medications and I agree to release the school district and school personnel from all claims of liability if my child suffers any adverse reactions from self-administration of asthma medications. Yes No

Print Parent/Guardian Name: _____ Signature: _____ Date: _____

Health Care Provider: My signature provides authorization for the above written orders. I understand that all procedures will be implemented in accordance with state laws and regulations. Student may carry and self-administer asthma medications: Yes No
(This authorization is for a maximum of one year from signature date.)

Print Provider Name/Credentials: _____ Signature: _____ Date: _____

Provider Phone #: _____ Provider Address: _____

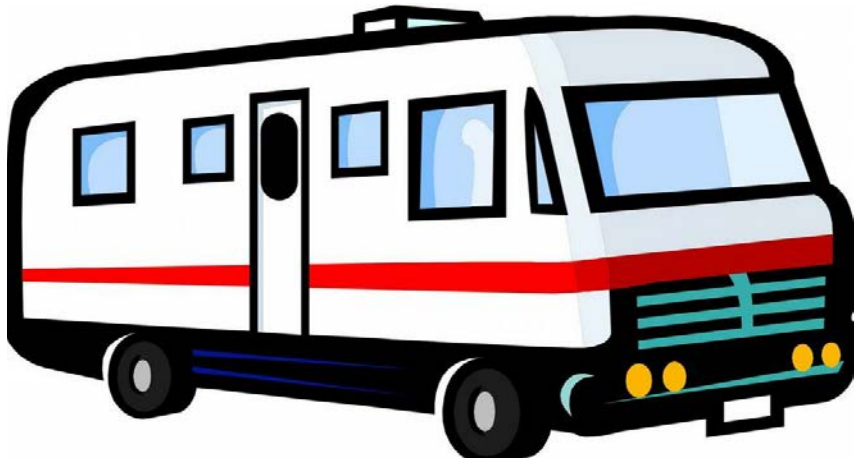


Asthma Plan Adherence

“In 2008 less than half of people with asthma reported being taught how to avoid triggers. Almost half (48%) of adults who were taught how to avoid triggers did not follow most of this advice.”

Where to get Asthma Screenings?

Breathmobiles



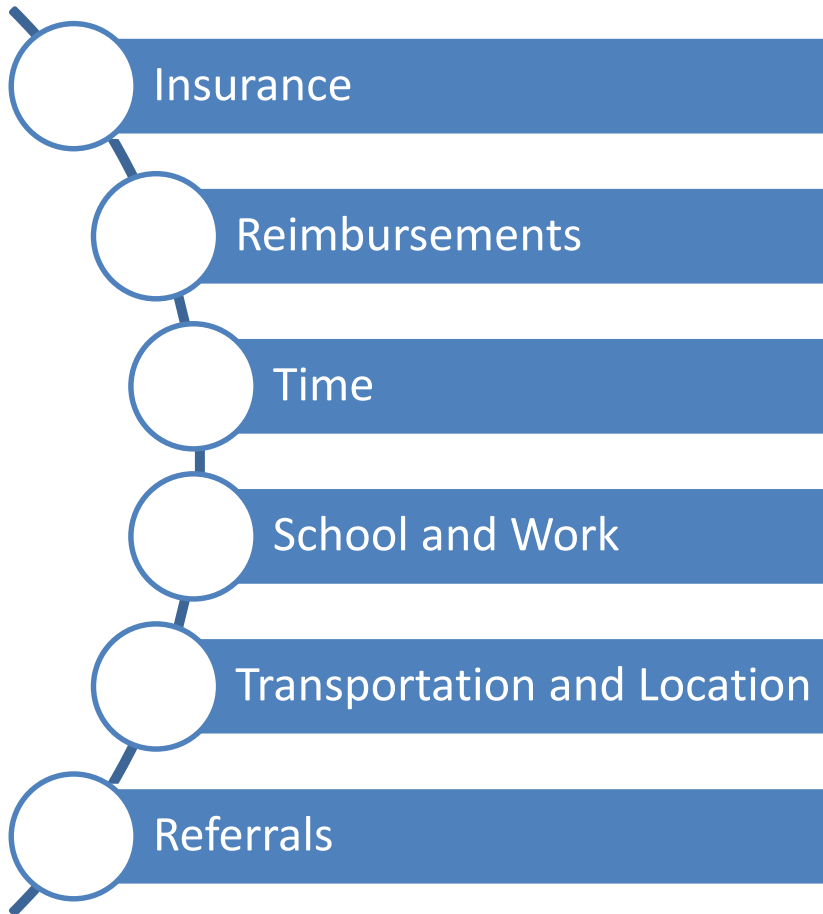
Physician Offices



Where to get Asthma Screenings?



Screening Obstacles



Asthma Review

Asthma is a Chronic Disease.



Asthma Needs to be Managed.



Asthma Management Starts with Asthma Screenings.



Tim Strom

RCP

RRT-NPS

AE-C