



# **NEW TOOLS FOR ASTHMA MANAGEMENT**

*Asthma Can Be Controlled. Expect Nothing Less.*

January, 2006

*Dear Healthcare Provider:*

*New tools for asthma management are available! School-aged children may carry asthma medications in school. Many health plans are focusing on quality measures in asthma management. The Provider's Tool Kit, developed by the Arizona Asthma Coalition, contains updates on asthma policy and tools you can use in your practice.*

*The Provider's Tool Kit contains some key points about asthma. It is not intended to be comprehensive, nor does it cover all aspects of asthma care. In addition to the sample patient information in the Provider's Tool Kit, more tools, including action plans, contact forms, the Pediatric Asthma Score and other useful information is available to you on our website at [www.azasthma.org](http://www.azasthma.org).*

*Although the Provider's Tool Kit is free to you, we have enclosed a donation envelope. The Arizona Asthma Coalition depends on a variety of funding sources, enabling the Coalition to develop patient and provider education materials and to advocate for better care and management for people living with asthma in Arizona. The Coalition is comprised of over one hundred dedicated volunteers, who donate their expertise and time. By making a donation to the Coalition, you will help us to continue to be able to provide these services to you and your patients. Please consider donating as generously as you can.*

*Sincerely,*



*Peggy Stemmler, MD*

*Chair, Arizona Asthma Coalition*

*Support for this project came from the Steps To A Healthier Arizona Initiative, GlaxoSmithKline, Inc. and the Arizona Department of Health Services, Office for Children with Special Health Care Needs.*

# Key Points in Diagnosing and Managing Asthma in Infants and Children Under Five Years of Age

## Making the diagnosis of asthma

Making the accurate diagnosis of asthma is important, because appropriate treatment is safe and effective. Undiagnosed and uncontrolled asthma symptoms are associated with significant morbidity and expense.

Diagnosis of asthma in children 5 years of age and younger is made based on symptom history, medical history, exclusion of alternate diagnoses, physical examination and clinical judgment regarding the response to treatment. Objective tests are not available.

Suspect asthma in infants presenting with wheezing at 2 to 5 months of age with viral respiratory infections. A typical pattern is recurrent exacerbations of cough and wheeze of varying severity and duration separated by long symptom-free intervals. The typical wheeze is a high-pitched, musical or polyphonic sound and is heard during expiration.

The likelihood that an alternate diagnosis exists is greater the younger the child presents with these symptoms. Differential diagnoses to consider include anatomic abnormality, aspiration of gastroesophageal reflux, bronchopulmonary dysplasia (chronic lung disease), cardiac abnormality with congestive heart failure, cystic fibrosis, foreign body aspiration, immunodeficiency, immotile cilia, infections, sinusitis and tracheobronchomalacia. Many of these conditions can be suspected on history and physical exam.

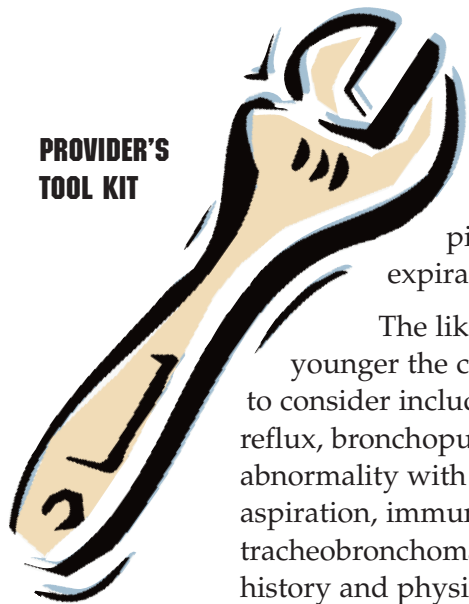
## Treatment of asthma

The controversy in young children is when to start inhaled corticosteroids (ICS). In this decision, the clinician should consider severity of asthma and also distinguish those patients with intermittent wheezing versus those with a tendency toward atopy. According to the National Asthma Education and Prevention Program (NAEPP) Expert Panel Report of 2002 you should consider initiation of long-term control therapy with an inhaled corticosteroids (ICS) for children 5 years of age and younger, if the child has more than two episodes per week requiring treatment

**OR**

- Four or more episodes of wheeze in the past year lasting more than one day and affecting sleep with risk factors for asthma
- parental history of asthma, personal history of atopic dermatitis

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- Two or more of the following: physician diagnosed allergic rhinitis, wheezing apart from colds and peripheral eosinophilia 4 %
- Severe exacerbations of asthma less than 6 weeks apart (where severe is defined as needing B-agonist more often than every 4 hours apart for 24 hours).

Classify the severity of asthma. Patients with persistent asthma are started on a high dose of steroids based on their asthma severity classification: *mild* persistent, *moderate* persistent or *severe* persistent.

## Ongoing Management

A follow-up visit should be scheduled two to four weeks after the initial diagnosis and thereafter every 2-3 months. Improved outcomes are achieved when the treatment plan is evaluated and enforcement of information occurs at every encounter, whether it is a well checkup or a visit for illness. Follow-up visits are important for monitoring asthma control, continued asthma education, goal setting and ongoing development of a management plan. Assess for conditions triggering asthma (i.e., sinusitis, GERD, allergic rhinitis).

Assess asthma control by asking about:

- activity levels (including exercise)
- asthma exacerbations
- Rules of 2's
  1. more than two instances of rescue medication use in past week,

**OR**

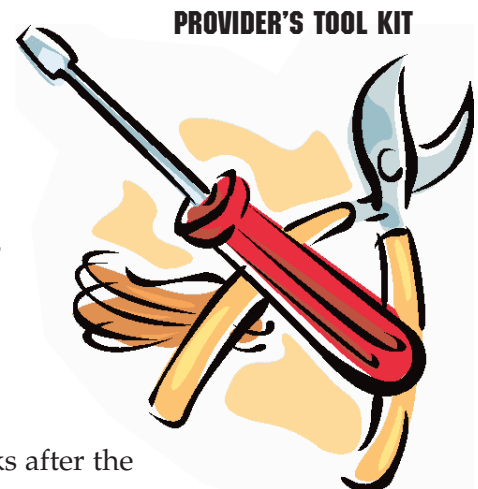
  2. more than two night time awakenings requiring rescue medication in past month,

**OR**

  3. more than two rescue medication refills in the past year.

## Step up and Step down therapy (to tailor medication therapy for each asthmatic)

Step up therapy when asthma is not controlled. Patients need further evaluation and medical management. Step down therapy when asthma is well controlled to minimize adverse effects of medications. Start by decreasing the inhaled steroid dose. Always keep the inhaled steroid going, just at lower doses. Monitor effect of change of therapy.



### Assess asthma control by asking about:

- Activity levels (including exercise)
- Asthma exacerbations
- Rules of 2's
  1. more than **two** instances of rescue medication use in past week, OR
  2. more than **two** night time awakenings requiring rescue medication in past month, OR
  3. more than **two** rescue medication refills in the past year.

## Action plans & preventing hospitalizations

All patients diagnosed with asthma should have a written action plan. Using the action plan, the family knows how to monitor their child's asthma and knows what to do if their asthma flares. When their asthma is not controlled, based on their individual plan, they may need to increase their maintenance medications, or may need to contact their provider.

### When to refer?

Always consider referral for asthma education when such a resource is available to you. Specialists who treat asthma include pulmonologists and allergists. All persistent asthmatics should be referred for skin testing, since up to 70% of children diagnosed with persistent asthma have allergies that may be triggering their asthma.

Patients diagnosed with asthma should be referred to the specialist if: there has been a life-threatening asthma episode, the asthma diagnosis is uncertain, asthma is not controlled despite treatment for 3-6 months, the patient has recurrent bouts of sinusitis, or there are two or more asthma episodes in one year requiring systemic corticosteroids.



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## Key Points in Diagnosing and Managing Children over Five and Adult Asthma Patients

### Asthma Diagnosis:

#### CLINICAL FINDINGS CONSISTENT WITH ASTHMA:

- Presents with one or more of the following symptoms:
  - cough (early morning or cough following exercise)
  - chest tightness
  - wheezing
  - dyspnea
- Clues supporting asthma
  - relief with inhaled beta agonist
  - fits a pattern (seasonal symptoms, symptoms around certain triggers, etc)

### Objective findings confirming asthma

- Spirometry - change of 12% in FEV1 pre/post bronchodilator with at least a 200cc increase in FEV1.

## Investigating and ruling out the differential diagnosis:

### **COPD (CHRONIC OBSTRUCTIVE PULMONARY DISEASE)**

- Look for a history of tobacco use/exposure
- Note that patients may have an asthma component along with COPD and need to be treated for both

### **CHF (CONGESTIVE HEART FAILURE)/ANGINA/CAD CORONARY ARTERY DISEASE)**

- Identify risk factors for CAD
- Look for pertinent clinical clues
  - CAD may present with orthopnea
  - Right-sided CHF may have lower extremity swelling
  - Chest tightness (not relieved with albuterol), nausea/diaphoresis, and upper left extremity numbness are c/w angina
- Patients may have cardiogenic asthma as well; treating for CHF will resolve symptoms.
- *Work-up/rule-out these cardiac diagnoses with EKG/Stress Testing/Cardiology Referral*

### **PULMONARY EMBOLISM (PE):**

- Identify risk factors for PE
  - immobilization/surgery within the past 3 months
  - history of stroke
  - prior PE/malignancy
- Common symptoms of PE include presentation with dyspnea (73%), pleuritic pain (66%), cough (37%), hemoptysis (13%)
- Common physical findings c/w possible PE include tachypnea (70%), rales (51%), tachycardia (30%), S4 (24%), accentuated P2 (23%), and fever (14%)
- *Work-up/rule-out PE with pulmonary angiogram vs. ventilation perfusion lung scanning*

### **VOCAL CORD DYSFUNCTION (VCD)/LARYNGEAL DYSFUNCTION**

- Can occur in combination with asthma or alone
- Clues suggesting VCD
  - No response to regular asthma medications
  - Beta-agonist use may actually increase symptoms

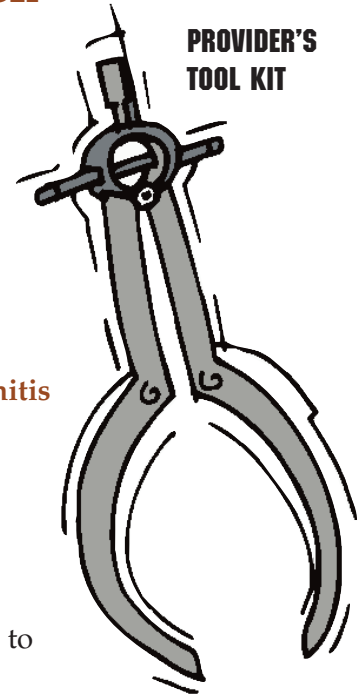
## Treatment for Patients Diagnosed with Asthma: Stepwise Therapy

- Start with high dose medications based on asthma classification
- When controlled (based on clinical rules of 2/activity level/spirometry results) decrease medication dose (i.e. 25% reduction) with follow up every 2-3 months.



## Important Questions to ask with each follow up visit:

- Discuss the rules of 2:
  - Use of rescue medication (albuterol) over 2 times a week
  - Night-time awakenings requiring rescue medication over 2 times a month
  - Use of more than 2 canisters of rescue medication yearly
- Assess patient activity level
- Identify comorbid conditions and treat as necessary:  
Gastroesophageal Reflux (GERD), sinusitis, allergic rhinitis



## When to Refer to a Specialist (pulmonologist/allergist)

- There has been a life-threatening asthma episode
- All patients diagnosed with severe persistent asthma
- Two or more asthma episodes in one year needing steroids to gain control
- Not clear that asthma is the only reason for breathing problems
- Asthma symptoms persist despite treatment for 3-6 months
- Repeated sinus infections; associated nasal symptoms not controlled
- Persistent Asthma associated with aeroallergen triggers
- Possibility that triggers for asthma are occupational related

## Key Points on Steroids and Asthma

Below are some common myths families have about using steroids and some facts you can present to them to help dispel these myths.

**Myth:** *Steroids should be the last resort in treating persistent asthma.*

**Fact:** *NO. Steroids are now the first-line choice for long-term treatment of persistent asthma, regardless of age or weight.*

The Expert Panel of the National Asthma Education and Prevention Program (NAEPP) changed their recommendations on the use of inhaled corticosteroids (ICS) in the 2002 Update of the Asthma Guidelines to include evidence from multiple studies showing ICS are more effective than any



other agent in long-term asthma outcomes in children with mild or moderate persistent asthma. As a result, ICS are now preferred therapy for all persistent asthma (including those under age 5 years).

**Myth:** *Steroids make you "bulk up" and can't be used in athletes playing competitive sports.*

**Fact:** *NO. There are different types of "steroids."*

The steroids used to treat inflammation in asthma (and other diseases) are more accurately called **corticosteroids**, which are similar to natural steroids made by the body in the cortex of the adrenal gland. The steroids publicized in the media are **anabolic steroids** and are similar to male hormones. When used by athletes, these anabolic steroids will build muscle and can be abused to enhance athletic performance.

Testing for steroid use in sports looks for anabolic steroids, not corticosteroids used in asthma. There is no ban on ICS by the NCAA or the IOC (International Olympic Committee), although the IOC does require prior notification if an athlete is on steroids for asthma.

**Myth:** *Steroids will stunt growth.*

**Fact:** *Not if used properly.*

For most children using ICS for asthma, height will not be affected. Strong evidence from several large, long-term clinical trials of ICS use in children followed for years show no long-term growth effects (a small percentage may have temporary slowing of growth velocity over first **12 to 18 months use**, but will catch-up and achieve expected adult height). In fact, uncontrolled and undertreated asthma is much more likely to lead to poor growth than use of daily ICS for years. Especially in young children, taking ICS has much fewer risks than not controlling asthma, where more potent oral steroids may be needed with more side effects.

**Myth:** *Steroids have too many side effects to be used every day in children.*

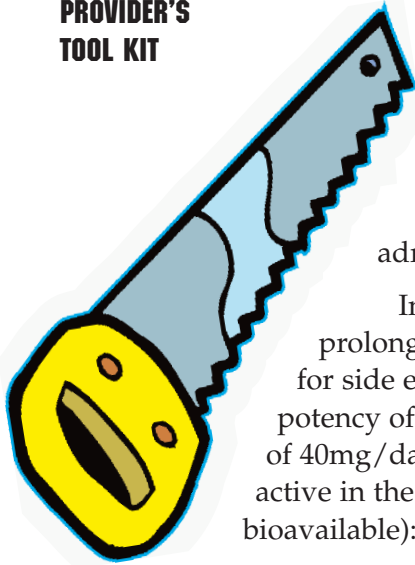
**Fact:** *Depends on the steroid.*



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Inhaled steroids, especially used with a spacer or holding chamber, have minimal side effects compared to oral or parenteral steroids. Because ICS are delivered directly to the lung, smaller doses are needed to be effective and very little gets absorbed into the rest of the body. The main side effect is thrush in the mouth or hoarseness/irritation of the throat, and these can be avoided by always using a spacer and rinsing the mouth after use. Otherwise, there is no significant effect on growth (see above myth on growth), and in children, there have been no significant effects on bone mineral density, the hypothalamic-pituitary-adrenal axis or immune system, or risk of cataracts/glaucoma.

In contrast, the use of frequent oral/parenteral steroids or prolonged use of oral steroids is more worrisome in the potential for side effects, because their potency is so much higher. To compare potency of steroids, the following table compares a prednisone course of 40mg/day for five days (almost all of which is bioavailable and active in the body) to common inhaled steroids (of which only 1-6% is bioavailable):

**FIVE DAYS OF PREDNISONE 40MG/DAY (200G TOTAL OR 200,000MG)  
IS EQUIVALENT TO:**

- |                                  |   |
|----------------------------------|---|
| ◆ 200 days of Advair 500 µg bid  | ◆ 200 days of Pulmicort Respules 0.5mg bid    |
| ◆ 400 days of Advair 250 µg bid  | ◆ 400 days of Pulmicort Respules 0.25mg bid   |
| ◆ 1000 days of Advair 100 µg bid | ◆ 250 days of Pulmicort Turbuhaler 400 µg bid |
| ◆ 227 days of Flovent 440 µg bid | ◆ 500 days of Azmacort 200 µg bid             |
| ◆ 454 days of Flovent 220 µg bid | ◆ 625 days of QVAR 160 µg bid                 |
| ◆ 1136 days of Flovent 88 µg bid | ◆ 1250 days of QVAR 80 µg bid                 |
| ◆ 200 days of Aerobid 500 µg bid | ◆ 1136 days of Beclovent/Vanceril 88 µg bid   |

## Key Points about Asthma and the Schools

In a United States survey conducted in 2003, 28 % of children and adolescents under the age of 18 were estimated to have asthma. A separate survey found that asthma was more disruptive of school routines than any other chronic illness and had a significant impact on absenteeism. School staff lacked an awareness of asthma management. The survey also reported that 85 percent of school nurses believed there were students with

undiagnosed asthma in their schools. Child care settings experience similar impact. Asthma is the leading cause of school absenteeism due to chronic illness and the third leading cause of hospitalizations in children 15 years of age. The cost in school days and missed educational opportunities from these absences is estimated at 14 million days per year.

**A survey conducted in United States in 2003, revealed that 28% of children and adolescents under the age of 18 were estimated to have asthma.**

## **Tips for Pediatricians**

- Inquire about school history, including absenteeism, availability of a school nurse and whether the student has declined to participate in school activities because of asthma.
- Complete an asthma action plan and asthma management plan (some districts have both on the same form) and be certain that the family and the school have copies.
- Obtain informed consent from parents to exchange information with school staff about asthma symptoms and management.
- Consider school nurses as partners in providing patient education, monitoring the method and frequency of inhaler use.
- Prescribe extra inhalers for school and when appropriate, extra peak flow meters, spacers and other needed devices. (Some insurance companies require that physicians complete waivers for the student to receive extra medication or equipment).

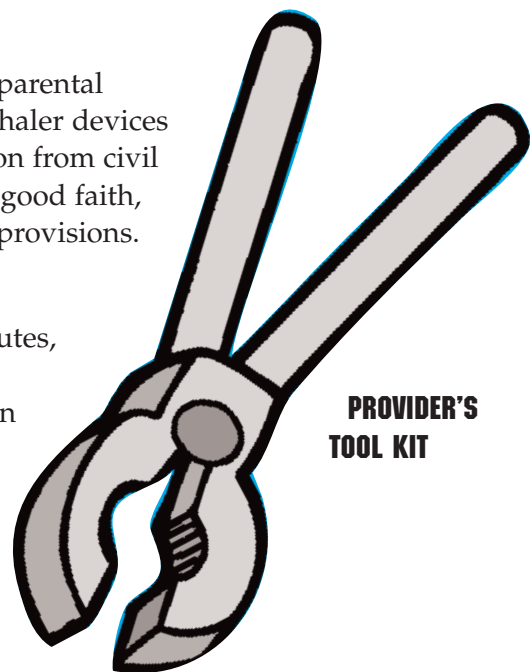
## **Asthma Rescue Medication**

The statute allows for a pupil who has written parental consent to possess and self-administer handheld inhaler devices for breathing disorders and establishes an exemption from civil liability for school districts and employees who, in good faith, make decisions or take actions to implement these provisions.

### **HISTORY**

Currently, Section 15-344, Arizona Revised Statutes, delegates authority regarding the policies and procedures of the administration of any prescription medication to a pupil by a school employee to the school district governing board.

Numerous other states have adopted legislation allowing pupils to possess and self-administer handheld inhaler devices for breathing disorders on school property.



**Asthma is the leading cause of school absenteeism due to chronic illness and the 3<sup>rd</sup> leading cause of hospitalizations in children 15 years of age.**

### **PROVISIONS**

- The statute allows for the possession and self-administration of prescription medication for breathing disorders by the pupil who has been prescribed the medication by a licensed physician or licensed health care professional if the pupil's name is on the handheld inhaler device or medical container.
- Exempts school districts and employees from civil liability for all decisions made and actions taken in good faith to implement these provisions.
- Requires parents to provide annual written documentation authorizing the pupil to possess and self-administer a handheld inhaler.
- Makes technical and conforming changes.

## **Pupils with Anaphylaxis Carry and Self-Administer Emergency Medications**

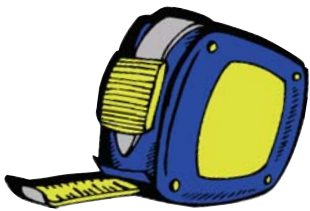
The statute requires school districts to adopt and enforce policies and procedures to allow pupils who have been diagnosed with anaphylaxis to carry and self-administer emergency medications while at school and school sponsored activities. Additionally, school districts and employees are immune from civil liability for all decisions made and actions taken in good faith to implement these provisions.

### **HISTORY**

Currently, Section 15-344, Arizona Revised Statutes, delegates authority regarding the policies and procedures of the administration of any prescription medication to a pupil by a school employee to the school district governing board.

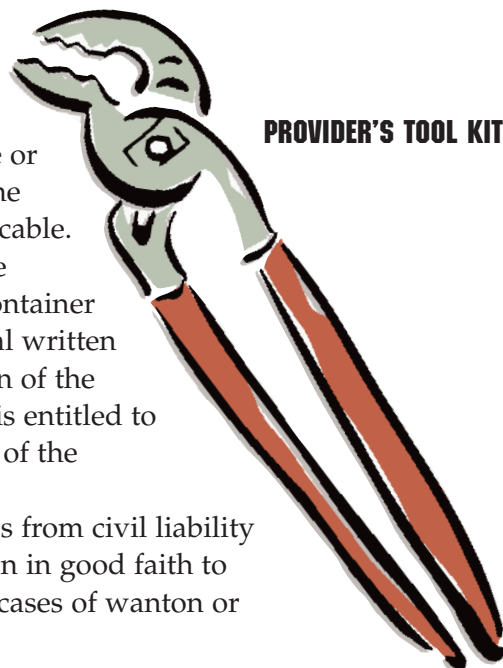
Numerous other states have adopted legislation allowing pupils to possess and self-administer inhaler devices for breathing disorders on school property.

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## PROVISIONS

- The statute requires school districts to adopt policies and procedures to allow pupils who have been diagnosed with anaphylaxis, by a specified licensed health care provider, to carry and self-administer emergency medications, including auto-injectable epinephrine, while at school and school sponsored activities. The policies adopted must require a pupil who uses auto-injectable epinephrine while at school and at school sponsored activities to notify the nurse or the designated school staff person of the use of the medication as soon as practicable.
- Declares that the pupil's name is on the prescription label on the medication container or on the medication device and annual written permission from the parent or guardian of the pupil is sufficient proof that the pupil is entitled to the possession and self-administration of the medication.
- Exempts school districts and employees from civil liability for all decisions made and actions taken in good faith to implement these provisions, except in cases of wanton or willful neglect.
- Makes technical and conforming changes.



*Asthma can be controlled. Expect nothing less.*

## References

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National Asthma Education and Prevention Program (NAEPP):  
**[www.nhlbi.nih.gov/guidelines/asthma/index.htm](http://www.nhlbi.nih.gov/guidelines/asthma/index.htm)** - can view and print 1997 full Expert Panel Report as well as Update of Selected Topics 2002.

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For more information on steroids and asthma, as well as patient handouts, go to the Arizona Asthma Coalition website: [www.azasthma.org](http://www.azasthma.org) - click on the "Provider's Tool Kit."

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