

# *Medical Review and Application of Asthma Clinical Practice Guidelines*

NAVY CAPT. HARLAN F. DOREY, M.D.

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# Presenter

## **Navy Capt. Harlan F. Dorey, M.D.**

Senior Medical Officer, General Pediatrics

Branch Health Clinic Iwakuni, Japan

Chair, Primary Care Clinical Community

Defense Health Agency (DHA)

Falls Church, Va.

# Navy Capt. Harlan F. Dorey, M.D.



CAPT Dorey attended the University of Washington with a Naval Reserve Officers Training Corps (NROTC) Scholarship and graduated with degrees in Chemical Engineering and Biochemistry. With a Navy Health Professions Scholarship, he completed his medical degree from George Washington University School of Medicine in 1999.

CAPT. Dorey completed tours with two different infantry battalions at Camp Lejeune, N.C. as a General Medical Officer, before returning to Portsmouth Pediatrics residency, graduating in 2005. He transitioned from Pediatrician to Pediatrics Department Head, and later held different positions including Chair of the Access to Care Committee, Vice-Chair, Executive Committee of the Medical Staff (ECOMS), Medical Executive Committee (MEC), and Director of Expeditionary Medicine, in various Military Training Facilities. (MTFs). He is committed to humanitarian assistance, he volunteered for Pacific Partnership (PP) treating children in Vietnam, Cambodia, Indonesia, Timor Leste, Papua New Guinea, Fiji, Papua New Guinea, and the Philippines.

Navy Capt. Dorey is currently the Chief Medical Officer at Marine Corps Air Station in Iwakuni, Japan. He is also the Chair of the Defense Health Agency Primary Care Clinical Community.

Navy Capt. Dorey is Board-Certified in Pediatrics and qualified as a Surface Warfare Medical Department Officer.

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# Acknowledgement

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**PULMONARY/CRITICAL CARE/SLEEP  
MEDICINE**

**CR DARNELL ARMY MEDICAL CENTER**

# Learning Objectives

At the end of the activity, the learners will be able to:

1. Describe the different classifications of asthma.
2. Explain how different classifications dictate treatment.
3. Evaluate the importance of asthma action plans and ensure they are part of the treatment and education regimen.
4. Identify when to refer asthma patients to a specialist.

# Asthma is...

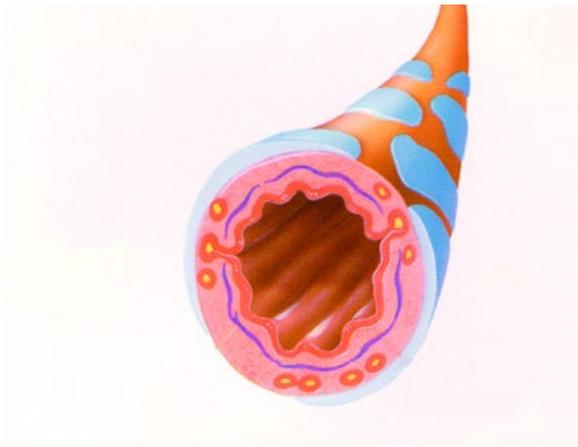
- ▶ A problem frequently managed by the primary care team
  - 6% of all office-based physician visits
- ▶ A disease affecting over 20 million adults and six million children in the US
  - Estimated cost from loss of productivity was \$3.8 billion in 2007
- ▶ A serious medical condition that can be life threatening
  - 1.7 million Emergency Department (ED) visits
- ▶ Deadly, nearly ten people die from it each day in the US

**Anybody can develop asthma at any time**

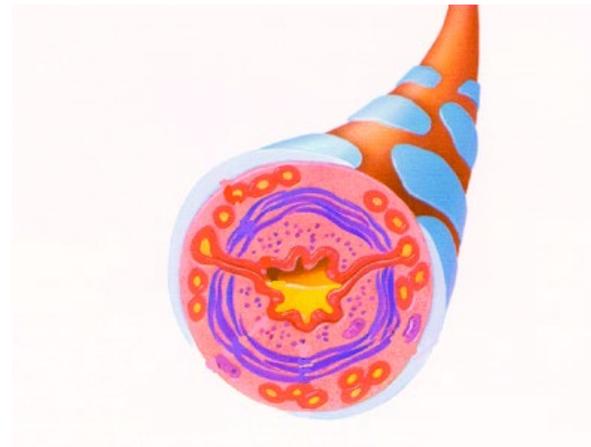
# Asthma is defined as...

**A chronic inflammatory disease of the lungs characterized by episodic and reversible airway obstruction**

Normal Airway



Asthmatic airway during an attack



# Symptoms that suggest an asthma diagnosis

- ▶ Adult: More than six weeks of symptoms of recurrent episodes of cough, wheeze, shortness of breath (SOB)
- ▶ Child: Cough or wheeze for more than two weeks or recurrent episodes of wheeze/significant cough

# Medical History

- ▶ Symptoms:
  - shortness of breath, chest tightness, coughing, wheezing, and sputum production
- ▶ Pattern:
  - onset (exercise, nocturnal), duration, frequency, seasonality
- ▶ Birth and/or family history
- ▶ Co-morbidities
- ▶ Review for conditions that can mimic asthma:
  - pulmonary embolus, heart failure, congenital heart disease, viral syndromes, hypersensitivity pneumonitis
- ▶ Precipitating Triggers:
  - dust mites, allergies, exercise, smoke, weather changes, medications
- ▶ Aggravating factors/risk factors:
  - Overweight/obesity\*
  - Atopy
  - Secondhand smoke (children)
  - Lower respiratory infection
  - Depression (adult)
  - Current smokers
  - Combat deployment

\* Conversely, diets high in fiber and antioxidants (fruits and vegetables) and low in processed foods improve respiratory function

# Physical Exam

- ▶ Vital Signs [tachypnea, hypoxia, hypertension (HTN), Increase Body Mass Index [BMI]]
- ▶ Upper respiratory tract:
  - nasal secretions, mucosal swelling, nasal polyps, enlarged tonsils, cobblestoning of the posterior pharynx
- ▶ Chest:
  - wheezing, prolonged forced exhalation, hyperexpansion of the thorax, use of accessory muscles, chest deformity, crackles, hyperresonance with percussion
- ▶ Skin:
  - atopic dermatitis
- ▶ Extremities:
  - Clubbing, edema, pulses
- ▶ Consider cardiac evaluation of all murmurs or evidence of cardiovascular disease

**Physical exam may be normal!**

# Assess Airway Obstruction (Spirometry)

- ▶ Asthma can be diagnosed based on History & Physical but spirometry **enhances** confidence in the diagnosis
- ▶ Obtain on all patients >5 years of age (who can follow directions)
- ▶ Classic finding:
  - Obstruction that partially or completely normalizes after bronchodilator treatment
  - May be normal
    - ▣ Consider bronchoprovocation challenge testing (adults)
    - ▣ Low threshold to treat symptoms/history (children)

# Assessment and Classification of Asthma Severity

**FIGURE 4–6. 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			
		Intermittent	Persistent		
		Mild	Moderate	Severe	
Impairment	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3–4x/month	>1x/week but not nightly	Often 7x/week
	Short-acting beta <sub>2</sub> -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily, and not more than 1x on any day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> <li>Normal FEV<sub>1</sub> between exacerbations</li> <li>FEV<sub>1</sub> &gt;80% predicted</li> <li>FEV<sub>1</sub>/FVC normal</li> </ul>	<ul style="list-style-type: none"> <li>FEV<sub>1</sub> &gt;80% predicted</li> <li>FEV<sub>1</sub>/FVC normal</li> </ul>	<ul style="list-style-type: none"> <li>FEV<sub>1</sub> &gt;60% but &lt;80% predicted</li> <li>FEV<sub>1</sub>/FVC reduced 5%</li> </ul>	<ul style="list-style-type: none"> <li>FEV<sub>1</sub> &lt;60% predicted</li> <li>FEV<sub>1</sub>/FVC reduced &gt;5%</li> </ul>
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 <sub>1</sub> .			
Recommended Step for Initiating Treatment		Step 1	Step 2	Step 3	Step 4 or 5
(See figure 4–5 for treatment steps.)		In 2–6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.			

Key: FEV<sub>1</sub>, forced expiratory volume in 1 second; FVC, forced vital capacity; ICU, intensive care unit

**Notes:**

- The stepwise approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.
- Level of severity is determined by assessment of both impairment and risk. Assess impairment domain by patient's/caregiver's recall of previous 2–4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and intense exacerbations (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.

(NHBLI, 2007)

# Management Considerations

## ▶ Trial of therapy

## ▶ Referral to specialist

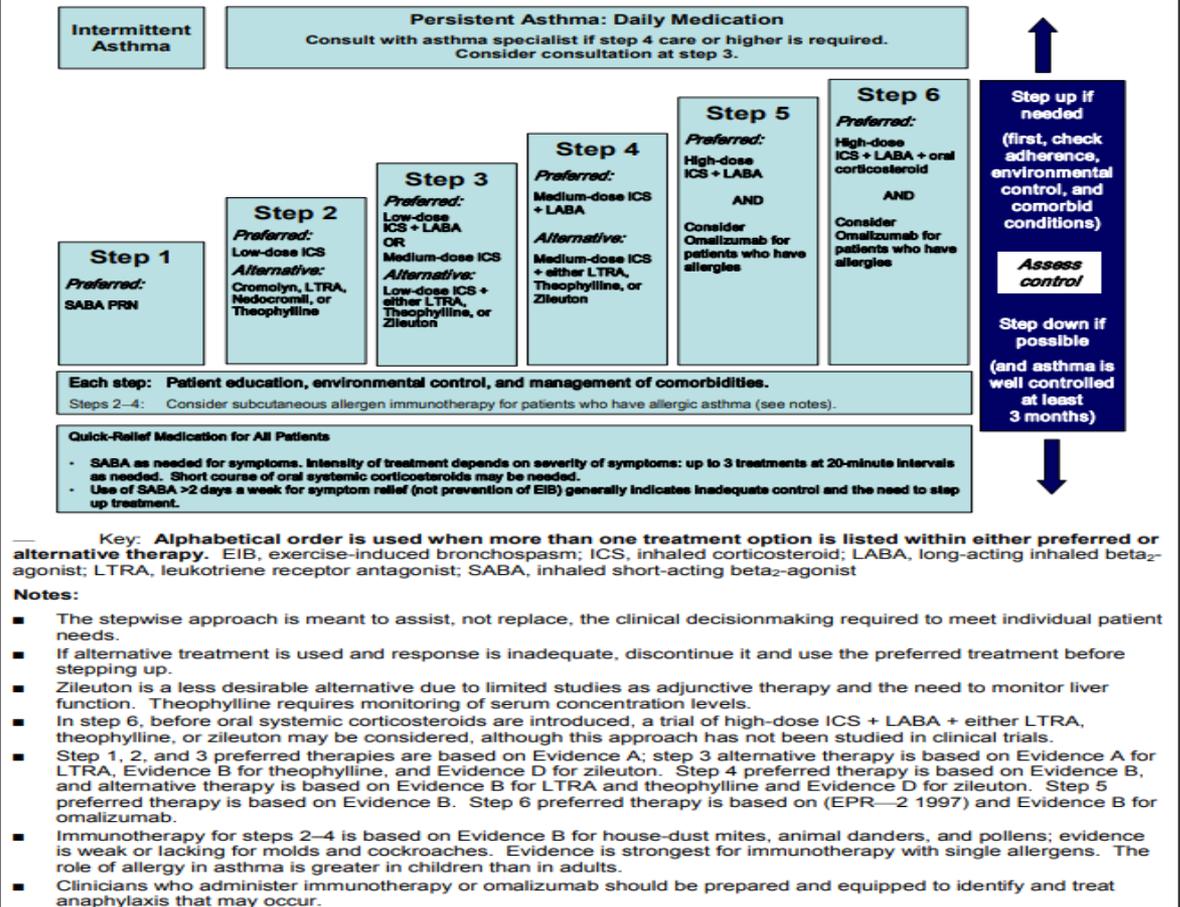
- Previous life-threatening asthma exacerbation
- Not meeting the goals of asthma therapy after 3–6 months of treatment
- If considering three-drug therapy or high dose of inhaled corticosteroid (ICS)
- Requirement of > 2 bursts of oral corticosteroids in one year or had an exacerbation requiring hospitalization
- Other conditions that complicate asthma or its diagnosis (e.g., recurrent sinusitis, nasal polyps, aspergillosis, severe rhinitis, vocal cord dysfunction, gastroesophageal reflux disease [GERD], chronic obstructive pulmonary disease [COPD]) that do not respond to appropriate management
- Additional diagnostic testing is indicated (e.g., allergy skin testing, Immunocap testing, rhinoscopy, complete pulmonary function studies, bronchoscopy)
- Consideration for immunotherapy or specialized medication such as omalizumab
- Requirement for true asthma educator

# Initiation of Therapy

- ▶ Establish the patient-provider partnership
- ▶ Set patient-centered goals of therapy (quality of life/activity driven)
- ▶ **EDUCATE** at diagnosis and at every visit
  - Enlist Nurse Educator or Senior Clinical Registered Nurse (RN) for education
  - Embedded pharmacists can be a resource also
- ▶ Stress patient self-management
- ▶ Consider asthma action plans jointly with the patient/family

# Initiation of Therapy

**FIGURE 4-5. STEPWISE APPROACH FOR MANAGING ASTHMA IN YOUTHS ≥12 YEARS OF AGE AND ADULTS**



(NHBLI, 2007)

# Medications

Drug Class§	Place in Therapy	Clinical Considerations‡
<b>Short-acting beta agonists (SABA)</b> Albuterol (MDI/Neb SOLN) Levalbuterol (MDI/Neb SOLN)	Short-acting agents are used for acute relief of bronchospasm, intermittent asthma, and prevention of exercise induced bronchospasm	<ul style="list-style-type: none"> <li>May cause palpitations, chest pain, rapid heart rate, increased blood pressure, tremor, nervousness</li> <li>Decreases in potassium levels or hyperglycemia have occurred</li> <li>Frequent use of SABA (&gt;2 days/week) may indicate uncontrolled asthma and the need to intensify drug therapy regimen</li> </ul>
<b>Inhaled corticosteroids (ICS)</b> Beclomethasone (MDI) Budesonide (DPI/Neb SOLN) Ciclesonide (MDI) Flunisolide (MDI) Fluticasone (MDI/DPI) Mometasone (MDI/DPI)	Considered first line agents for maintenance treatment of asthma	<ul style="list-style-type: none"> <li>Local adverse effects include oral candidiasis, dysphonia, and reflex cough/bronchospasm. Advise patients to rinse mouth and spit after use of ICS</li> <li>Prolonged use may slow growth rate in children and adolescents</li> <li>Higher doses have been associated with adrenal suppression, glaucoma, cataracts, skin thinning, bruising, osteoporosis</li> </ul>
<b>Long-acting beta agonists (LABA)</b> Salmeterol (DPI) Olodaterol (SMI)* Indacaterol (DPI)* Formoterol (Neb SOLN)* Arformoterol (Neb SOLN)*	Preferred add-on agents to inhaled corticosteroids	<ul style="list-style-type: none"> <li>See comments for SABA</li> <li>Because of the risk of asthma-related death and hospitalization, use of a LABA for the treatment of asthma without concomitant use of a long-term asthma control medication, such as an inhaled corticosteroid, is contraindicated</li> </ul>
*Approved for maintenance therapy for COPD; at present, they are not approved for use in asthma.		
<b>Combination ICS/LABA</b> Budesonide/formoterol (MDI) Fluticasone/salmeterol (MDI/DPI) Mometasone/formoterol (MDI) Fluticasone/vilanterol (DPI)	Fixed-dose combination ICS/LABA is preferred over using both drugs as separate inhalers to encourage adherence to therapy	See comments for ICS and beta agonists  (NHBLI, 2007)

# Medications

Drug Class§	Place in Therapy	Clinical Considerations‡
<p><b>Leukotriene Modifiers</b></p> <p><b>Montelukast (tablets, chewable tablet, oral granules)</b></p> <p><b>Zafirlukast tablets</b></p> <p><b>Zileuton (immediate-release and extended-release tablets)</b></p>	<ul style="list-style-type: none"> <li>■ Monotherapy may be considered as an alternative (not preferred) to ICS for mild persistent asthma</li> <li>■ May be used as an alternative (not preferred) to a LABA for add on therapy to ICS</li> <li>■ Montelukast may be used for prevention of exercise-induced bronchospasm (zafirlukast and zileuton are not FDA approved)</li> </ul>	<ul style="list-style-type: none"> <li>■ Neuropsychiatric events (e.g., suicidal ideation, depression, agitation, aggression, anxiousness, irritability, restlessness, dream abnormalities, hallucinations, and insomnia) have been reported.</li> <li>■ Rare cases of systemic eosinophilia, eosinophilic pneumonia, or clinical features of vasculitis consistent with eosinophilic granulomatosis with polyangiitis (formerly known as Churg-Strauss) have occurred with montelukast and zafirlukast and may be associated with the reduction of oral steroid therapy.</li> <li>■ Serious hepatic adverse events have been reported with zafirlukast. Use in patients with hepatic impairment, including hepatic cirrhosis is contraindicated.</li> <li>■ Zileuton may result in increased hepatic transaminases and liver injury. Zileuton is contraindicated in patients with active liver disease or persistent ALT elevations of 3 or more times the upper limit of normal</li> <li>■ Zileuton is not indicated in children under the age of 12</li> <li>■ Montelukast chewable tablets contain phenylalanine</li> <li>■ Do not abruptly substitute leukotriene modifiers for inhaled or oral corticosteroids; reduce steroids gradually</li> </ul>
<p><b>Long-acting anticholinergics (LAMA)</b></p> <p><b>Tiotropium (SMI/DPI)</b></p> <p><b>Note: Tiotropium is the only LAMA approved for asthma. Only the SMI is approved for use in asthma in patients 6 years of age and older</b></p>	<ul style="list-style-type: none"> <li>■ May be considered as an alternative for add-on to ICS if unable to use LABAs</li> <li>■ May be used as add-on for those who remain symptomatic despite maximal therapy with ICS/LABA (recommend referral to specialist)</li> </ul>	<ul style="list-style-type: none"> <li>■ Maximum benefits may take up to 4 to 8 weeks of dosing</li> <li>■ May cause dizziness and blurred vision</li> <li>■ Caution patient to avoid getting product in eyes; temporary blurred vision may result</li> <li>■ Use with caution in patients with narrow angle glaucoma, prostatic hyperplasia, or bladder neck obstruction as these conditions may worsen</li> <li>■ Use with caution in patients with moderate to severe renal impairment (CrCl ≤60 mL/minute); monitor patient for anticholinergic adverse events.</li> <li>■ Contraindicated in patients who have had hypersensitivity to ipratropium (NHBLI, 2007)</li> </ul>

# Spacers



<https://dpi.wi.gov/sites/default/files/imce/sspwp/pdf/snabcsfasthma.pdf>, n.d.



- ▶ Attach the inhaler to spacer & shake well
- ▶ Deep breath in and out
- ▶ Put the spacer in the mouth & spray
- ▶ Take a slow, deep breath through the mouth (3-5 seconds)
- ▶ Hold the breath for up to ten seconds (if possible)
- ▶ Can take a second breath on the same puff
- ▶ Breathe out through pursed lips
- ▶ Wait one minute and repeat (for relievers)

# Asthma Education

- ▶ Nature of asthma
- ▶ Goals of treatment
- ▶ Medication use (what it does, how to use it, side effects)
- ▶ How to identify loss of control and steps to regain control
- ▶ When and how to seek emergency care
- ▶ Asthma action plan (all patients should have one)
  - Post asthma action plan on refrigerator
- ▶ Care management team approach

# Manage Factors That Can Influence Asthma Control

## ▶ Multidisciplinary Care Management:

- Cognitive Behavioral Therapy
- Triggers identification and control/reduce exposure
- Comorbidities (Identification and management)
  - ❑ Obstructive Sleep Apnea (OSA)
  - ❑ GERD
  - ❑ Allergic and non-allergic rhinitis
  - ❑ Obesity
  - ❑ Cardiac disease

## ▶ Lifestyle Changes:

- Smoking cessation
- Regular exercise
- Weight management
- Avoidance (if sensitive)
  - ❑ Aspirin/Non-steroidal anti-inflammatory drugs (NSAIDs)
  - ❑ Non-selective beta blockers
  - ❑ Sulfite containing foods/beverages

## ▶ Psychosocial considerations:

- Financial burden of medication cost
- Lost time from work
- Impact on home life
- Frequency of exacerbations

# Assessment of Asthma Control

Table B-2: Asthma Control (All Ages)<sup>3</sup> [138,139]

Components of Control		Assessing Asthma Control and Adjusting Therapy All Ages	
		Controlled	Not Controlled
<b>Impairment</b> Normal FEV <sub>1</sub> /FVC: ≤ 19 yr – 85% 20-39 yr – 80% 40-59 yr – 75%	Daytime Symptoms	≤ 2 brief symptomatic episodes per week	> 2 symptomatic episodes per week
	Nighttime awakening	≤ 2 nights/month	> 2 nights/month
	Interference with normal activities	None	Some Limitation
	SABA use for symptom control (not for prevention of EIB)	≤ 2 treatments/week	> 2 treatments/week
	Spirometry (if obtained) *predicted/personal best	FEV <sub>1</sub> ≥ 80% AND FEV <sub>1</sub> /FVC normal	FEV <sub>1</sub> ≤ 80% OR abnormal FEV <sub>1</sub> /FVC
	ACT score ages ≥ 4 years	≥ 20	≤ 19
<b>Risk</b>	Exacerbation requiring oral systemic steroids	0-1x/year	≥ 2/year
	Progressive loss of lung function	Evaluation requires long-term follow-up and is best assessed by spirometry conducted at regular intervals (at least every 1-2 years)	
	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	
<b>Action for Treatment</b>	Maintain current therapy step Follow up every 1-6 months Consider step down	Step up therapy; Reevaluate in 2-6 weeks <ul style="list-style-type: none"> <li>■ Consider a 5 to 10-day course of oral steroids if acute exacerbation and reevaluate in 1-2 weeks</li> <li>■ If persistently uncontrolled or worsening, consider referral to specialist</li> </ul>	

Abbreviations: ACT: Asthma Control Test; EIB: exercise-induced bronchospasm; FEV<sub>1</sub>/FVC: forced expiratory volume/forced vital capacity; SABA: short-acting beta agonist

# Asthma Control Tests: Objective Tools

## TRACK™ Test for Respiratory and Asthma Control in Kids

**Who should use TRACK?**  
This simple test can help determine if your child's breathing problems are not under control. The test was designed for children who

- Are under 5 years of age **AND**
- Have a history of 2 or more episodes of wheezing, shortness of breath, or cough lasting more than 24 hours **AND**
- Have been previously prescribed bronchodilator medications, also known as quick-relief medications (e.g. albuterol, Ventolin®, Provent®; Mxata®, ProAir®, ProAir® HFA, or Xopenex®), for respiratory problems **OR** have been diagnosed with asthma.

For kids under 5 years of age

### How to take TRACK

- Step 1:** Make a check mark in the box below each of your selected answers.  
**Step 2:** Write the number of your answer in the score box provided to the right of each question.  
**Step 3:** Add up the numbers in the individual score boxes to obtain your child's total score.  
**Step 4:** Take the test to your child's health care provider to talk about your child's total TRACK score.

Score

1. During the **past 4 weeks**, how often was your child bothered by breathing problems, such as wheezing, coughing, or shortness of breath?

Not at all	Once or twice	Once every week	2 or 3 times a week	4 or more times a week
20	15	10	5	0

2. During the **past 4 weeks**, how often did your child's breathing problems (wheezing, coughing, shortness of breath) wake him or her up at night?

Not at all	Once or twice	Once every week	2 or 3 times a week	4 or more times a week
20	15	10	5	0

3. During the **past 4 weeks**, to what extent did your child's breathing problems, such as wheezing, coughing, or shortness of breath, interfere with his or her ability to play, go to school, or engage in usual activities that a child should be doing at his or her age?

Not at all	Slightly	Moderately	Quite a bit	Extremely
20	15	10	5	0

4. During the **past 3 months**, how often did you need to treat your child's breathing problems (wheezing, coughing, shortness of breath) with quick-relief medications (albuterol, Ventolin®, Provent®, Mxata®, ProAir®, Xopenex®, or ProAir® Mist)?

Not at all	Once or twice	Once every week	2 or 3 times a week	4 or more times a week
20	15	10	5	0

5. During the **past 12 months**, how often did your child need to take oral corticosteroids (prednisone, prednisolone, Orencia®, Pralor®, or Decadron®) for breathing problems not controlled by other medications?

Never	Once	Twice	3 times	4 or more times
20	15	10	5	0

The brands mentioned herein are trademarks of their respective owners and are not trademarks of the AstraZeneca group of companies. The numbers of these brands are not affiliated with and do not endorse AstraZeneca or its products.

Please see reverse side for an explanation of what your child's total TRACK score means.

Total

## Childhood Asthma Control Test for children 4 to 11 years old.

### Know the score.

This test will provide a score that may help your doctor determine if your child's asthma treatment plan is working or if it might be time for a change.

### How to take the Childhood Asthma Control Test

- Step 1:** Let your child respond to the first four questions (1 to 4). If your child needs help reading or understanding the question, you may help, but let your child select the response. Complete the remaining three questions (5 to 7) on your own and without letting your child's response influence your answers. There are no right or wrong answers.  
**Step 2:** Write the number of each answer in the score box provided.  
**Step 3:** Add up each score box for the total.  
**Step 4:** Take the test to the doctor to talk about your child's total score.

**19 or less**  
If your child's score is 19 or less, it may be a sign that your child's asthma is not controlled as well as it could be. No matter what the score, bring this test to your doctor to talk about your child's results.

### Have your child complete these questions.

1. How is your asthma today?

Very bad	Bad	Good	Very good
1	2	3	4

2. How much of a problem is your asthma when you run, exercise or play sports?

It's a big problem, I can't do what I want to do. It's a problem and I don't like it.	It's a little problem but it's okay.	It's not a problem.
1	2	3

3. Do you cough because of your asthma?

Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.
1	2	3	4

4. Do you wake up during the night because of your asthma?

Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.
1	2	3	4

### Please complete the following questions on your own.

5. During the **last 4 weeks**, on average, how many days per month did your child have any daytime asthma symptoms?

Not at all	1-3 days/mo	4-10 days/mo	11-18 days/mo	19-24 days/mo	Everyday
3	4	3	2	1	0

6. During the **last 4 weeks**, on average, how many days per month did your child wheeze during the day because of asthma?

Not at all	1-3 days/mo	4-10 days/mo	11-18 days/mo	19-24 days/mo	Everyday
3	4	3	2	1	0

7. During the **last 4 weeks**, on average, how many days per month did your child wake up during the night because of asthma?

Not at all	1-3 days/mo	4-10 days/mo	11-18 days/mo	19-24 days/mo	Everyday
3	4	3	2	1	0

Please turn this page over to see what your child's total score means.

791 x 1024

FOR PATIENTS:

## Take the Asthma Control Test™ (ACT) for people 12 yrs and older. Know your score. Share your results with your doctor.

- Step 1 Write the number of each answer in the score box provided.  
Step 2 Add up each score box for your total.  
Step 3 Take the test to the doctor to talk about your score.

1. 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
SCORE									

2. During the past 4 weeks, how often have you had shortness of breath?

More than once a day	1	Once a day	2	2 to 3 times a week	3	Once or twice a week	4	Not at all	5
SCORE									

3. 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 a week	4	Not at all	5
SCORE									

4. 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
SCORE									

5. How would you rate your asthma control during the past 4 weeks?

Not controlled at all	1	Poorly controlled	2	Somehow controlled	3	Well controlled	4	Completely controlled	5
SCORE									

TOTAL

If your score is 19 or less, your asthma may not be controlled as well as it could be. Talk to your doctor.

FOR PHYSICIANS:

### The ACT is:

- Clinically validated by spirometry and specialist assessment
- Supported by the American Lung Association
- A self-administered, brief, 5-question assessment that can help you assess your patients' asthma during the past 4 weeks

Reference: 1. Nathan RA et al. J Allergy Clin Immunol. 2004; 113:596S.

# Asthma Action Plans

**MEDICAL RECORD - SUPPLEMENTAL MEDICAL DATA**  
 For the use of this form, see AR 40-400; the proponent agency is The Office of the Surgeon General

REPORT TITLE: **ASTHMA ACTION PLAN** DTSS APPROVED (DATE): 15 Dec 99

Personal Best: GREEN - "Good To Go" Breathing Good, No Cough or Wheeze. Can work or play, Sleep through the night. Add'l Symptoms:

Triggers: \_\_\_\_\_  
 Trigger Management: \_\_\_\_\_  
 Follow-Up Appt (Date/Time): \_\_\_\_\_ With: \_\_\_\_\_  
 Controllers: \_\_\_\_\_ Dose: \_\_\_\_\_ Frequency: \_\_\_\_\_  
 Use EVERY day to prevent attacks

OPTIONAL: Your quick reliever medicine is: \_\_\_\_\_  
 Take reliever medicine 20 minutes before exercise.  
 Remember to use your SPACER with all of your Metered Dose Inhalers

Continue GREEN ZONE medications  
**TAKE RELIEVER MEDICINE 2-4 PUFFS EVERY 20 MINUTES UP TO ONE HOUR**  
 OR nebulizer unit dose every 20 minutes x 3  
 THEN, recheck symptoms/peak flow:  
 If still YELLOW  
 Increase Reliever 2-4 puffs every 4 hours for \_\_\_\_\_ days  
 Add \_\_\_\_\_  
 Provider Recommendations: \_\_\_\_\_

OPTIONAL: Call health care provider for an appointment. Phone #: \_\_\_\_\_

50-80% of personal best Peak Flow: \_\_\_\_\_ to \_\_\_\_\_  
**RED - STOP - DANGER**  
 SIGNS/SYMPTOMS: Medicine not helping, can't talk or eat/drink well, Lips turn blue or gray  
**TAKE RELIEVER MEDICINE 4-8 PUFFS EVERY 20 MINUTES X 3**  
 OR NEBULIZER UNIT DOSE EVERY 20 MINUTES X 3  
**WHILE CALLING 911 OR IN ROUTE TO THE EMERGENCY ROOM**  
 Provider Recommendations: \_\_\_\_\_  
 Upon admission to EMERGENCY Department or Inpatient care, Asthma Action plan is placed on hold.

PREPARED BY (Signature & Title) \_\_\_\_\_ DEPARTMENT/SERVICE/CLINIC \_\_\_\_\_ DATE \_\_\_\_\_

PATIENTS IDENTIFICATION (For a typed or written entries give: Name - last, first, middle; grade, date; hospital or medical facility)

HISTORY/PHYSICAL  FLOW CHART  
 OTHER EXAMINATION OR EVALUATION  OTHER (Specify) Action Plan  
 DIAGNOSTIC STUDIES  
 TREATMENT

DA FORM 4700 FEB 2003

**Asthma Action Plan**  
 \*Check Please allow this child to use Albuterol MDI as indicated below; authorized for 1 year

Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_ Contact info: \_\_\_\_\_  
 You have: \_\_\_\_\_  
 USE the below 3 Traffic light colors to help learn about your asthma medicines and when you need to seek help.

**GREEN ZONE - Good Control** Prevention Medicines - Use as instructed

Child has any of these:  
 • Breathing is good  
 • No cough or wheeze  
 • Can work/play  
 • Sleeps all night

Medicine:	How much to take:	When to take it:
Albuterol	2 puffs	every 4 hrs prn cough/sob
Flovent 110 mcg/pf	1 puff	two times a day

20 minutes before sports use this medicine if you have exercise related asthma triggers:  
 \_\_\_\_\_ to \_\_\_\_\_ Albuterol **2** puffs \_\_\_\_\_

**YELLOW ZONE - Rule of "4's"**

Child has any of these:  
 • Cough  
 • Wheeze  
 • Tight chest  
 • Wakes up at night

Medicine:	How much to take:	When to take it:
Albuterol	4 puffs	4 times a day for 4 days
Flovent 110 mcg/pf	2 puffs	twice a day for 4 days

\* If you DID NOT feel better in 20 to 60 mins follow the "4's" rule  
 \*\* If you remain in the \_\_\_\_\_ with these symptoms for 12 to 24 hours, call your doctor. \*\*\* School Nurses: If no improvement noted, notify parents and EMS. \*\*\* Also LET US KNOW if you are in the \_\_\_\_\_ more than twice a week!

**RED ZONE - Call DOCTOR or go to E.R. NOW!** Take the medicines in YELLOW ZONE and follow the directions below until you see the doctor.

Child has any of these:  
 • Medicine not helping  
 • Breathing hard & fast  
 • Nose opens wide  
 • Can't walk or talk well  
 • Ribs show

Medicine:	How much to take:	When to take it:
Albuterol	6 puffs	every 20 minutes

En Route to ED  
**call 911** Lips are bluish - Getting worse fast - Struggling to breathe - Can't talk or cry because of hard breathing - Has passed out

Triggers:  Common colds  Animals  Dust  Smoke  Weather changes  Seasonal Allergies  Others: \_\_\_\_\_

Action Plan prepared by: \_\_\_\_\_ Date: \_\_\_\_\_ Follow up: \_\_\_\_\_  
 We recommend that you visit us at least yearly to update this asthma action plan even if you are well controlled; ALWAYS take inhaled medications with proper inhaled spacer, and monitor your peak flows. KEEP immunizations updated, especially yearly FLU vaccine as you are requiring more than 1 Albuterol refill yearly, please call us for appt.

LAST UPDATED FEB 2010 PATIENT COPY SCHOOLDAY CARE COPY QUART COPY

6 Available at: [https://www.gmo.amedd.army.mil/general\\_documents/ActionPlan.html](https://www.gmo.amedd.army.mil/general_documents/ActionPlan.html)

# Asthma Care in Pregnancy

- ▶ Asthma care should be integrated with obstetrics care
- ▶ Asthma may change!
  - 1/3 get better
  - 1/3 get worse
- ▶ Diagnose and treat asthma as if the patient is not pregnant
- ▶ Continue stable asthma medication (Categories A, B and C)
- ▶ Monitor lung function regularly (spirometry is preferred, but peak flow is acceptable)

# Key Takeaways

- ▶ **All persistent asthmatics should have inhaled corticosteroids as part of the treatment plan.**
- ▶ Differentiating intermittent from persistent asthmatics dictates treatment regimens and is directly linked to improved outcomes.
- ▶ Spirometry enhances confidence in an asthma diagnosis.
- ▶ Following asthma management guidelines, with careful follow-up of patients and stepping-down therapy when able, improves outcomes.
- ▶ Asthma education, and a take-home asthma action plan, directly improves compliance and decreases emergency department visits.

# Questions

# References

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2. Search for your course using the **Catalog**, **Calendar**, or **Find a course** search tool.
3. Click on the REGISTER/TAKE COURSE tab.
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4. Follow the onscreen prompts to complete the post-activity assessments:
  - a. Read the Accreditation Statement
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  - c. Take the Posttest
5. After completing the posttest at 80% or above, your certificate will be available for print or download.
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