



## ASTHMA MANAGEMENT IN EDUCATIONAL SETTINGS

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# I. INTRODUCTION

Asthma affects approximately 120,000 (1 in 10) children in Washington State. Asthma is an inflammatory disease of the respiratory tract and is the most common cause of absenteeism related to a chronic illness among school-aged children. The incidence of asthma among students is increasing, as are the numbers of hospitalizations and emergency room visits related to asthma attacks.

Poor control of asthma symptoms results in repeated absenteeism and may adversely affect the academic success of students. A student whose asthma is under control is able to participate more fully in all school activities: classroom, physical education and sports, extracurricular activities and expanded learning opportunities. Quality asthma management involves not only the efforts of the student, student's parent(s)/guardians\* and medical provider but school personnel as well.

In the school setting, the school nurse, by law, guides the team of people who will help maintain a school environment that is safe and supportive for the student with asthma. The school nurse communicates directly with the student and parent and is responsible for training school personnel regarding:

- the administration of needed medications
- response to a student's asthma symptoms
- minimizing asthma triggers

The school nurse communicates with the student's health care provider as needed.

The purpose of this publication is to provide guidelines for the care of students who have asthma. Use of the guidelines will assist in creating a safe environment. This guide will:

1. Provide an overview of asthma and its management to aid in educating school personnel about the disease.
2. Provide information regarding optimal care for the student with asthma in the school setting.
3. Provide tools to standardize communication between student and family, health care providers and school personnel.
4. List additional resources for school personnel, students and parents.

\* The term "parent" refers to all adults who have legal/parental responsibility for a student.

## HOW TO USE THIS GUIDE

*AMES: Asthma Management in Educational Settings* is intended to provide information and guidance for all of the individuals who promote the well-being of students who have

been diagnosed with asthma. These individuals include the student, parents, health care providers, school nurses, and other school health personnel, educators, coaches, school administrators and staff, and maintenance personnel.

The primary audience for the guide is school nurses, as they are the contact point in the schools for student health issues. It is anticipated that the school nurse will use the guide as a source of information for students, parents and school personnel, as well as a way to collect and disseminate student asthma-related information. This guide will also be helpful for all school personnel in delivering quality care to students with asthma.

Recognizing that each individual on the team offers different contributions to the student's success in the school setting, this guide offers both generic information of interest to all and role-specific information. Forms and handouts that may be used or distributed by the school nurse are located in the appendices.

These guidelines were developed to assist with management of the student who has a health care provider. It is assumed that the student, parent and health care provider have developed an asthma management plan. Families who have children with asthma who are not under the care of a health care provider may need assistance in accessing health care for the student.

#### ACKNOWLEDGEMENTS

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#### DEDICATION

Barbara Gayle Thronson, RN, MEd (1951-2013)

Remembering her leadership, vision, and service to promoting the health of school children with asthma in Washington State

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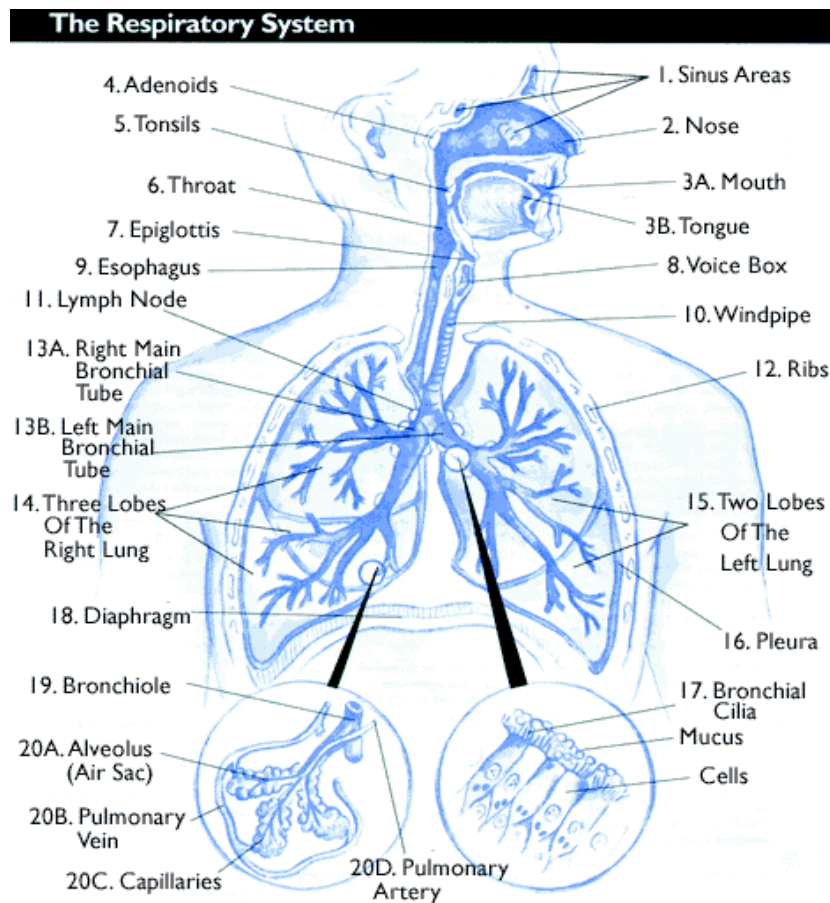
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## II. ASTHMA BASICS

### OVERVIEW OF ASTHMA

#### Why do I need to know about asthma?

In the United States, asthma is the most common chronic childhood illness. Asthma prevalence rates have increased over the last 20 years, with an estimated 7 million children nationally, and more than 110,000 (1 in 10) in Washington State. Asthma disproportionately affects African Americans, Native Americans, Low Income children, those with at least one parent with asthma, and overweight children. Poor asthma control affects school performance and attendance. Akinbami & Moorman, 2012, WA Department of Health 2012). . Asthma can be disruptive not only to the students with breathing problems but also to others around them. All school personnel need to understand this disease, its causes, and its treatment.



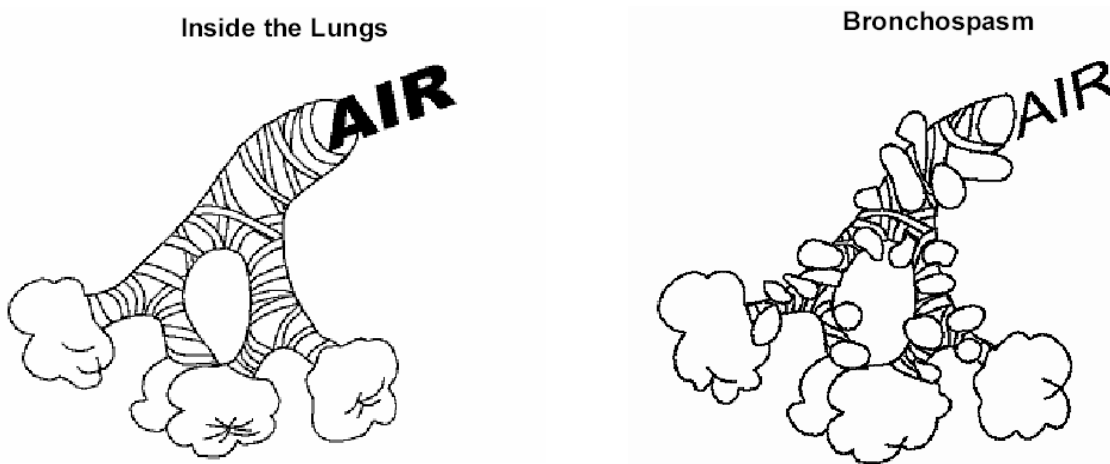
## What is asthma?

Asthma is a chronic lung condition with reversible airway tightening (bronchospasm), inflammation of the airways (bronchioles), and excessive mucus production. Asthma causes episodes of breathing problems such as coughing, wheezing, chest tightness, or shortness of breath. The inflammation of asthma causes the lining of the airways to swell and produce more mucus. When this happens, the airways narrow and obstruct the flow of air out of the lungs. Asthma disease has multiple phenotypes and genetic markers that affect the triggering of symptoms and the progression and pharmacological control of an episode. Treatment of asthma has changed to focus on “control” of symptoms rather than “management” of severity.

## What happens during an “asthma attack”?

An acute episode of asthma, or “asthma attack,” occurs when there is a narrowing of the airways caused by the following:

|                      |   |
|----------------------|---|
| <i>Bronchospasm:</i> | The muscles that surround the airways tighten and make the airways smaller.   |
| <i>Swelling:</i>     | The lining of the airways swells making the airways even smaller. This swelling is caused by inflammation of the airways. |
| <i>Mucus:</i>        | The tissues that line the airways secrete extra mucus. This mucus can plug the narrowed airways even further.             |



Together the bronchospasm and inflammation make it harder to move air through the airways. The student with asthma works harder and breathes faster to move enough air through these narrowed airways. The student may appear as if he or she had run a race while sitting quietly.

## What are the early warning signs and symptoms of an asthma attack in a student who is known to have asthma?

Most people think that an asthma attack starts suddenly. Many students show “early warning signs” before the episode begins. Students vary significantly in the ways that they perceive their symptoms. Consider developing a list, with the student, of his or her early warning signs and symptoms. If they occur, follow the student’s Individual Health or School Emergency Asthma Plan (see Appendix L, Forms, Individualized emergency medical plan (iemp)).

## Possible Early Warning Signs and Symptoms

*Early warning signs may progress to an asthma attack.*

|   |   |
|---|---|
| coughing                                | dark circles under eyes                       |
| itchy throat or chin (tickle in throat) | behavioral changes                            |
| stomach ache (younger child)            | decreased appetite                            |
| funny feeling in chest (younger child)  | drop in peak flow meter to yellow or red zone |
| grumpiness or irritability              | persistent coughing                           |
| fatigue                                 | agitation                                     |
| headache                                |   |

## Possible Asthma Attack Signs and Symptoms

*Not all students will experience all of these symptoms during an asthma attack.*

|   |                                    |
|---|------------------------------------|
| becoming anxious or scared                                  | tightness in chest                 |
| shortness of breath   | wheezing while breathing in or out |
| rapid labored breathing                                     | vomiting from hard coughing        |
| incessant coughing  | unable to talk in full sentences   |
| nasal flaring   | shoulders hunched over             |
| pulling-in of neck and chest with breathing                 | sweaty, clammy skin                |
| requiring rescue medications every four hours or more often |                                    |

In the event of an asthma attack, the student's School Emergency Asthma Plan should be followed.

**Call 911** if the student has these signs and symptoms of an asthma attack in the following circumstances:

- No improvement in Asthma Attack symptoms (*see above*) 15-20 minutes after initial treatment with medication and a parent cannot be reached
- Medications are not available and the student is exhibiting the following: wheezing or incessant coughing, difficulty breathing, chest and neck "pulling-in" with breathing, shoulders hunched over, struggle with breathing
- Lips or nail beds turning gray or blue (students with light complexions)
- Paling of lips or nail beds (students with dark complexions)
- Decreasing or loss of consciousness

## What Causes an Asthma Attack?

Asthma is caused by a variety of factors. An asthma attack is caused, in most cases, by a student's exposure to a trigger. A trigger may be an allergen or an irritant to the respiratory tract. A response to a trigger may be delayed up to six hours following an exposure. The most common triggers include:

- **Respiratory illnesses:** colds, viral infections, ear infections, sinus infections, bronchitis, pneumonia
- **Allergens:** pollens from trees, grasses and weeds, dander from animals (e.g., gerbils, birds, dogs, cats, mice, rats), dust and dust mites, molds, cockroaches
- **Weather:** cold air, sudden or marked changes in temperature, humidity or barometric pressure
- **Irritants:** cigarette smoke, wood smoke, air pollution, dust, chemicals with volatile organic compounds (such as solvent based permanent and dry erase markers, paints, glues, cleaners), air fresheners, perfumes, disinfectants, cleaners, laboratory & vocational education chemicals, art supplies, pesticides, and diesel exhaust.
- **Emotions:** excitement, anxiety, tension, stress, depression, and post-traumatic stress related to exposure to violence or a severe asthma episode
- **Exercise:** the type of asthma in which attacks are triggered by exercise is called "Exercise-Induced Asthma" (EIA) or "Exercise-Induced Bronchospasm" (EIB). EIA results from bronchospasm triggered by physical activity or exercise and/or exposure to cold dry air or pollution (wood smoke, ozone, diesel, etc.). While many students perceive symptoms of asthma only when exercising, EIA in the absence of other triggers is rare, and most commonly the student may have chronic airway inflammation and the "EIA" is evidence of poor control.

Parents, health care providers, teachers and even students themselves, frequently overlook EIA in children. Many students with EIA learn to avoid outdoor play, sports or other physical activities that produce symptoms. Untreated, EIA can limit normal activities. This may result in lasting negative physical and psychological effects such as poor conditioning and poor self-image. If you suspect that a student has EIA, talk with the parent or school nurse.

Physical activity is critical for a student's health, *especially* the student with asthma. Most students can participate fully in physical activities if EIA is properly treated and the underlying asthma is well controlled.

*See Section IV, Appendix C: Minimizing Triggers in the School environment, and Exercise-Induced Asthma Information, The Children's Hospital at St. John's*

## How is Asthma treated?

Asthma is controlled through 4 activities:

1. Provider visits and monitoring for control using spirometry.
2. Medication management emphasizing the use of corticosteroids, step therapy, and (in the school) use of rescue inhalers (Albuterol).
3. Education of the student (symptom recognition, following an action plan, correct use of medications, avoidance of environmental triggers).
4. Monitoring, avoidance, and elimination of environmental triggers.

The school nurse should assess for control by evaluating students for the following symptoms in the previous 4 weeks using the Asthma Control Test (see Appendix M: Assessments: Asthma Control Test for Children ages 4 to 11, and Asthma Control Test for Children ages 12 and Up):

- Activity limitation
- Nighttime awakenings
- Daily symptoms requiring the use of a rescue inhaler/or daytime wheezing in children < 11 yrs
- Overall feelings of being in control

Asthma medications belong to two broad categories based on whether they provide quick relief or long-term control of asthma symptoms.

- **Quick relief medications** (bronchodilators) open the airways by relaxing the muscles around the bronchial tubes. Bronchodilators are taken when symptoms begin to occur or when they are likely to occur (e.g., prior to recess, physical education classes or sports events or, if student is using a peak-flow meter, when readings are in the yellow or red zone). This category of drugs includes short-acting inhaled beta-two ( $\beta_2$ )-agonists.
- **Long-term control medications** generally are anti-inflammatory medications and taken daily on a long-term basis to gain and maintain control of persistent asthma, even in the absence of symptoms. This category includes long-acting inhaled  $\beta_2$ -agonist, inhaled anti-inflammatory drugs (corticosteroids and non- corticosteroids), anti-leukotriene drugs, combination medications, theophylline and anti-IgE immunotherapy.

While they are not used for ongoing control of asthma, **oral steroids** may be used to treat severe, acute asthma episodes, or be given for a longer period when needed to gain control of severe asthma. Since the side effects of oral steroids can be serious, depending on the dosage and duration of the therapy, they should always be taken in consultation with the child's health care provider. Instructions for use of oral steroids should be closely followed.

*See Appendix K, Controlling Asthma With Medications: Stepwise Approaches and Asthma Inhaler Use Checklist*

## GENERAL NOTES ON COMMON ASTHMA MEDICATIONS:

### With use of an inhaler

- It is recommended that inhalers be primed prior to initial use, or if it has been longer than 2 weeks since the last use. Manufacturer recommendations vary depending on the medication, but typical instructions include shaking the medication well, then releasing 4 sprays, shaking well between each spray. Avoid priming with every dose, as this will waste medication.
- It is important to shake the medication prior to every use, as this mixes the ingredients in the drug reservoir that may have separated.
- To relieve dry mouth or throat irritation caused by inhaler use, rinse the mouth with water, chew gum, or suck sugarless hard candy after each use. Rinsing is required after each use of a corticosteroid inhaler so that small amounts of the steroid do not remain on the back of the throat and cause thrush.
- Inhalation devices require regular cleaning. Once a week, remove the drug container from the plastic mouthpiece, wash the mouthpiece with warm tap water, and dry it thoroughly. The mouthpiece area of dry powder devices should be cleaned inside with a cotton-tipped applicator once a week.

### Side Effects

Side effects may or may not be common depending on the medication, dosage, or duration of the therapy. Tell your doctor if unexpected symptoms are severe or do not go away after 2-3 days. Side effects may include: dry mouth, headache, upset stomach, dizziness, shakiness, or increased heart rate.

Call your health care provider as soon as possible if you have any of the following severe side effects. Call 911 if necessary.

|   |                     |
|---|---------------------|
| Difficulty breathing                            | Severe rash         |
| Chest pain or discomfort                        | Irregular heartbeat |
| Swollen face, throat or other parts of the body |                     |

### How are asthma medications given?

Medications may be administered in a number of ways. The student's health care provider determines the type of medication delivery. Medication delivery may be by:

|                            |                          |
|----------------------------|--------------------------|
| Mouth (oral)               | Nebulizer                |
| Metered dose inhaler (MDI) | Dry powder inhaler (DPI) |
| Diskhaler                  |                          |

**See Appendix K: Controlling Asthma with Medications** *for information regarding use and care of these delivery methods.*

A student using a metered dose inhaler should also use a device called a “spacer” or “holding chamber” (see Appendix K: Controlling Asthma with Medications). Holding chambers are useful for all patients, particularly for young children and persons with coordination problems. They are *recommended* for use with bronchodilators, but should *always* be used with an inhaled anti-inflammatory that contains steroids. Neither bronchodilators nor anti-inflammatories should be withheld, however, if a holding chamber or spacer is not available.

### **What is a peak flow meter and how is it used?**

The peak flow meter measures how fast the student can blow air out through the airways. It lets the student and supervising adult know how much airway narrowing is present at a given time. There are many different types of peak flow meters, but they all do the same thing.

### **A peak flow meter can...**

- Tell how well air is moving through the airways.
- Give early warning of an asthma attack, sometimes before symptoms develop or before a student notices asthma symptoms.
- Signal when medication can prevent worsening asthma.
- Measure how well the student’s asthma medications are working.
- Help adults share information about the student’s asthma.

### **The following students may benefit from having a peak flow meter at school:**

- Students with frequent asthma attacks.
- Students requiring asthma medications at school.
- Students who have asthma symptoms at school.

The usefulness of a peak flow meter is dependent upon having a baseline or “personal best” peak flow reading. The baseline is used in the development of an asthma management plan. Peak flow ‘zones’ are created based on the peak flow obtained when the student is feeling well and does not have symptoms. It is important to remember, however, that management decisions should be based on symptoms as well as peak flow readings.

The school nurse may talk with the student’s family and health care provider about having a peak flow meter at home and another at school. For children whose health coverage is through the Department of Social and Health Services, the nurse can call Medical Assistance Administration at 1-800-562-6188 for questions about Medicaid coverage of these devices or use the ASK DSHS line at 1-800-737-0617.

*See Appendix K, Controlling Asthma With Medications: Stepwise Approaches and Asthma Inhaler Use Checklist*

## CONSIDERATIONS FOR ASTHMA MANAGEMENT EQUITY IN EDUCATIONAL SETTINGS

### Introduction

Asthma Management Disparities in children and youth have persisted and increased over the last 20 years. Asthma management is measured by observing the incidence of mismanagement (e.g. emergency room visits and hospitalizations) and is thus a more accurate measure of burden. Disparities occur across several intersections of disadvantage including race, class, gender, and sexual orientation. This brief paper provides the background for school nurse action on these disparities.

### Data

National:

While there may be 150% more *prevalence* of asthma in African American children than White American<sup>1</sup> children, the incidence of emergency room visits and hospitalizations is 200-300% higher between African American and White American children (Gupta, Carrión-Carire, and Weiss 2006, Akinbami et al. 2012).

Washington State:

Race-based hospitalization data is not available in Washington. Disparities in prevalence may be as high as 15% and 13% in American Indian/Alaskan Native and African American children compared to 11% in White American children:

\*non-Hispanic; AI/AN-American Indian/Alaska Native; AP-Asian/Pacific Islander; AA-African American

Source: [Children & Youth with Asthma in Washington 2011](#)

Washington Behavioral Risk Factor Surveillance System, 2007-2008

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<sup>1</sup> White American refers to the racial group that characterize themselves as white.

Disparities in prevalence of current asthma vary significantly between *successive* groups: in other words **there is a gradient between current asthma and wealth**. Regarding poverty: Rates vary from 9% current asthma (>200% Federal Poverty Level) compared to 12% (100-200% FPL) and 15% (<100% FPL).

Source: [Children & Youth with Asthma in Washington 2011](#)  
Washington Behavioral Risk Factor Surveillance System, 2007-2008

Regarding education: **There is a gradient between current asthma and education of the parents**. Prevalence of current asthma in children is more the 10% for those living with parents with less than high school, under 10% for those with more than high school educated parents, and under 8% for those whose parents are college graduates.

**Youth with current asthma by maternal educational attainment, 2008 and 2010**

Washington Healthy Youth Survey, combined 2008 and 2010; grades 6-8-10-12 standardized  
Source: [The Burden of Asthma in Washington State: 2013 Update](#)

Sexual identity: While no data exists for youth asthma prevalence and sexual identity at the state level, non-heterosexual adults in Washington have a significantly higher prevalence of asthma.

Washington Behavioral Risk Factor Surveillance System, 2008-2010; Age-standardized  
Source: [The Burden of Asthma in Washington State: 2013 Update](#)

## **Actions**

Actions a school nurse can take vary from individual (education), healthcare, community, to an advocacy level. The evidence base for the antecedents for asthma disparities is growing and robust. A large number of determinants have been described that disproportionately affect disadvantaged groups, yet evidence for effective interventions is still of low quality. Most experts agree that actions need to be taken on multiple levels in each school community.

### **Individual**

- Education: There is little evidence base for individual or group education decreasing disparities. In fact epidemiological studies have shown that in some cases, disadvantaged groups with asthma report being MORE educated about asthma than advantaged groups with asthma (King and Rudd 2007).
- Co-morbid conditions: Address co-morbidities such as diabetes, anaphylaxis, and depression. Disparities exist within these co-morbid conditions thereby increasing the burden on disadvantaged groups.
- Nutrition: evidence is growing that nutrition is an important component of asthma management

### **Healthcare**

- Quality of care: while improvements have been made, many providers are unaware of the clinical guidelines for asthma. Passing on to the provider the EPR-3 tool would assist with this dissemination (See Appendix P: Other Resources, Washington State Department of Health Summarized Recommendations).
- Communication: Clearly this is a major issue between school nurses and primary care. The AMES manual is intended to address this problem.

### **Community**

- Indoor air quality and community health worker visits: Strong evidence now exists for health worker home visits. Health workers provide multi-level tailored asthma interventions, healthcare navigation, and social support (Krieger et al. 2005). (See WA DOH brochure on [Asthma Home Visits](#))
- School environments: Nurses should be concerned with the quality of athletic facilities, nutritional services, and travel distance between classrooms for children with asthma. Nurses should also participate in periodic air quality assessments inside schools.
- Housing quality: poor housing stock increases the risk for numerous environmental exposures for disadvantaged communities. Landlords can be asked to mitigate some exposures such as mold, poor ventilation, pesticides, and second-hand smoke.
- Violence/crime/social stress: exposure to various forms of violence (domestic, gunshots, etc.) has been shown to increase social stress and asthma exacerbations. Collaboration with crime-prevention and gun-violence work in at risk school communities would be an example of an intervention at this level.

### **Advocacy**

- Air pollution: certain communities in Washington are more exposed to ozone and particulate matter. Principle sources are major highways and woodstoves. School nurses should monitor daily air quality reports and consider community education and awareness raising during periods of high risk (during burn bans for example). See Washington State's Department of Ecology [homepage](#) as well as WA DOH's [rental housing codes](#).
- Racism and discrimination: discrimination (in healthcare and in the community) of disadvantaged groups has been shown to increase health disparities. Nurses should collaborate with other race and social justice initiatives to examine and improve their local school and government policies.

### **Definitions**

*Asthma management disparities:* the unfair or unequal differences in allocation of resources for asthma management (provider, educational, pharmacological, & environmental resources) between groups of youth who are more or less advantaged socially (Braveman 2006).

*Health Equity:* the absence of systematic and potentially remediable differences in one or more characteristics of health across populations or population groups defined socially, economically, demographically, or geographically. Health inequity thus refers to differences in health or access to care that can result from structural arrangements that are potentially remedial; in this sense, inequities may be deemed unjust (Starfield 2011)

### III. WORKING WITH PARENTS AND STUDENTS TO MANAGE THE STUDENT'S ASTHMA AT SCHOOL

#### WHAT SHOULD BE DONE BEFORE SCHOOL BEGINS?

Before the student with asthma enters school, it is important to prepare for his or her needs. The team caring for the student includes the student, the parent, the school nurse, other school personnel and the student's health care provider. Each member of the team has a role to assure safe and effective care at school. For a checklist to assist in the development and implementation of a plan for the student with asthma see Appendix H: Asthma checklist for school nurses.

As a chronic health problem, the severity of asthma can vary. Some students will have mild asthma and require medications occasionally, e.g., with colds, or periods of excessive pollen, whereas other students will have asthma that requires daily medications and frequent monitoring (see Appendix P: Washington State Department of Health Summarized Recommendations). ***Any acute asthma episode has the potential to become life-threatening.*** Some students have an asthma history that increases the likelihood of a life-threatening situation at school for which RCW 28A.210.320 would apply. These students must have an Emergency Asthma Plan/Emergency Care Plan (ECP, see Appendix L: Individualized emergency medical plan (iemp)). It is suggested that any student for whom asthma medication is provided at school has an Emergency Asthma Plan/ECP in place.

NAEPP provides step-wise guidelines for the management of acute asthma symptoms; however the goal of asthma management is to step up treatment until symptoms are controlled and then decrease to the level needed to maintain control ([http://www.nhlbi.nih.gov/guidelines/asthma/asthma\\_qrg.pdf](http://www.nhlbi.nih.gov/guidelines/asthma/asthma_qrg.pdf)). These guidelines provide important information on the acute state of a student's asthma, but are not as helpful in determining their level of need for school purposes. For school planning and management, it is helpful to determine when RCW 28A.210.320, regarding children with life-threatening conditions, would apply.

#### Predictors of life-threatening asthma episodes

Any of the following indicators may predict a higher likelihood of a life-threatening situation (fatality prone asthma) at school and are recommended to use in determining life-threatening status under RCW 28A.210.320:

- Past history of sudden severe asthma attacks
- Prior intubation/mechanical ventilation for asthma
- Prior admission to an ICU for asthma
- 2 or more hospitalizations in the past 12 months
- 3 or more ER visits in the past 12 months
- Use of more than 2 canisters of inhaled beta agonists (rescue medication)/month
- Current regular use of oral steroids
- Difficulty perceiving severe airflow obstruction
- Allergies (including anaphylaxis)

- Nursing judgment

**Nursing judgment** includes consideration of the following more minor risk factors that may increase the risk of a life-threatening event:

- Low Socio-Economic Status (SES) (which can limit access to medications and thus affect compliance)
- Urban residence (which can affect air quality and exposure to triggers)
- Minority racial, ethnic, or sexual identity
- Non-compliance with medication management
- Illicit drug use by student or parent/guardian
- Serious mental health problems in student or parent/guardian
- Maternal smoking
- High frequency of days with symptoms

In addition to identifying the student's level of need, the classification of severity coding can be used to determine staffing needs. The Washington State Nursing Care Quality Assurance Commission (NCQAC) and the Washington State Office of the Superintendent of Public Instruction (OSPI) developed "Staff Model for the Delivery of School Health Services" (see Appendix O: Levels of Nursing Care for Student Diseases and Conditions: Severity Coding) that describes four general levels of student health needs and the corresponding staff necessary to meet the students' needs. These levels can be documented with the standardized state-wide health acuity codes that are available at <https://www.esd123.org/hsdocsarticle>. Standardized acuity codes can be added to school districts' electronic student information system by contacting the Washington State Information Processing Cooperative (WSIPC).

These levels are:

**Level A: Nursing Dependent:** Student requires 24 hours per day, one-to-one, skilled nursing care for survival.

**Level B: Medically Fragile:** Student faces daily the possibility of a life-threatening emergency requiring the skill and judgment of a professional nurse in the school building at all times. (This student may be prone to status asthmaticus, declines rapidly when having an exacerbation, is a poor perceiver of symptoms, is not well controlled, experiences frequent ER visits/hospitalizations, has been intubated, has high absenteeism, experiences limitation of activity, age considerations, or requires frequent nurse monitoring)

**Level C: Medically Complex:** Student is complex and unstable; requires daily treatments and close monitoring. The professional nurse determines level of supervision and delegates to other trained, willing and competent school staff (multiple meds, frequency of symptoms >2 days/week, night time awakening, pre-medicates prior to exercise, environmental allergies are triggers, symptoms with upper respiratory infections (URI), controller med, triggers in school environment, has used rescue medication in past 3 months, requires nurse monitoring at least once a week) In general, students who need an Emergency Asthma Plan/ECP or 504 Plan/ IHP, have medication at school or who require more intensive monitoring than annually are suggested to be coded at Level C.

**Level D: Health Concerns:** Student condition is uncomplicated and predictable requires nurse review at least once a year. (history of asthma with no current symptoms, no controller medication, no use of rescue medication in over one year, no impact on attendance, participation in activities,)

It is suggested that students who need medication at school or who require more intensive monitoring than annually have an emergency care plan or an Individual Health Plan (IHP)/504 Plan and be coded at Level C.

Developing a plan of care will depend on the severity of the student's asthma, treatment needs, and assignment of one of the above levels of nursing care. **The plan of care will be developed with the family (and student if age appropriate) in consultation with the student's health care provider. Other school personnel who will provide care to the student in the absence of the nurse may be included in care planning as well.** This discussion should guide development of an Asthma Management Plan (See American Lung Association's Asthma Action Plan ).

Periodic evaluation may be needed to determine if a student's severity code needs adjusting based on a change in student needs. Nursing judgment is required to determine the student's acuity level and asthma management plan for school. The following recommendations can be used as guidelines.

|  | <b>Level B<br/>Medically Fragile</b>                  | <b>Level C<br/>Medically<br/>Complex</b>                | <b>Level D<br/>Health Concern</b> |
|--|---|---|-----------------------------------|
| <b>Individual Health Plan (IHP)/<br/>Section 504 Plan, review<br/>annually and as needed</b>                                       | Yes   | Yes   | No                                |
| <b>Asthma Emergency Care Plan<br/>(ECP), updated annually and as<br/>needed</b>  | Yes   | Yes   | No                                |
| <b>Assess level of independence</b>  | Yes   | Yes   | No                                |
| <b>Assess level of participation in<br/>activities</b>   | Yes   | Yes   | No                                |
| <b>Peak Flow Monitoring, who,<br/>how</b>  | Yes, if personal<br>best parameters are<br>identified | Maybe, if personal<br>best parameters<br>are identified | No                                |
| <b>Field Trips, review plan/protocol</b>   | Yes   | Yes   | No                                |
| <b>Planning for transportation</b>   | Yes   | Maybe   | No                                |
| <b>Annual training of staff in signs,<br/>symptoms, management, med<br/>administration with ongoing<br/>supervision/monitoring</b> | Yes   | Yes   | Yes                               |
| <b>Monitor and update student<br/>needs</b>  | Yes   | Yes   | Maybe                             |
| <b>Oral Medication Form, signed<br/>parent/HCP, renewed annually</b>   | Yes   | Yes   | No                                |
| <b>Medication at school with<br/>pharmacy label</b>  | Yes   | Yes   | No                                |
| <b>Exchange of Medical<br/>Information</b>   | Yes   | Yes   | No                                |
| <b>Classroom education</b>   | Yes   | Maybe   | No                                |
| <b>Documentation of assessment,<br/>plan and alert (ECP/IHP) to staff<br/>recorded in student file</b>                             | Yes   | Yes   | Yes                               |

WHAT SHOULD BE DONE WHEN THE SCHOOL NURSE LEARNS THAT A STUDENT HAS ASTHMA?

1. A phone call or a meeting between the school nurse, student and parent can provide information about the student's asthma, severity, and needs at school and assist the school nurse in assigning a level of nursing care. An Asthma History Form (see Appendix L: Asthma History Update) is a useful tool to gather needed information. It can guide a phone conversation or be sent home with a request to complete and return.
2. After assessment is complete, appropriate asthma management plans (both ECP and IHP/ 504) will be developed by the school nurse. The table above may be helpful in determining the types of plans indicated for individual students. The written asthma management plan developed by the school nurse should include:
  - The student's name and birth date

- Routine medications and delivery methods
  - Medications needed at school
  - Licensed health care provide name & phone number
  - Usual triggers and asthma symptoms
  - Peak flow measurements (if used for monitoring)
  - Strategies for preventing acute asthma attacks
  - Co-morbidities that may affect asthma management (i.e. anaphylaxis and need for emergency epinephrine in acute unresponsive asthma treatment)
  - An emergency plan for an acute asthma attack
  - Parent and emergency back-up contact information
3. RCW 28A.210.370 permits students to self-administer medication at school if all of the following conditions are met:
    - A prescription from a health care provider (HCP) who has instructed the student in correct and responsible use of the medication.
    - Demonstration by the student of the skill level necessary to use the medication and any delivery device as prescribed. It should be demonstrated to the HCP or their designee and a professional RN at school.
    - A written treatment plan for managing asthma episodes at school and use of medication.
    - Parent/guardian has submitted written documentation as above including their authorization for the student to self-carry.
  4. The student must be allowed to possess and use their medication in school, during school sponsored activities, and in transit to or from school or school sponsored activities per RCW 28A.210.370.
  5. Parents are informed that medications and treatments, according to Washington State law, cannot be administered by any school personnel without a licensed HCP order. This order must be given to the school in order for the school nurse to train school personnel to give medications. The school nurse is responsible for care given by school staff, and school staff are accountable for care or medication administered. Parents cannot direct school staff regarding medications or procedures. The school nurse must follow orders provided by the licensed HCP. Any change in orders must be in writing to the school nurse or given by the HCP directly to the school nurse verbally.
  6. The school nurse and other school personnel will collaborate to implement the Emergency Asthma Plan/ECP and IHP/ 504 Plan if needed. Training of school personnel must be done by the school nurse.
  7. An Authorization for Exchange of Medical Information form (*see Appendix L: Authorization for Release of Medical Information*) signed by the parent may be helpful so that the school nurse can exchange essential information with the HCP.
  8. For medication or treatments to be administered in school, a licensed HCP must complete and sign the Authorization for Administration of Oral Medication Form. The HCP should also provide a copy of student's Asthma Action Plan and indicate if the student may self-carry medication. The Medication Authorization form requires a parent/guardian signature and

their authorization for the student to self-carry medication.

## WHAT STATE AND FEDERAL REGULATIONS ASSIST IN CARING FOR THE STUDENT WITH ASTHMA?

### *SECTION 504*

Section 504 is a federal civil rights law under the Rehabilitation Act of 1973. The law and regulations prohibit discrimination on the basis of disability in any program or activity that receives federal financial assistance, including public schools. The law was amended in 2008 to expand access to Section 504 accommodations by broadening how the term “disability” is to be interpreted. A student is covered under Section 504 if he or she has a mental or physical impairment that substantially limits one or more major life activities. The list of major life activities was expanded in 2008, and includes, but is not limited to: caring for one’s self, walking, hearing, breathing, communicating, concentrating, eating, sleeping, reading, and major bodily functions, such as functions of the immune system, normal cell growth, and digestive, bowel, bladder, neurological, endocrine, and respiratory functions.

A student with asthma, for example, may be eligible under Section 504 if his or her asthma substantially limits his or her breathing or respiratory function. This determination must be made by a team of individuals, including individuals who are knowledgeable about the student, understand the evaluation data, and are knowledgeable about placement options. When making this determination, a Section 504 team cannot consider the effects of “mitigating measures,” such as medication, assistive devices, or health plans. Therefore, impairments that may not have previously been considered to be disabilities because of a student’s use of medication or other mitigating measures, may now meet the definition of a disability under Section 504.

Once a student is evaluated and determined to meet this definition, the student must be provided any accommodations, aids, or services that are necessary for the student to receive a free, appropriate public education (FAPE). That is, whatever accommodations, aids, or services that the student needs to access and benefit from his or her education to the same extent as his or her non-disabled peers, must be made. Accommodations for a student with asthma may include, for example, administering medication, trigger reduction, adapting the activity level for recess and physical education, accommodating medical absences by providing make-up work and notes, and providing rest periods. Even if a student receives services through a health plan, students with asthma may need to be referred to the school’s Section 504 Coordinator to integrate the accommodations in their health plan into a Section 504 Plan, while providing the required procedural safeguards. For more information on Section 504 and accommodations for students with health conditions, visit <http://www.k12.wa.us/Equity/Families/Section504.aspx>.

### *WASHINGTON STATE MEDICATION DELIVERY*

Washington State regulations allow medication administration to students by trained, non-licensed personnel at school when these guidelines are met. These guidelines refer to both prescription and over-the-counter medications.

- School personnel must be informed of the student’s need for medications during school hours.
- An Authorization for Administration of Oral Medications is completed and signed by a licensed health professional prescribing within the scope of his or her prescriptive authority, and by the parent.

- Medication brought to school must have a pharmacy label indicating the child's name, name of medication, dose, time to be given, delivery method and frequency.
- The medication must be stored in a secure place in the school.
- A written record of medication administration is kept in the school.

#### WHAT IF NON-ROUTINE ASTHMA MEDICATIONS ARE GIVEN AT SCHOOL?

Notifying parents when non-routine asthma medications are given to the student during school will assist the parent and student in managing asthma. A sample form for Notification of Non-Routine Medication Delivery is found in *Appendix L: Parent Notification of Non-Routine Medication Administration*.

#### DELEGATION OF CARE BY REGISTERED NURSES IN SCHOOLS

##### **Who can monitor or give medications to students at school?**

This section describes who may assume responsibility for activities in the Individual Health (IHP)/Section 504 Plan as determined by statute, regulation, Nursing Care Quality Assurance Commission (NCQAC) guidelines or advisory opinions. While they are only guidelines or opinions, it is strongly recommended that they be applied in individual situations as determined and delegated by the supervising school nurse in order to maintain the safety and quality of care. Determinations that relate to these guidelines become part of the student's IHP/Section 504 plan.

Registered nurses in school settings function under a special provision that allows them to delegate and supervise the administration of oral medications to unlicensed school personnel who are willing, competent and trained. There is no provision in the law to permit a licensed practical nurse to delegate oral medication delivery; however licensed practical nurses can administer medications ordered by a licensed health care provider.

The NCQAC assumes that the registered nurse uses the nursing process to assess the care needed, verify orders, individualize standard guidelines based on the student's needs and the nurse's assessment, and that certain tasks will not be delegated when the registered nurse determines that care is too complex.

##### **Monitoring – Peak Flow Measurements**

Peak flow measurements at school ordered by a health care provider should include the number of times to do the measurement (i.e., best of 3 consecutive measurements) and the ranges of peak flow measures for the individual student. Routine peak flow measurements should be completed in the nurse's or another school office where measurements can be recorded. It will be necessary for the school nurse to establish a peak flow-monitoring plan with the student, parent, and other school personnel in advance as part of the Individual Health Plan.

School nurses may choose to monitor peak flow readings for any student with asthma as part of the individual health plan, and should endeavor to consult with the health care provider on this adjusted protocol. School personnel may assist the student to identify emergent and urgent

situations, including the use by the student of a peak flow meter so that the student may determine his or her own status, as long as the registered nurse has included these activities in the plan of care. The registered nurse may not delegate nursing assessment or the nursing process (clinical decision making) to an unlicensed individual (see Appendix O: Legal Resources, Related Nurse Practice Act RCWs and WACs).

### **Medications Administration – Nebulized Medications**

Administration of nebulized medications requires a written order stating the type of medication, method of delivery (mask or mouthpiece), dose, and frequency. If multiple medications are to be delivered through the nebulizer, the licensed health care provider must include in the order, the medications that can be mixed for delivery through the nebulizer. The medication must be labeled by a pharmacy with the student's name, medication, dose, frequency, and delivery method.

Pharmacy labeled medications given via nebulizer may be sent to the school in premeasured or pre-mixed vials (unit dose) or in containers that require the dose be drawn up. Often multiple medications are ordered to be delivered together via the nebulizer. Most often the medication dosage to be delivered via nebulizer will remain the same on a daily basis. Occasionally, doses may change based on peak flow measurements. In this case the licensed health care provider order must clearly indicate each dose for a given peak flow measurement range. The supervising school nurse must indicate in the student's IHP that this activity can be delegated to unlicensed staff based on the nurse's assessment. Parents may not order treatments or changes to the individual health treatment plan independently as they are not authorized to prescribe.

If the registered nurse has taught and supervised school personnel to place medications in a nebulizer chamber, and if the school nurse has determined this is a safe procedure within an individual plan of care, this activity is part of the process of administration of oral medications.

A plan needs to be developed by the nurse in conjunction with the student, parent, and licensed health care provider prior to nebulized medication being delivered at school.

#### **Delivery of nebulized medication**

Nebulized medications are most often delivered through a mouthpiece. In some instances, usually for young children or children who cannot cognitively or physically use a mouthpiece, the nebulized medications are given via a mask that is attached to the end of the tubing or a spacer. If the medication is ordered for oral inhalation, it falls within the category of "PO" or "by mouth" even if a mask is used. Medications ordered to be administered intra-nasally are not included within this category. (Reference: telephone communication with Joe Honda, Pharmacy Board Consultant, 8/24/00.) (NCQA Advisory Opinion to the American Lung Association, Seattle Headquarters, Asthma Management in School Settings Committee, September 2000)

### **Medication Administration-Metered Dose Inhalers**

Administration of metered dose inhaler (MDI) medications require a written order stating the type of medication, method of delivery (MDI, MDI with spacer, MDI with spacer and mask), dose and frequency. The medication must be pharmacy labeled with the student's name, medication, dose, frequency, and delivery method.

Most often the medication dosage to be delivered via metered dose inhaler will remain the same on a daily basis. Occasionally, doses may be adjusted within the parameter of the licensed practitioner's order based on the student's signs and symptoms, or peak

flow measurements. Primary health care provider orders must clearly indicate each dose for a given peak flow measurement range if there are variations in the doses for routine metered dose inhaler medications. For example the primary care provider may order one puff of the MDI pre exercise, but two puffs if the student is having an asthma attack and feels the signs and symptoms or if peak flow readings indicate the need for treatment.

Unlicensed personnel may supervise metered dose inhaler medications via a MDI, MDI with a spacer, or MDI with a spacer and mask after training, supervision and delegation by the school nurse and according to the student's IHP.

### **Self-Administration of Medications**

Assessment of the student's ability to independently take metered dose inhaled medications will be determined by the student, parent/guardian, school nurse, the primary health care provider and school district policy. If a student is responsible for self-administration of his/her own medications on a routine basis or for acute asthma attacks, the metered dose inhaler will be in the possession of the student and may be taken as needed. A licensed health care provider order should be obtained if the student self-administers medications at school. (See Agreement of Exemption for Self-Administration and Carrying of Medication, Medication Authorization form, Version 1, *and* Medication Authorization Form, Version 2)

School districts are directed to grant authorization for any student to self-administer medication to treat asthma or anaphylaxis if:

- A health care practitioner (HCP) prescribed the medication for use during school hours and instructed the student in the correct and responsible use of the medication;
- The student has demonstrated to the HCP or the HCP's designee and the registered nurse at the school, the skill level necessary to use the medication and any device necessary to administer the medication as prescribed;
- The HCP formulates a written treatment plan for managing asthma or anaphylaxis episodes and for medication use by the student;
- The student's parent or guardian has completed and submitted to the school any written documentation the school requires, including the treatment plan and documents related to liability.

The authorization must allow the student to possess and use his or her medication in school, at school-sponsored events, and in transit to and from school and school-sponsored events. If back-up medication is provided by the parent, it must be kept at the student's school in a location where the student has immediate access to it in the event of an asthma or anaphylaxis emergency. Schools must also keep on file the written treatment plan and the parent's documentation.

HCPs are required to assess the student's ability to self-administer medications for asthma or anaphylaxis and consider the following factors:

- The student's desire to carry and self-administer the medication;
- The student's age, maturity or development level;
- The student's ability to identify signs and symptoms of asthma and/or anaphylaxis;
- The student's knowledge of how to use the medications in response to the signs/symptoms; and

- The student's use of the correct technique and knowledge of medication side effects and what to report.

The student must be willing to comply with school rules including:

- Keeping the bronchodilator inhaler and/or auto-injectable epinephrine with him/her at all times;
- Notifying a responsible adult when a bronchodilator is used and immediately when auto-injectable epinephrine is used;
- Not sharing medication with other students or leaving it unattended; and
- Not using the bronchodilator or auto-injectable epinephrine for any other use than what is intended.

Responsible carrying and self-administering of medication at school in the past is an indicator that the student is ready to self-administer the medication (*National Heart, Lung, and Blood Institute, 2012*).

School nurses are also required to assess the skills of the student to self-administer asthma medications and auto-injectable epinephrine. Each student should be assessed individually. The following areas should be assessed in students with asthma:

- Age
- Type of asthma diagnosed (mild intermittent, mild persistent, moderate persistent, severe persistent, exercise-induced, or unknown)
- How long they have used the inhaler
- Understanding about asthma
- Signs and symptoms
- When it is time to take the inhaler
- Demonstration of the technique for using the inhaler
- Ability to tell time
- What to do if the inhaler isn't working
- Name of the inhaler used at school
- Triggers of asthma

A similar assessment could be done for students who have an auto-injector of epinephrine for severe allergic reactions or asthma. The use of an EpiPen or Twinject trainer could be used for the demonstration of the administration of epinephrine. The student with severe allergies needing epinephrine for anaphylaxis should tell an adult immediately if the epinephrine auto-injector was used.

RCW 28A.210.380 Anaphylaxis – Policy guidelines-Procedures-Reports directs the Office of Superintendent of Public Instruction (OSPI), in consultation with the Department of Health, to develop anaphylactic policy guidelines for schools to prevent anaphylaxis and deal with medical emergencies resulting from it. The treatment of a medical emergency may include self-administered medication.

# PERSONNEL GUIDELINES FOR CARE OF CHILDREN WITH ASTHMA IN SCHOOLS

| <i>Skill/Topic</i>   | <i>Who Can Do/Interpret: Shading Indicates Permission</i> |            |  |  |  | <i>Location</i>   |
|--|---|------------|--|--|--|---|
|  | Stu<br>de<br>nt <sup>*</sup>                              | Par<br>ent | Lic<br>ens<br>ed<br>Sta<br>ff <sup>†</sup> | Desig<br>nated<br>Sta<br>ff <sup>‡</sup> | An<br>y<br>Sc<br>hoo<br>l<br>Sta<br>ff |   |
| I. Peak Flow Measurement   |   |            |  |  |  | As indicated in the IHP   |
| II. Nebulized Medications <sup>S</sup> <ul style="list-style-type: none"> <li>• Premeasured Medications</li> <li>• Medication measurement required</li> <li>• Mixing 2 or more medications</li> <li>• Dose as ordered by HCP based on peak flow measurement</li> <li>• Nebulizer with mouthpiece</li> <li>• Nebulizer with mask</li> </ul> |   |            |  |  |  | As indicated in the IHP   |
| III. Metered Dose Inhaler Medications <ul style="list-style-type: none"> <li>• MDI</li> <li>• MDI &amp; spacer</li> <li>• MDI &amp; spacer &amp; face mask</li> </ul>  |   |            |  |  |  | Health Room, School Office, or any pre-approved location as designated in the IHP |
| IV. Decision on Activity Participation   |   |            |  |  |  | When needed as designated in the IHP  |

<sup>\*</sup> **Student's developmental ability:** The student possesses the cognitive, emotional, behavioral, motor skills, and physical maturity necessary to perform the required activity and can demonstrate it consistently and across multiple settings. A release should be included that is signed by the parent, primary health care provider, and school nurse.

<sup>†</sup> **Licensed staff:** Must be a registered nurse (RN) or licensed practical nurse (LPN). A primary health care provider's order is required for licensed person to test or give medications.

<sup>‡</sup> **Designated staff:** School employee trained and supervised by RN who has been delegated tasks such as verifying numbers on peak flow meter. A release should be included that is signed by the parent and school nurse.

Generally students do not possess sufficient developmental ability to self-administer nebulized medication treatments.



## IV. CREATING A SAFE AND SUPPORTIVE ENVIRONMENT FOR THE STUDENT WITH ASTHMA

WHAT SHOULD SCHOOL PERSONNEL KNOW ABOUT STUDENTS WITH ASTHMA?

All school personnel interacting with the student with asthma should know:

- How to reduce known asthma triggers in the school environment. Common triggers found in the classroom include dust, animals, and solvent-containing products such as perfumes, paints, cleaning products, permanent and dry erase markers, air fresheners, art supplies, and rubber cement. Discourage or remove upholstered furniture and stuffed animals. Discourage use of perfume, colognes, and body sprays among other students. Classroom carpeting, if present should undergo a hot water steam extraction at least twice annually. Encourage purchase of non-toxic products such as water-based permanent markers and safer white board markers. Wipe down chalkboards with damp cloth daily to keep dust down, if they're present.
- The early warning signs of an asthma attack.
- Whether the student is able to carry and administer their own medication.
- The location of a readily available copy of the student's School Emergency Asthma Plan in the classroom, physical education office, nurse's office and the main office, and what steps to take in case of an asthma attack. (*See Appendix L: Forms, Individualized emergency medical plan (iemp)*)
- The possible side effects of asthma medications and how they may impact student performance in the classroom and gym. Side effects of asthma and allergy medications that warrant concern are nervousness, nausea, jitteriness, hyperactivity, inability to concentrate, and drowsiness. Discuss problems with the school nurse and parents. (*See Appendix K: Controlling Asthma with Medications*).
- That when a student is having asthma symptoms and is sent to the office or nurse's office, someone should always accompany the student.
- To advocate for students with asthma to participate fully in physical activities, since exercise training can improve quality of life AND athletic performance in children with asthma. This could include advocacy for:
  - Complete participation in all levels of athletics including competition.
  - Pre-treatment with a rescue inhaler at least 15 minutes prior to exercise.
  - The vital importance of a physical warm-up to take advantage of the refractory period.
  - Awareness that environmental conditions such as extremely dry conditions (hot or cold), or periods of moderate to severe air pollution, can be a trigger.
  - Optimum control using corticosteroids.
  - The importance of nutrition.
- To allow a student recovering from an acute attack to engage in quiet activities.
- That the student with asthma may feel:
  - Withdrawn

- Drowsy or tired
  - Different from other kids
  - Anxious about access to medications
  - Embarrassed about the disruption of school activities caused by an asthma attack
- How to develop a clear procedure with the student and parent for handling missed schoolwork and to encourage full school participation
- To educate classmates about asthma so they will be more understanding. Contact experts in the community to provide educational material and/or lectures for your students. *Resources are identified in Appendix A: Local/state/national resources, and more information on triggers is available in Appendix C: Minimizing Triggers in the School environment.*

## WHAT SHOULD I DO IF A STUDENT IS HAVING AN ASTHMA ATTACK?

Contact the school nurse. In the absence of the school nurse, contact the person responsible for school health duties in the school nurse's absence, who will:

- Give medications as directed by the School Emergency Asthma Plan\*
- Encourage the student to relax and take slow deep breaths
- Offer sips of warm water to relax and focus the student's attention
- Contact parent if no improvement after 15-20 minutes\*

**When a student is having asthma symptoms and is sent to the office or nurse's office, ALWAYS have someone accompany the student.**

### **CALL 911**

#### ***Call 911 for the following signs and symptoms***

- No improvement in Asthma Attack symptoms 15-20 minutes after initial treatment with medication and a parent cannot be reached
- Medications are not available and the student is exhibiting the following Asthma Attack symptoms: wheezing or incessant coughing, difficulty breathing, chest and neck "pulling in" with breathing, shoulders hunched over; struggling to breathe
- Lips or nail beds turning gray or blue (students with light complexions)
- Paling of lips or nail beds (students with dark complexions)
- Decreasing or loss of consciousness

## ARE THERE ANY CONFIDENTIALITY ISSUES RELATED TO ASTHMA CARE PLANS?

Every school that has students who have asthma should have a clearly defined plan for responding to a student who is having an asthma attack. As with all health-related information, the asthma care plan is confidential. Sharing the plan with others should be on a need-to-know basis per the OSPI "Guide For Handling Health Care Information In School Records". Parents should always be informed if non-routine asthma medications are given at school. (*See Appendix L: Parent Notification of Non-Routine Medication Administration*).

## WHAT ARE SPECIAL CONCERNS RELATED TO FIELD TRIPS OR CAMP?

When planning a field trip, inform school nurse and parents of the general environment to be visited. Locations such as zoos, smoky areas, and botanical gardens may trigger asthma. Make sure the student's medications, peak flow meter (if prescribed) and School Emergency Asthma Plan are taken with the student on the field trip (*See Individualized emergency medical plan (iemp)*). When students are car-pooling to and from off-campus school activities, the person authorized to administer medications should ride in the same vehicle with students likely to require medications.

When planning for camp, the school nurse, parent and health care provider should make sure the asthma management plan is up to date and that both quick relief medication and long term medications (if prescribed) are available to the student. The parent must make sure that the student will have ready access to emergency health care services (i.e., emergency room) while at camp. The camp's emergency medical personnel should be aware of the presence of a student with asthma in camp.

#### WHAT ARE SPECIAL CONCERNS FOR BUS DRIVERS AND PLAYGROUND SUPERVISORS?

Bus drivers and playground supervisors should be aware of students who are at risk for asthma attacks and should know what to do in the event of an asthma attack. They should have a copy of the student's School Emergency Asthma Plan that includes special instructions for bus drivers (See Individualized emergency medical plan (iemp)).

#### HOW CAN A SCHOOL IMPROVE THE ENVIRONMENT FOR STUDENTS WITH ASTHMA?

School custodians should be aware of factors influencing indoor air quality in the school. Custodians should try to schedule plant maintenance activities, e.g., painting the classrooms and halls, laying carpet or vinyl, early during summer or other breaks so that the fumes from the materials used have a chance to dissipate before students return to school. Low or no odor/volatile organic compound products should be used wherever possible. (See Appendix D: Information for Custodial Staff).

#### HOW CAN INDOOR AIR QUALITY (IAQ) BE IMPROVED?

Many indoor air quality problems in schools can impact the health of students and staff, including those with asthma. Some of the indoor air quality problems include: chemical pollutants from building or building maintenance materials; chemical pollutants from science and art classes; improperly maintained ventilation systems; and allergens from dust, classroom animals, and cockroaches or pests. Mold growth may result from standing water in maintenance rooms and near pipes, or from excess moisture in ceiling tiles, carpets, and other furnishings. Also, outdoor air pollutants such as diesel exhaust and pollens may enter the school through ventilation systems or open doors and windows. High quality 30% efficient extended surface pleated filters should be used. Remove upholstered furnishings and stuffed animals. Encourage clutter-free, easily cleanable, custodial friendly classrooms. Discourage vehicle idling near school entrances, windows, or fresh air intakes. Reduce or eliminate pesticide usage through the use of Integrated Pest Management.

## WAYS TO MANAGE ASTHMA TRIGGERS IN THE SCHOOL ENVIRONMENT

| <b><i>What to watch for</i></b>                 | <b><i>How to Manage the Problem</i></b>   |
|---|---|
| Control Animal Allergens                        | Remove classroom animals from the school.   |
| Control Cockroach Allergens                     | Use Integrated Pest Management practices to prevent cockroach and other pest problems (store food in tightly sealed containers and place dumpsters away from the building). Repair all water leaks.   |
| Clean Up Mold and Control Moisture              | Fix moisture problems and thoroughly dry wet areas within 24-48 hours to prevent mold growth. Clean up moldy hard surfaces with water and detergent, and then dry thoroughly. Remove any damaged materials, seal and replace.                   |
| Eliminate Secondhand Smoke Exposure             | Enforce no-smoking policies in the school.  |
| Reduce Dust Mite Exposure                       | Make sure school is dusted and vacuumed thoroughly and regularly. Remove upholstered furniture and stuffed toys. Discourage use of carpeting in classrooms.   |
| Reduce Volatile Organic Compound (VOC) Exposure | Common sources are solvent based markers, cleaning materials, art supplies, and perfumes. Evaluate materials and look for safe alternatives such as low odor, xylene free or water based white board markers. No air fresheners should be used. |
| Eliminate Entrainment of Outdoor Pollutions     | Eliminate idling of vehicles, especially diesel ones on school property. Use high efficiency air filters. Properly maintain the heating and cooling systems. Use walk-off mats.   |

*For more information about ways to manage triggers, see Appendix C: Minimizing Triggers in the School environment, Appendix D: Information for Custodial Staff, Appendix E: Reducing triggers of asthma attacks around the house, and Appendix G: The Trigger Checklist*

In order to help improve indoor air quality problems in school buildings, the Environmental Protection Agency (EPA) developed the Indoor Air Quality (IAQ) Tools for Schools Action Kit. This kit helps school personnel identify, solve, and prevent indoor air quality problems in the school environment. Through the use of a 19-step management plan and checklists for the entire building, schools can also lower their students' and staff's risk of exposure to asthma triggers. The checklists cover the building's ventilation system, maintenance procedures, classrooms (especially animals and mold), and food service areas.

Included in the kit is a Coordinator's Guide, which explains the fundamentals of indoor air quality in schools and procedures for improving the air inside the schools. The kit also contains checklists, a background informational piece for staff, a problem-solving wheel to identify potential indoor air quality causes and solutions, a guide for health professionals, and a 30-minute, two-part video covering the ventilation checklist and a school's implementation of IAQ Tools for Schools.

To use the IAQ Tools for Schools Kit, most schools form an IAQ coordinating team that implements the kit during the school year. Because IAQ problems can originate anywhere in the school building, usually the entire staff is informed and brought into the process of improving the indoor air. In addition, students can be involved in the process. (See Appendix A: Local/state/national resources *and* Appendix B: School Environmental Health & Safety Program Contact Information and Websites)

The Washington State Department of Health is available to assist in school IAQ improvement (site visits) and has produced a School Indoor Air Quality Best Management Practices Manual to assist schools in being healthy environments for all students and staff, available at <http://www.doh.wa.gov/Portals/1/Documents/Pubs/333-044.pdf>

## V. APPENDICES

### APPENDIX A: LOCAL/STATE/NATIONAL RESOURCES

**Allergy and Asthma Network/Mothers of Asthmatics**

[www.aanma.org](http://www.aanma.org)

**Allergy Control Products, Inc.**

[www.allergycontrol.com](http://www.allergycontrol.com)

**Allernet Allergy and Asthma**

[www.allernet.com](http://www.allernet.com)

**American College of Allergy, Asthma and Immunology Online**

[www.acaai.org](http://www.acaai.org)

**American Lung Association, Mountain Pacific**

[www.alaw.org](http://www.alaw.org)

**Asthma and Allergy Foundation of America**

[www.aafa.org](http://www.aafa.org)

**Asthma Plan of Action: Creating Asthma-Friendly Environments**

[www.asthmainschools.com](http://www.asthmainschools.com)

**Centers for Disease Control and Prevention**

<http://www.cdc.gov/asthma>

**Clinical Trials: Asthma**

[www.centerwatch.com/studies/CAT16.HTM](http://www.centerwatch.com/studies/CAT16.HTM)

**EPA's information on Indoor Air Quality**

[www.epa.gov/iaq](http://www.epa.gov/iaq)

**Family Doctor on Asthma**

[familydoctor.org/familydoctor/en/diseases-conditions/asthma.html](http://familydoctor.org/familydoctor/en/diseases-conditions/asthma.html)

**Food Allergy Research and Education (FARE)**

[www.foodallergy.org](http://www.foodallergy.org)

**Healthfinder, of U.S. Department of Health and Human Services**

[www.healthfinder.gov](http://www.healthfinder.gov)

**Health Talk**

[www.healthtalk.com](http://www.healthtalk.com)

**Immune Deficiency Foundation**

**(National Patient Organization for Primary Immunodeficiency Diseases)**

[www.primaryimmune.org](http://www.primaryimmune.org)

**Indoor Air Quality Program of WA State DOH**

[www.doh.wa.gov/CommunityandEnvironment/AirQuality/IndoorAir.aspx](http://www.doh.wa.gov/CommunityandEnvironment/AirQuality/IndoorAir.aspx)

**Integrated Pest Management in Schools**

[www.epa.gov/pesticides/ipm](http://www.epa.gov/pesticides/ipm)

**Kid's Health**

[www.kidshealth.org](http://www.kidshealth.org)

**Mayo Clinic**

[www.mayoclinic.com/health/asthma/DS00021](http://www.mayoclinic.com/health/asthma/DS00021)

**National Association of School Nurses**

[www.nasn.org/ToolsResources/Asthma](http://www.nasn.org/ToolsResources/Asthma)

**National Center for Environmental Health**

[www.cdc.gov/nceh](http://www.cdc.gov/nceh)

**National Education Association Health Information Network**

[www.neahin.org](http://www.neahin.org)

**National Heart Lung Blood Institute/ Asthma Management Model System**

**National Asthma Education and Prevention Program (NAEPP)**

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

**Expert Panel Report 3: Diagnosis and Management of Asthma Practical Guide to the Diagnosis and Management of Asthma** [www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf](http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf)

**National Jewish Hospital (Specializes in Respiratory Care)**

[www.njc.org](http://www.njc.org)

**National Library of Medicine**

[www.nlm.nih.gov](http://www.nlm.nih.gov)

**Northwest Clean Air Agency: Video: Mold in Your Home**

[www.youtube.com/watch?v=gDikRj5i0PU](http://www.youtube.com/watch?v=gDikRj5i0PU)

**PubMed Database**

[www.ncbi.nlm.nih.gov/pubmed](http://www.ncbi.nlm.nih.gov/pubmed)

**School Health and Safety Program of WA State DOH**

[www.doh.wa.gov/CommunityandEnvironment/Schools/EnvironmentalHealth.aspx](http://www.doh.wa.gov/CommunityandEnvironment/Schools/EnvironmentalHealth.aspx)

**Seattle Children's Hospital and Regional Medical Center**

[www.seattlechildrens.org](http://www.seattlechildrens.org)

**Airway, Breathing and Lungs Resource Center**

[www.seattlechildrens.org/medical-conditions/airway](http://www.seattlechildrens.org/medical-conditions/airway)

**Health Consultation Program (for community health providers only)**

You can leave a message with consulting nurse, who will call back within 24 hours  
1-800-293-2462

**Minnesota Department of Health: Asthma Medications Poster**

<http://www.health.state.mn.us/asthma/asthmaMedsPosters.html>

**Spokane Asthma and Allergy Clinic**

[www.spokaneallergy.com](http://www.spokaneallergy.com)

**Spokane County Air Control Authority**

[www.scapca.org](http://www.scapca.org)

**Tacoma-Pierce County's Clean Air for Kids Program**

[www.tpchd.org/health-wellness-1/diseases-conditions/asthma](http://www.tpchd.org/health-wellness-1/diseases-conditions/asthma)

**Teen's Health**

[www.teenshealth.org/teen](http://www.teenshealth.org/teen)

**US Environmental Protection Agency, Region X**

[www2.epa.gov/aboutepa/epa-region-10-pacific-northwest](http://www2.epa.gov/aboutepa/epa-region-10-pacific-northwest)

**Washington State Department of Ecology for Air Quality**

<http://www.ecy.wa.gov/air.html>

**Washington State Department of Health Asthma Program**

<http://www.doh.wa.gov/PublicHealthandHealthcareProviders/HealthcareProfessionsandFacilities/BestPractices/Asthma/AsthmaResourcesforMedicalProfessionals.aspx>

**Washington State Department of Health, Office of Environmental Health, Safety, and Toxicology, School Health and Safety Program**

<http://www.doh.wa.gov/AboutUs/ProgramsandServices/EnvironmentalPublicHealth/EnvironmentalHealthSafetyandToxicology/Schools.aspx>

**Washington State Department of Health School Indoor Air Quality Best Management Practices Manual**

<http://www.doh.wa.gov/Portals/1/Documents/Pubs/333-044.pdf>

**Washington State Local Health Departments/Districts**

[www.doh.wa.gov/AboutUs/PublicHealthSystem/LocalHealthJurisdictions.aspx](http://www.doh.wa.gov/AboutUs/PublicHealthSystem/LocalHealthJurisdictions.aspx)

## APPENDIX B: SCHOOL ENVIRONMENTAL HEALTH & SAFETY PROGRAM CONTACT INFORMATION AND WEBSITES

Nancy P. Bernard, MPH  
School Health & Safety Program  
Manager  
(360) 236-3072 Fax (360)236-2261  
[Nancy.Bernard@doh.wa.gov](mailto:Nancy.Bernard@doh.wa.gov)

Local Health Support Section  
Office of Environmental Health &  
Safety  
P.O. Box 47825  
Olympia, WA 98504-7825

Department of Health School Environmental Health & Safety Website [http://  
www.doh.wa.gov/CommunityandEnvironment/Schools/EnvironmentalHealth.aspx](http://www.doh.wa.gov/CommunityandEnvironment/Schools/EnvironmentalHealth.aspx)

Washington State Board of Health Primary & Secondary School Regulations [http://  
sboh.wa.gov/Rules/  
EH.htm#Primary\\_and\\_Secondary\\_School\\_Environmental\\_Health\\_and\\_Safety\\_](http://sboh.wa.gov/Rules/EH.htm#Primary_and_Secondary_School_Environmental_Health_and_Safety_)

DOH/OSPI *K12 Health & Safety Guide*  
[http://www.k12.wa.us/schfacilities/publications/pubdocs/  
completesafety&healthmanual2002-2003.pdf](http://www.k12.wa.us/schfacilities/publications/pubdocs/completesafety&healthmanual2002-2003.pdf)

Department of Health Indoor Air Quality Website  
<http://www.doh.wa.gov/CommunityandEnvironment/AirQuality/IndoorAir.aspx>

DOH *School Indoor Air Quality Best Management Practices Manual*, Revised 2003  
<http://www.doh.wa.gov/Portals/1/Documents/Pubs/333-044.pdf>

Department of Health Zoonotic Disease Website, including West Nile Virus prevention  
[http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/  
AnimalTransmittedDiseases.aspx](http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/AnimalTransmittedDiseases.aspx)

School Integrated Pest Management <http://schoolipm.wsu.edu/>

*Washington Sustainable Schools Protocol (2010)*  
[http://www.k12.wa.us/SchFacilities/Programs/HighPerformanceSchools/  
WSSP2010Criteria.pdf](http://www.k12.wa.us/SchFacilities/Programs/HighPerformanceSchools/WSSP2010Criteria.pdf)

OSPI *Career and Technical Education Health and Safety Guide* [http://www.k12.wa.us/  
CareerTechEd/Forms/CTEHealthandSafetyEducationGuide2009.pdf](http://www.k12.wa.us/CareerTechEd/Forms/CTEHealthandSafetyEducationGuide2009.pdf)

US Consumer Product Safety Commission *Handbook for Public Playground Safety*  
<http://www.cpsc.gov/PageFiles/107329/325.pdf>

OSPI/DOH *Infectious Disease Guide for School Staff*, April 2004 [http://www.k12.wa.us/  
healthservices/pubdocs/InfectiousDiseaseControlGuide  
3-11-04.pdf](http://www.k12.wa.us/healthservices/pubdocs/InfectiousDiseaseControlGuide3-11-04.pdf)

## APPENDIX C: MINIMIZING TRIGGERS IN THE SCHOOL ENVIRONMENT

## Control Animal Allergens

Classes often adopt animals as a classroom pet or science project. School staff may not realize that any warm-blooded animals, including gerbils, rabbits, birds, cats, dogs, mice, and rats may trigger asthma. Proteins which act as allergens in the dander, urine, or saliva of warm-blooded animals may sensitize individuals and can cause allergic reactions, or trigger asthma episodes in people sensitive to animal allergens. Hand washing facilities are a must.

If a school chooses to allow animals, it is important to make sure those classrooms and cages containing animals are frequently and thoroughly cleaned. It is important to realize that, even after extensive cleaning, pet allergen levels may stay in the indoor environment for up to six months after animals are removed. In addition, animal allergens can readily migrate to other areas of the school environment through the air and on children who handle pets. Therefore, the entire building should be cleaned thoroughly. Service animals must be accommodated.

Schools are sometimes advised to use portable air cleaners. Although properly used and maintained air cleaners may be effective for reducing animal dander in small areas, they should only be considered as an addition to other control methods. Carefully review information on the type of air cleaner used to make sure it is suitably sized and has high particle removal efficiency. Some air cleaning devices marketed as air purifiers emit ozone, which is a respiratory irritant and toxin. Ozone generators, as well as certain ion-generating air cleaners, must not be used in any occupied space.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual*, *The EPA Indoor Air Quality Tools for Schools Teachers Checklist*.

## Control Cockroach and Rodent Allergens

Pests such as cockroaches, rats, and mice, are sometimes found in schools. Allergens from these pests may be significant asthma triggers for students and staff. Pest problems in schools may be caused or worsened by a variety of conditions such as plumbing leaks, moisture problems, and improper food handling and storage practices. A minimal amount of food should be stored in classrooms, in insect proof containers, away from any chemicals. Follow Integrated Pest Management (IPM) practices (<http://schoolipm.wsu.edu>). Pesticides are a last resort and should only be used by a licensed applicator, following the directions on the label. Unlicensed staff must not use pesticides of any kind. Students must not be present.

### [Pesticide Application and Schools - RCW 17.21.415](#)

Schools and daycares in Washington state are required to have a written pest control policy, notify interested parents before pesticides are used indoors or outdoors, and post all areas treated with a pesticide. This law is intended to help reduce or eliminate the possibility of student or staff exposure to pesticides. Resources to help comply with the law include:

- [Compliance Guide for the use of Pesticides at Public School \(K-12\) and Licensed Day-Care Centers \(PDF\)](#)
- [Pesticide Notification and Records Inspection Check List \(PDF\)](#)

## Clean Up Mold and Control Moisture

Molds can be found almost anywhere; they can grow on virtually any substance, providing moisture is present. Molds produce tiny spores to reproduce, and the spores travel through the

indoor and outdoor air continually. There are molds that can grow on wood, paper, carpet, and foods. If excessive moisture or water accumulates indoors, extensive mold growth may occur. There is no practical way to eliminate all molds and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture. If mold is a problem in your school, you must clean up the mold and eliminate sources of moisture.

When mold growth occurs in buildings, it may be followed by reports of health symptoms from some building occupants, particularly those with allergies or respiratory problems. Potential health effects and symptoms associated with mold exposures include allergic reactions, asthma, and other respiratory complaints.

Carpet needs to be properly maintained or removed. Vacuum regularly with a HEPA (high efficiency particulate air) filter machine (or at least a HEPA or 1 micron filter bag), when the classroom is unoccupied. Carpet cleaning should be by hot water steam extraction—truck-mounted works best—using a low-residue environmentally sensitive (green clean) cleaner. Cleaner and water must be thoroughly extracted and the carpet should dry within 24 to 48 hours. Dried cleaner, if not thoroughly removed, can be a skin and respiratory irritant for some people.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual*, EPA's [\*Indoor Air Quality Tools for Schools\*](#) EPA's [\*Mold Remediation in Schools and Commercial Buildings\*](#). ([http://www.epa.gov/mold/mold\\_remediation.html](http://www.epa.gov/mold/mold_remediation.html))

## **Eliminate Secondhand Smoke Exposure**

Enforce the Washington State ban on tobacco use anywhere on school property. Tobacco smoke is a respiratory irritant, a serious health threat, and a significant asthma trigger. It may also be a cause of asthma. . Also, keep in mind that for very sensitive individuals, tobacco smoke on clothing (third-hand smoke) can be an asthma trigger and may need to be addressed.

## **Reduce Exposure to Dust Mites**

Dust mite allergens play a significant role in asthma. These allergens may cause an allergic reaction or trigger an asthma episode in sensitive individuals. In addition, there is evidence that dust mites cause new cases of asthma in susceptible children.

Dust mites are too small to be seen but are found in homes, schools, and other buildings. Dust mites live in mattresses, pillows, carpets, fabric-covered furniture, bedcovers, clothes, and stuffed toys. Their food source is dead skin flakes.

Cloth covered furniture, especially couches, should be removed from schools. Stuffed animals should be washed every two weeks in hot water (at least 130 degrees F). Remove dust from hard surfaces weekly with a damp micro-fiber or static electric cloth. Carpet should be vacuumed daily with a HEPA filter vacuum (or at least a HEPA or 1 micron filter bag). Allergic people should not be in the area when it is being vacuumed.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual*, *The EPA Indoor Air Quality Tools for Schools*

## **Reduce Volatile Organic Compound (VOC) Exposure**

Common sources of VOCs include solvent-based markers, cleaning materials, art supplies, perfumes, colognes, and cleaners. If chalk and a blackboard are used, eliminate or remove as much chalk dust as possible daily. Evaluate materials and look for safe alternatives. Low odor,

xylene free or water based white board markers and board cleaners should be used. No air fresheners (plug-in or spray), potpourri, candles, etc., should be used. Address odor problems through source removal and good ventilation.

Susceptibility/sensitivity to chemicals varies in individuals. What one person can tolerate can make another ill, including inducing an asthma attack. Reducing chemicals in the environment will help all individuals, but may be critical for those with chemical sensitivity, allergies, and/or asthma.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual*, *The EPA Indoor Air Quality Tools for Schools*

## APPENDIX D: INFORMATION FOR CUSTODIAL STAFF

The school custodial staff plays a vital role in a school's indoor air quality. Cleaning methods and materials significantly impact the particulate and volatile organic compound (VOC) levels in schools. Custodians can help provide and maintain healthy indoor air.

### **Carpets**

Carpet needs to be properly maintained or removed. Vacuum regularly with a HEPA (high efficiency particulate air) filter machine (or at least a HEPA or 1 micron filter bag), when the classroom is unoccupied. Carpet cleaning should be by hot water extraction using a low-residue, environmentally sensitive (green clean) cleaner. Cleaner and water must be thoroughly extracted and the carpet should dry within 24-48 hours. Dried cleaner, if not thoroughly removed, can be a skin and respiratory irritant for some people.

### **Hard Floors**

Dust with static electricity or micro-fiber mops daily. Wet mop the surface weekly.

### **Dusting**

All horizontal surfaces should be damp dusted weekly with a micro-fiber or static electricity cloth.

### **Cleaning Supplies**

Evaluate cleaners and chemicals, replacing with the least toxic or safer, "green" alternatives when possible. Use metered dispensers for chemicals to ensure that they are always diluted according to directions. Do not use urinal cakes or deodorants, which are known to be toxic. Air fresheners and deodorants should not be used in schools. Proper cleaning and ventilation should be used to take care of odor problems. Schools should consider policies on making their schools fragrance free.

### **Pesticides/Herbicides**

Integrated Pest Management must be followed. Teachers must not use pesticides of any kind. Pesticides are a last resort and must only be used by a licensed applicator, following the directions on the label. Unlicensed staff must not use pesticides of any kind. Students should not be present and the Washington State School Pesticide Notification Law must be followed: (<http://www.leg.wa.gov/RCW/index.cfm?fuseaction=section&section=17.21.415>)

### **Filters: HVAC Systems (Heating, ventilation, air conditioning)**

Upgrade the filters in the HVAC system to 30% ASHRAE extended surface, pleated filters. Replace all filters on a quarterly basis, and after any construction work involving drywall or woodworking.

## **Ventilation**

Pollutants can build up in the air in buildings. Dilution ventilation is necessary to improve indoor air quality. Classrooms require 15 CFM/person of fresh air, 20 CFM/person for laboratories, during occupancy. The easiest way to test for appropriate ventilation levels is to keep CO<sub>2</sub> levels below 1150ppm. HVAC should be properly maintained for maximum efficiency.

References: The Washington State Department of Health School Indoor Air Quality Best management Practices Manual, The EPA Indoor Air Quality Tools for Schools, Integrated Pest Management

## APPENDIX E: REDUCING TRIGGERS OF ASTHMA ATTACKS AROUND THE HOUSE

Follow these steps to control asthma triggers. Check off the ones you can do. Keep in mind that a complete solution will probably involve implementing a number of controls, and that implementing a single measure will probably not be sufficient.

### **General tips to reduce allergens and irritants:**

*The list includes general cleaning or maintenance practices that are effective at reducing many kinds of triggers in the house.*

### **Managing at the source**

Remove shoes before entering the house if possible. If not, place good quality, commercial grade doormats at all entrances. This will allow less tracking in of dust, pollen, mold, pesticides, and other toxic materials.

Remove carpeting if possible, particularly from the bedroom.

Repair any source of leaking water inside or outside the house, such as faucets, pipes, gutters, and downspouts. Make sure that all downspouts direct water away from the house.

If there is a crawlspace in the home, cover all exposed dirt with 10 mil black visqueen.

If there is excessive moisture in the basement, consider installing a dehumidifier.

### **General cleaning**

Vacuum frequently and thoroughly. Use a powered brush for carpeting. Use ultrafiltration vacuum bags if available. Consider purchasing a vacuum cleaner with a dirt sensor and HEPA filter.

Dust weekly using a damp, lint-free rag. Do not use a dry cloth since this just stirs up dust.

Use the least toxic cleaning products available.

Asthmatics should wear protective gloves and an appropriate mask while cleaning to reduce exposure to dust, dander, mold or cleaning irritants.

To eliminate pests, use integrated pest management (IPM) and mechanical methods over chemical.

### **Proper ventilation, humidity control and indoor air**

Since indoor air tends to be more polluted than outside air, ventilate the house by opening the windows when conditions permit: e.g. on days with a low pollen count if you are allergic and

when the outside air quality is good. You can check the local air quality by contacting Puget Sound Clean Air Agency ([www.pscleanair.org](http://www.pscleanair.org)) and pollen prevalence by contacting ([www.pollen.com](http://www.pollen.com)) or by checking local newspapers.

Use a pleated paper filter for your home's forced air heating and/or cooling system. Clean or change the filter monthly or every 3 months. Consider purchasing room air purifiers that use HEPA filters. Do not purchase any purifier that generates ozone.

Since dust mites and molds thrive in high humidity, maintain indoor humidity between 30-50%. Humidity levels can be measured by hygrometers that are available at hardware stores.

### **Proper maintenance of heating/air conditioning systems**

Keep the furnace in good working order by having it cleaned, inspected and serviced annually by a licensed heating contractor.

If there is a combustion device in the home, install a carbon monoxide detector on each floor.

### **Pets**

Pet allergies are caused by proteins secreted by oil glands that are shed as dander, proteins in saliva or urine of animals. Though the best way to remove pet allergens is to remove the pets from home, there are some things that you can do to reduce triggers if removing the pet is not a viable option. Keep in mind that the pet allergens will remain in the house for several more months even after the removal of pets.

### **Managing at the source**

- Find new homes for pets if possible (once the pet is removed, dander will still be present for another six months.)
- If removing pets is not possible, keep them out of bedrooms.
- Try to keep pets off of carpets or upholstered furniture.

### **General tips**

- After playing with your pet, wash your hands and clean your clothes to reduce pet allergens.
- Having pets bathed weekly may be helpful.
- Dust often with a damp cloth to reduce pet dander in the house.

### **Cockroaches**

Cockroaches are one of the most common indoor pests, especially in crowded urban areas and older buildings. The proteins in saliva, bodies and droppings of cockroaches are highly allergenic to people who are sensitive. If the problem is serious, call for professional help and talk to your landlord or homeowners association if you live in a multi-family dwelling.

- Limit the spread of food around the house. Keep food out of bedrooms.
- Avoid leaving open food or garbage inside the home.
- Store food in airtight containers.
- Eliminate water sources that attract cockroaches. Fix leaky faucets and drain pipes.
- Plug up crevices around the house through which cockroaches can enter.
- Mop the kitchen floor at least once a week. Wash the countertops daily.
- Use mechanical traps instead of pesticides if possible. If you must use chemical treatments, use them only when you are away from home. Boric acid is effective and low in toxicity to humans.

### **Mold**

Mold spores can be airborne when dry and are powerful allergens when inhaled or touched. They are found both indoors (especially in damp areas such as bathrooms and basements) and outdoors (in soil, decaying plant materials and rotten wood). There is no definite seasonal pattern with indoor molds, but outdoor molds pose problems mainly between spring and fall. If the problem is serious, call for professional help. Some molds are not only allergenic but can also be toxic.

### **Ventilation and Humidity Control**

- Use a dehumidifier or air conditioner to maintain relative humidity below 30-50%.
- Use bathroom and kitchen fans. Install 60 minutes timers on bathroom fans to increase ventilation of moisture during and after showers or baths. Consider installing a humidistatically controlled fan in the bathroom.
- Vent all fans (bathrooms and kitchens) and clothes dryers outside. Don't vent them into the attic or crawl space.
- Increase the flow of air within your home. Moving furniture away from walls and opening closet doors to permit air circulation limits the growth of molds. Make sure to open drapes during the day to increase circulation behind them.
- Avoid hanging laundry inside. Use a clothes dryer or dry in a well-ventilated area.

### **Managing at the source**

- Check faucets, pipes and ductwork for leaks.
- Remove carpets that are laid on concrete floors. Use throw rugs that can be cleaned.
- Remove decaying debris from the roof and gutters.
- Install 10 mil Black Visqueen plastic sheeting over all exposed dirt in the crawl space and install adequate ventilation.

### **Cleaning**

- Regularly clean tubs, sinks and other places where mold and mildew grow.
- If mold is present, remove using  $\frac{1}{4}$  cup dishwasher detergent or soap to 1 quart water.

### **General tip**

Asthmatics should avoid raking leaves, mowing lawns or working with peat, mulch, hay or dead wood. If someone with asthma must do yard work, he or she should wear a mask and wash after the work.

### **Dust and dust mites:**

Dust may contain molds, pollens, fibers and dander from pets as well as dust mites. Dust mites are microscopic creatures that feed on flakes of skin shed by humans and animals and live in carpets, mattresses, bedding, etc. Their waste products can provoke allergic reactions in people who are sensitive. Although it is virtually impossible to eliminate dust or dust mites, you can reduce the number of mites and alleviate the dust problems by adopting some preventive strategies.

### **Managing at the source**

- Encase your mattress and pillows in dust mite-proof or allergen-impermeable covers. Wash twice yearly in warm water and air dry.

- Wash sheets and pillow cases once a week in hot water (130°F or above) to kill dust mites. (Since this can be scalding, if there are children in the home, increase hot water temperature one hour before washing and turn down after washing.)
- Replace wool or feathered bedding with synthetic materials, and replace traditional stuffed animals with washable ones.
- Remove carpets if possible, particularly from the bedroom. Use throw rugs and clean them regularly.
- Remove or reduce the number of stuffed animals, wicker baskets, dried flowers and other dust collectors around the house.
- Replace heavy drapes and blinds with washable curtains or shades.

## **Cleaning**

- If there is carpeting, have it professionally cleaned using hot water steam extraction twice a year. Carpeting should dry within 24 hours. Avoid chemical treatments of carpeting.
- Dust weekly using a damp, lint-free rag. Do not use a dry cloth since this just stirs up dust.
- Ask someone to vacuum for you, if possible. If you must vacuum, wear a high quality dust mask. Or consider getting a vacuum cleaner with a HEPA filter.
- Consider having air ducts for heating, ventilation and air conditioning cleaned every 3-5 years or after any remodeling work, unless the ductwork is sealed.

## **General tip**

- Use a dehumidifier or air conditioner to maintain relative humidity at about 30-50% or below. Consider purchasing a dehumidifier with a hose bib that a hose can be attached to and then drained to a sink or floor drain.
- Dust mites thrive in high humidity.
- Avoid sleeping or lying on the carpet or upholstered furniture.

## **Pollen and outdoor air quality**

Pollen and outdoor air pollution can trigger asthma attacks. Pollens are produced by plants and often seasonal. They are carried by wind for a long distance and then can be carried inside your house on your clothes or pets. Although the air pollution level is strongly affected by the weather, it is a year-round problem.

- If you are sensitive to airborne allergens and irritants, limit time spent outdoors when pollen levels or air pollution levels are high.
- Use air conditioning to avoid having to open windows if possible. Clean the filter every month.
- Avoid hanging laundry outside. Instead, dry your clothes in an automatic dryer. Or hang dry inside if humidity is not a problem.
- If you buy plants for your yard, look for species that do not aggravate allergies.
- Consider “sneezeless” landscaping.
- Keep track of the local air quality ([www.pscleanair.org](http://www.pscleanair.org)) or pollen prevalence ([www.pollen.com](http://www.pollen.com))

## **Smoke and other irritants**

Tobacco smoke is one of the most powerful irritants of the lungs found in our daily lives. It irritates the airways and can cause permanent damage to the lungs of healthy people, and it

can trigger asthma attacks in people with asthma. Smoke or fumes released by some household items such as wood- burning stoves, candles and incense can also trigger asthma attacks.

- Do not smoke and do not allow others to smoke in your house or car. Avoid exposure to tobacco smoke.
- Since the tobacco smell remains on the clothes and can trigger an asthma attack, going outside to smoke may not prevent an asthmatic family member from having an episode. If you must smoke, smoke outside and use a smoking jacket and hat and leave them outside. Wash hands and face afterwards.
- Do not use wood-burning stoves and fireplaces.
- Do not burn candles or incense in the house.
- Avoid strong-smelling products, such as cleaning products, air-fresheners, perfumes, hair sprays, etc.
- Remove or seal the sources of formaldehyde with a water-based sealer.

### **Cold air**

Changes in the weather, especially cold air, can trigger asthma attack.

- Dress warmly in a cold weather.
- Breathe through your nose so air is warmed before reaching your lungs.
- Wear a scarf around your nose and mouth in a cold weather.]
- Warm up before exercising and pre-treat with an inhaler if needed.

### **Food**

Some people have food allergies that can trigger asthma attacks while others have symptoms such as skin problems and intestinal problems. Some react to preservatives found in processed food. Food allergies can be fatal in certain people.

- Beware of foods that may cause you symptoms.
- Learn to read food labels carefully. If dining out, ask about the ingredients used in preparing a particular dish before tasting the food.
- If you have had severe reactions to a specific food, talk to your doctor about carrying an epinephrine injector.

### **Other Tips**

- Ask your health care provider about skin or blood tests to tell if you have allergy problems.
- Ask your health care provider about getting an annual flu shot, since influenza can lead to serious respiratory problems.
- Treat respiratory infections promptly.

## APPENDIX F: LIVING WITH ASTHMA

In addition to mastering the typical developmental tasks of childhood, students with asthma have the additional challenge of becoming partners in the management of their asthma. With adequate education and support, the student can develop the skills needed to assume increasing responsibility for their self-management. Each member of the team can assist the student with skill development through teaching, coaching, providing access to health care, and making available necessary self-assessment tools. A critically important way to assist students is to minimize as many triggers in the student's home environment as possible.

### Self Care

Because asthma is a chronic illness, students with asthma are always at risk for developing symptoms. Students who are able to avoid triggers, identify early warning signs, and take medication as prescribed are often able to avoid asthma attacks, emergency room visits, and hospitalizations.

Students who have asthma must ensure that the school both has the medications on hand and permission to administer the medications. Students in middle school, junior high school, and high school often carry their medications for self-administration, but must have written permission to do so. The school nurse can assist the parents with the appropriate permission forms. The primary care provider needs to evaluate the student's asthma so that the asthma management plan is kept current.

Sometimes, students with asthma feel that having asthma makes them different from their classmates. Students may not want anyone to know about the asthma and may postpone taking needed medications because they are embarrassed to do so. Absences from school because of asthma attacks may cause students to fall behind in schoolwork. Parents, primary care providers, and school personnel can work together to help students integrate asthma management into their daily lives, helping them to recognize a possible commonality with their classmates and lessen any feelings of being different.

### Improving Indoor Air Quality at Home

Effective asthma management depends upon a balance between adequate medications and control of triggers in the environment. A student may not be affected by all of the triggers listed here. A medical professional will be able to help a student determine which triggers affect his or her asthma. The following measures can be taken to minimize triggers in the home. The Master Home Environmentalist program from the American Lung Association can provide an in-home evaluation.

#### Dust and Dust Mite Control

- Every home has dust mites. They feed on skin flakes and are found in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys, fabric, etc. Body parts and feces of dust mites can trigger asthma in sensitive individuals.
- Household cleaning and laundry should be done when the asthmatic is not home.
- Damp-dust the house frequently with a micro or electrostatic cloth.
- Wash bedding (sheets, blankets, and bedcovers) every week in hot (130 degree F) water. Water heaters should be set at 120 degrees F or lower to prevent burns. The heater can be turned up for this washing and then lowered again. Allow enough time for the water temperature to increase. A kettle full of boiling water can be added to the wash cycle in a

top-loading machine. Some newer front-loading machines have a sanitize cycle, which should be used.

- Cover mattresses and pillows in dust-proof (allergen-impermeable) zippered covers.
- Choose washable stuffed toys, wash them often in hot water, and dry thoroughly. Keep stuffed toys off beds.
- Maintain low indoor humidity, ideally between 30 and 50 % relative humidity. Humidity levels can be measured by hygrometers that are available at local hardware stores.
- Curtains or mini-blinds should be washed/cleaned weekly.
- Upgrade filters in the Heating/Ventilation/Air Conditioning unit to 30% efficient, extended surface pleated filters. Maintain and clean HVAC components, including baseboards and ducts regularly, following manufacturer's recommendations.
- Replace carpets with hardwood or vinyl that can be damp-mopped, and use rugs that can be laundered. If carpets cannot be replaced, vacuum the carpet thoroughly twice a week. Use HEPA (high efficiency particulate air) filter vacuums, or at least HEPA rated vacuum bags.
- Remove shoes at the door. This will prevent the spread of dust and external toxins throughout the home, especially if carpeting is present.

### **Animal Dander**

- Dogs, cats, rodents (including hamsters and guinea pigs), and other mammals can trigger attacks in sensitive asthmatics.
- Keep pets outside whenever possible and never allow them into the asthmatic's bedroom. Follow the dust control measures for dust mites to lower animal dander in the home. Pets can be washed to reduce dander.

### **Secondhand Smoke**

- Do not allow smoking in the home or car. Inhaling secondhand smoke can make asthma worse.
- If the student smokes, make sure the student discusses this with his or her primary care providers.
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## Mold

- If mold is a problem in your home, you must clean up the mold and eliminate sources of moisture. The Master Home Environmentalist Program or local environmental health department can offer advice to eliminate mold.
- Wash mold off hard surfaces and dry completely. Absorbent materials, such as carpet may have to be replaced if they are contaminated. Use soap or detergent and dry thoroughly. Bleach does not kill mold, and it is a lung irritant that can cause an asthma episode. It may be difficult to kill all of the mold on a very porous surface. Surfaces need to stay dry to keep mold from growing again.
- Fix leaky plumbing or other sources of water.
- Keep drip pans in your air conditioner, refrigerator, and dehumidifier clean and dry.
- Use exhaust fans or open windows in kitchens and bathrooms when showering, cooking, or running the dishwasher. Fans may need to run 30-45 minutes afterwards to exhaust

moisture. Low speed exhaust fans are available that can be installed to run on a continuous basis. Ensure that exhaust fans are vented to the outside, not into the attic space.

- Vent clothes dryers to the outside. Clean/vacuum exhaust ducts and lint traps frequently.
- Maintain low indoor humidity, ideally between 40 and 60% relative humidity. Humidity levels can be measured by hygrometers available at local hardware stores.
- Practice good moisture management by providing adequate ventilation, especially in the winter. Open windows and/or use exhaust fans to pull air through the house as often as possible. This will minimize condensation on cold surfaces and reduce mold growth.

Remember that asthma is a manageable disease and that by following these recommendations you can possibly reduce medication use, reduce emergency room visits, and improve the quality of life for asthmatics.

Consider watching the Northwest Clean Air Agency's video, Mold in Your Home, and following its recommendations. ([www.youtube.com/watch?v=gDikRj5i0PU](http://www.youtube.com/watch?v=gDikRj5i0PU))

It is important to determine what triggers your asthma episode since effective asthma management depends on a balance between appropriate medications and control of triggers in the environment. Asthma episodes are often triggered by such factors as allergens, irritants and reactions to physical changes.

- Allergens are substances that can cause an allergic reaction in certain people. Some examples of common allergens are: pollen, pet dander and certain kinds of medications. Your health care provider may give you a skin or blood test to find what substances you are allergic to.
- Irritants are substances that irritate airways and lungs. Although they adversely affect everybody to a varying degree, they trigger asthma episodes only in people with asthma. Common irritants include air pollution, diesel exhaust, ozone, tobacco and wood smoke, perfumes, permanent markers, paints, solvents, and many household chemicals.
- Other things that can trigger asthma episodes include reactions to changes in the weather, illness, stress, and strong emotions.

To find which substances can trigger your asthma episode, it is often helpful to determine the circumstances under which you tend to get sick. First, ask yourself if your asthma symptoms are worse on particular occasions. Then go over the list of common triggers and check the ones that seem to make you sick. If you are not sure what is causing your asthma attack, keep a diary describing the circumstances surrounding each asthma episode. Check the list to see which trigger might have been present before you had an asthma episode. Keep in mind that you might have an episode hours after exposure to possible triggers.

**General questions: Determine if your asthma symptoms are worse...**

- ☐ in certain seasons? (seasonal pollens and molds)
- ☐ when you are around pets? (animal dander)
- ☐ when vacuuming or changing the bedding? (dust mites)
- ☐ in the bathroom or basement? (mold)
- ☐ after exposure to cold air or exercise? (physical triggers)
- ☐ after exposure to tobacco, diesel exhaust, wood smoke or perfume? (irritants)
- ☐ when you develop a cold or bronchitis? (infection)
- ☐ at work and symptoms improve when away from work? (occupational asthma)
- ☐ when you come home? (indoor allergens)

**Check the ones that seem to make you sick:**

- |  |   |
|--|---|
| <input type="checkbox"/> Air pollution (wood smoke, diesel exhaust, fumes, etc.)               | <input type="checkbox"/> Humidity (high or low)                     |
| <input type="checkbox"/> Changes in the weather  | <input type="checkbox"/> Medications (aspirin, etc.)                |
| <input type="checkbox"/> Chemical smells (paint, bleach, cleaning agents, new carpeting, etc.) | <input type="checkbox"/> Mold                                       |
| <input type="checkbox"/> Cockroaches   | <input type="checkbox"/> Perfume, deodorants, hair spray, etc.      |
| <input type="checkbox"/> Cold air  | <input type="checkbox"/> Pets                                       |
| <input type="checkbox"/> Colds and respiratory infections                                      | <input type="checkbox"/> Pollen                                     |
| <input type="checkbox"/> Dust or dust mites  | <input type="checkbox"/> Smoke (fireplaces, candles, incense, etc.) |
| <input type="checkbox"/> Food or beverages   | <input type="checkbox"/> Stress                                     |
| <input type="checkbox"/> Exercise or physical exhaustion                                       | <input type="checkbox"/> Strong emotional responses                 |
|  | <input type="checkbox"/> Tobacco smoke                              |

***NOTE: Any child who needs medications delivered at school or who self-administers medications at school must have an Oral Medication Order Form.***

### **Before School Begins**

- As possible review incoming students' health information.
- Contact families of students known to have asthma to gather additional information by calling, e-mailing or sending an asthma history form.
- If needed, set up meeting with family and student.
- Points to review with family:
  - ✓ Content on asthma history form
  - ✓ Expectations of asthma care while at school
  - ✓ Current Asthma Management plan as outlined by student's primary health care provider
  - ✓ Need for asthma emergency care plan and asthma management plan including how to communicate with parents and Health Care Provider(HCP)
  - ✓ Equipment, supplies and medication needs, including 3-day disaster supply
  - ✓ Role of the school nurse/health services and school-based staff in managing asthma needs while at school, including need-to-know
  - ✓ Need for Oral Medication at School form for all students who have medication whether administered by school personnel or self administered
  - ✓ Possible need for Exchange of Medical information form to communicate with HCP
  - ✓ Other documents needed as determined by your school district
  - ✓ Flu, pneumonia vaccination
- General school staff training on asthma

Once information is received\_the school nurse determines if the student meets criteria for life-threatening (fatality-prone) asthma. While any asthma exacerbation has the potential to be life-threatening, some students are more prone to experience a life-threatening episode while at school. See appendix ( ) for the life-threatening algorithm. All students deemed to have life-threatening asthma must have an emergency care plan, medication, and staff training in place prior to their start of school. (SHB 2834)

### **Assigning level of Care/Severity code**

Students with asthma will be assigned a severity code that reflects their level of nursing care needs based on the “Staff Model for the Delivery of School Health Services” from OSPI. Those most likely assigned to students with asthma are:

### **Level B Medically Fragile**

Student faces the possibility of life-threatening emergency daily, requiring the skill and judgment of a professional nurse in the building at all times. This student may: be prone to status asthmaticus, decline rapidly when having an exacerbation, be a poor perceiver of symptoms, not be well-controlled, have had frequent ER visits/hospitalizations, have been intubated, have high absenteeism, have limitation of activity, and/or have age considerations, and therefore require frequent nurse monitoring.

### **Level C Medically Complex**

Student is complex and unstable. Requires daily treatments and close monitoring. The student may have: multiple meds, frequency of symptoms >2 days/week, nighttime awakening, pre-medication prior to exercise, environmental allergies as triggers, symptoms with URI's, controller med, triggers in school environment, and/or used rescue medication in the past 3 months, and therefore require nurse monitoring at least once a week. The professional nurse determines the level of supervision and delegates to other trained, willing, and competent school staff.

### **Level D Health Concern**

History of asthma, no controller medication, no use of rescue medication in over one year, no impact on attendance, participation in activities, and therefore requires nurse review at least once a year.

- Periodic evaluation may be needed to determine if a student's severity code needs adjusting.
- Individual Health Plan/Section 504 Plans should be developed on any student who needs medication while at school. These will primarily be level B and C students.

The plan of care will be developed with the family and student if age-appropriate. Other school personnel who will provide care to the student in the absence of the nurse may be included as well.

**Asthma Management Issues to consider in care-planning for care by level of care/ severity code**

|   | Level B<br>Medically Fragile | Level C<br>Medically Complex | Level D<br>Health Concern<br>Monitoring |
|---|------------------------------|------------------------------|---|
| Individual Health Plan/Section 504 Plan, review annually                    | Yes                          | Possibly                     | No                                      |
| Asthma Emergency Care Plan, update annually                                 | Yes                          | Yes                          | Possibly                                |
| School day, level of independence   | Yes                          | Yes                          | No                                      |
| Participation in Activities   | Yes                          | Yes                          | No                                      |
| Peak Flow Monitoring, who, how  | Yes, if prescribed           | Possibly, if prescribed      | No                                      |
| Field Trips, review plan/protocol   | Yes                          | Yes                          | No                                      |
| Transportation  | Yes                          | Possibly                     | No                                      |
| Training of staff annually, signs, symptoms, management, med administration | Yes                          | Yes                          | Yes                                     |
| Monitor and update student/staff needs                                      | Yes                          | Yes                          | No                                      |
| Oral Medication Form, signed parent/HCP, renewed annually                   | Yes                          | Yes                          | Possibly                                |
| Medication at school with pharmacy label                                    | Yes                          | Yes                          | Possibly                                |
| Exchange of Medical Information   | Yes                          | Possibly                     | No                                      |
| Classroom education   | Yes                          | No                           | No                                      |
| Health concern recorded in file   | Yes                          | Yes                          | Yes                                     |

Reminder these are points to consider when developing a plan of care for students with asthma.

**Self-Administration of Oral Medications**

Asthma is a condition that requires immediate treatment when an asthma attack occurs. For this reason many school districts allow self-administration of asthma medications; however, some school districts do not allow any medications to be self-administered. District policy should be reviewed before self-administration is considered.

- Assess student's readiness for self-administration of oral medications or peak flow monitoring. Student is capable of identifying individual medications
- Student is knowledgeable of purpose of individual medications
- Student is able to identify/associate specific symptom occurrence and need for medication administration
- Student is capable of, and knowledgeable about, medication dosage
- Student is knowledgeable about method of medication administration
- Student is able to state side effects/adverse reactions to this medication
- Student is knowledgeable of how to access assistance for self if needed in an emergency

- Student is able to identify safety issues: no sharing of medications with others; need for safe storage of medication; consistent placement of medication
- Obtain an Oral Medication Order form indicating permission from the primary health care provider and parent for the student to self-administer oral medications.
- Develop a plan for oral medication administration with the student, parent and other school personnel as needed.
- Develop a School Asthma Emergency Plan.

## **Promoting Independence in the Student's Self Management**

As the student grows and develops, responsibility in assessing and making asthma management decisions should progress. School nurses can assist in promoting this independence within the school setting in various ways.

### ☒ **Assess and promote:**

- ☒ Knowledge and understanding of asthma
- ☒ Use of the metered dose inhaler
- ☒ Recognition of asthma symptoms
- ☒ Avoidance of asthma triggers
- ☒ Planning for self-care

### ☒ **Assess asthma control in relation to:**

- ☒ Absenteeism rate
- ☒ Participation in activities, particularly physical education, recess
- ☒ School performance

### ☒ **Assess social/emotional growth related to student's asthma and self care:**

- ☒ Feeling that he/she is different from other students
- ☒ Avoids taking medications; toughs it out during an attack
- ☒ Reluctance to go to office for medications
- ☒ Notifying school personnel about medication need or use if self-administering
- ☒ Safety issues, e.g., not sharing medications with other students

### ☒ **Promote self esteem:**

- ☒ Assist student in providing information about asthma to others
- ☒ Positive feedback for good decisions
- ☒ Increasing independence in plan of care

### Preparation before school starts

Before the student with asthma enters school in the fall, it is important to prepare for his or her needs. The student's health care team includes the student, the family, the school nurse, the primary classroom teacher, PE teacher, other school personnel and the student's asthma health care provider. Each member of the team has a role to assure safe and effective care at school. Try to do the following before school starts each year:

1. Talk with your child's asthma doctor (or nurse practitioner) about your child or teen's asthma and his or her needs at school. Work with your health care provider to develop an asthma management plan for your child/teen. This plan should include:
  - Triggers and how to avoid them
  - Asthma early warning symptoms
  - Medications to treat asthma—name, dose, time, how to give, and side effects
  - The importance of keeping fit and playing sports if the child desires
  - What to do during an asthma attack
  - What to do if the asthma attack does not improve, an emergency plan
  - Medicines and treatment needed during school hours
  - A completed and signed Authorization for Administration of Oral Medication Form if your child needs any oral or inhaled medicines at school.
  - Prescription medicines ordered and filled and labeled in original pharmacy container for delivery at school
2. Call or meet with the school nurse and your child/teen to develop a plan of care for school. A School Emergency Asthma Plan should be developed at this meeting. This includes whom to call and when. Put the emergency plan in writing. For the student's safety, this plan will be shared with other school personnel, such as coaches, physical education teachers, bus drivers, cafeteria and office staff.
3. Discuss any special situations for physical education, field trips, transportation to and from school, and after school activities. Include these in your written plan.
4. Get all school paperwork signed. You may be asked to sign an Authorization for Medical Information form. The school nurse gives this form to your child's or teen's health care provider so that essential medical information can be given to the school nurse.

### Taking medications at school - the current rules

Washington State regulations allow medication administration to students by school personnel when these specific guidelines are met:

- School personnel must be informed of the student's need for medications during school hours.
- An *Authorization for Administration of Oral Medication* form is completed and signed by the health care provider. The health care provider's name on the prescription is **not** enough.
- The medicine is brought to school with an original pharmacy label indicating the child's name, name of medication, dose, time to be given, delivery method and frequency.
- The medicines must be stored in a secure place in the school.

- A written record of when medicines are taken and who assisted with them is kept in the school.

Some students may be able to take asthma medicine on their own at school. The practice of medication self-administration varies with each school district. It depends on your individual school district's policy. The school nurse can tell you about the policy in your district. If your school district permits self-administration, the school nurse can work with you, your child or teen and health care provider to determine the student's ability to take their own medicines and develop a plan for self administration at school.

**Note:** Washington State law requires that a licensed health care provider order must be given to the school for school personnel to give medications. The school nurse must follow orders provided by the licensed health care provider and is responsible for care given by school staff. Parents cannot direct school staff regarding medication delivery.

### **Your Child's/Teen's Rights at School**

The Rehabilitation Act of 1973, Section 504, was written to provide all individuals access to federally funded facilities and programs including public schools. This law pertains to any child who has an "impairment that substantially limits one or more major life activity such as caring for one's self, walking, hearing, or breathing." Asthma can interfere with the child's ability to participate in school. A safe environment must be provided where related aids and services designed to meet the individual educational needs of the child are met. In schools, triggers are eliminated or minimized and medications are allowed for children with asthma.

### **Medical Confidentiality**

Providing the best care for the student with asthma requires that the family, the student, health care provider, school nurse, and school personnel work together. An Authorization for Exchange of Medical Information is a consent form that allows essential health information to be shared with the school nurse. All information shared is kept confidential and stored in a secure place in the school.

If you have questions or concerns about your child's or teen's asthma or care at school, call the school nurse, the Educational Service District School Nurse Supervisor, or the school principal.

School Nurse \_\_\_\_\_

Phone number at school \_\_\_\_\_

**Q. How can I help my child be prepared for asthma at school?**

**A.** Begin each school year talking with your child's school nurse, primary classroom teacher, PE teacher and school principal. Find out who the school nurse is if you don't already know and talk often with her or him. Provide updates on your child's asthma at least every 6 months. Help all staff understand asthma and explain your child's unique asthma needs like:

- Steps to take when symptoms occur, or get worse
- Health care provider updates to the school when changes in medicines or peak flow zones are made
- Classroom adaptation such as no classroom pets, or easy access to an inhaler on field trips
- Access to current quick relief medicines at school, even if symptoms occur infrequently
- Keeping a peak flow meter at school if your child uses one to tell when it's time to use an inhaler
- Know that your child may have more asthma trouble during certain parts of the year because of cold weather (in January), pollens (in April), or colds (back to school germs in September)
- Inform teachers of your child's asthma triggers

**Q. What do I need to do if my child/teen needs to take asthma medicine at school?**

**A.** Have your child seen by his or her health care provider during the summer, before school starts in the fall. This office visit will give you the chance to talk about any changes needed in the asthma management plan and to have your provider complete the Authorization for Administration of Oral Medication at School Form needed for school. Be sure to get a prescription for medication that needs to be given at school as well as one for home so the medication for school is properly labeled and ready to go to school when your child starts. Sometimes medicine schedules can be changed so doses are given before and right after school, avoiding scheduled doses at school altogether. That is not always possible, but check with your child's health care provider.

**Q. What do I do if I feel that my child's needs are not being met at school?**

**A.** Most often school problems are due to miscommunication. Have a talk with the appropriate member of the school asthma team based on the situation. Begin by working with your child's health care provider to make sure you are clear about what your child's management needs are. Talk with your school nurse about your concerns related to medication taking. If it's a classroom allergen, talk directly with the teacher. If the issue is complex or not easily solved, contact the school principal or counselor to request a staff meeting with involved school staff to discuss your child's concerns. Keep a written record of the steps you have taken, including names and dates of contacts and concerns discussed. This record will help in further discussions with other school personnel.

**Q. When should I keep my child home from school because of asthma?**

**A.** If a child's asthma is well controlled, few if any days should be lost from school due to asthma. Talk to your child's health care provider about situations that would prevent your child or teen from attending school. In general, however, keep your student home and call the health care provider in the case of:

- Wheezing that comes back within 1-2 hours after taking inhaled medications
- Difficulty breathing like heaving chest, flaring nostrils or trouble talking
- Rapid breathing at rest
- Peak flow below 50% of personal best and does not improve after one treatment
- Cough that is tiring the student or severe enough to disrupt the classroom
- Weakness or tiredness that limits normal activities
- Evidence of infection, sore swollen throat, painful neck glands with or without wheezing
- Fever greater than 100 degrees orally, the face is hot and flushed

**Q. When is it ok to send my child to school?**

**A.** Your student can attend school if she or he has:

- Stuffy nose but no wheezing
- Mild wheezing that clears easily with one inhaled treatment of medicine
- Peak flow measured within 80-100% of personal best or improves to 80-100% of personal best with one inhaled treatment
- Participation in normal activity without breathing difficulties
- Participation in physical education may be limited for that day by sending a note to the school that includes asthma as the reason for not participating in physical activities that day.

## APPENDIX K: CONTROLLING ASTHMA WITH MEDICATIONS

### *INTRODUCTION: CONTROLLING ASTHMA*

#### How is Asthma Controlled?

Control of asthma uses four basic approaches: minimizing contact with triggers, regular visits to the provider (>2/year), education on symptom recognition and medication use, and use of medications. Asthma medications belong to two broad categories based on whether they provide quick relief or long-term control of asthma symptoms. Ongoing assessment of control is a critical aspect of care for the student with asthma.

#### Brief Overview of Asthma Medications

- Quick relief medications: These medication should be kept for every student, regardless of level of control, and used first for any asthma emergency. Quick relief medications help relax the airways, thus allowing more medication to penetrate and treat more bronchioles.. Bronchodilators used for managing breakthrough asthma symptoms (when out of control – the Asthma Control Test APPENDIX XXX), during an emergency, and as a pretreatment 30-45 minutes BEFORE exercise.  
NOTE: In the school the focus should be on handling, storage, and correct administration of rescue medication.
- Long-term control medications generally are anti-inflammatory medications and taken daily on a long-term basis (preferably at home) to gain and maintain control of persistent asthma, even in the absence of symptoms. This category includes long-acting inhaled b2-agonist, inhaled anti-inflammatory drugs (corticosteroids and non- corticosteroids), anti-leukotriene drugs (PO), inhaled combination medications, and anti-IgE immunotherapy (IM).
- Oral steroids may be used to treat severe, acute asthma episodes, or be given for a longer period when needed to gain control of severe asthma. Since the side effects of oral steroids could be serious, depending on the dosage and duration of the therapy, they should always be taken in consultation with your child's health care provider. Instructions for use of oral steroids should be closely followed.
- Rules of two to briefly assess whether your student is out of asthma control:
  - >2 episodes of daytime symptoms/using a rescue inhaler in a WEEK
  - >2 episodes of nighttime awakening in a MONTH (student recall of this may be low)
  - >2 refills of their rescue inhaler in a YEAR
  - Asthma is limiting their active life

#### General Notes on Common Asthma Medications

##### If you use an inhaler

- To relieve dry mouth or throat irritation caused by inhaler use, rinse your mouth with water, chew gum, or suck sugarless hard candy after each use. Rinsing is required after each use of a corticosteroid inhaler so that small amounts of the steroid do not remain on the back of your throat and cause thrush.
- Inhalation devices require regular cleaning. Once a week, remove the drug container from the plastic mouthpiece, wash the mouthpiece with warm tap water, and dry it thoroughly

placing it vertically in the drainage rack. The mouthpiece area of dry powder devices should be cleaned inside with a cotton-tipped applicator once a week.

#### Side Effects

- Side effects may or may not be common depending on the medication, dosage, or duration of the therapy. Tell your doctor if unexpected symptoms are severe or do not go away after 2-3 days. Side effects may include: dry mouth, headache, upset stomach, dizziness, shakiness, or increased heart rate.
- Severe side effects: Call your doctor or health care provider as soon as possible if you have any of the following severe side effects. Call 911 if necessary.
- Difficulty breathing
- Chest pain or discomfort
- Irregular heartbeat
- Severe rash
- Swollen face, throat or other parts of the body

#### How are asthma medications given?

Medications may be administered in a number of ways. The student's health care provider determines the type of medication delivery. Medication delivery may be by:

- mouth (oral)
- nebulizer
- metered dose inhaler (MDI)
- dry powder inhaler (DPI)
- diskhaler

Appendix ?? contains information regarding use and care of these delivery methods.

A student using a metered dose inhaler should also use a device called a “spacer” or “holding chamber” (Appendix ??). Holding chambers are useful for all patients, particularly for young children and persons with coordination problems. They are recommended for use with bronchodilators, but should always be used with an inhaled anti-inflammatory containing steroids. Neither bronchodilators nor anti-inflammatories should be withheld, however, if a holding chamber or spacer is not available.

#### What is a peak flow meter and how is it used?

The peak flow meter measures how fast the student can blow air out through the airways. It lets the student and supervising adult know how much airway narrowing is present at a given time. There are many different types of peak flow meters, but they all do the same thing.

#### A peak flow meter can:

- Tell how well air is moving through the airways.
- Give early warning of an asthma attack, sometimes before symptoms develop or before a student notices asthma symptoms.
- Signal when medication can prevent worsening asthma.
- Measure how well the student's asthma medications are working.
- Help adults share information about the student's asthma.

The following students may benefit from having a peak flow meter at school:

- Students with active asthma: i.e. having had at least one acute care visit (ER/Hospitalization) or had to use rescue medication in the last year
- Students requiring asthma medications at school.
- Students who have asthma symptoms at school.

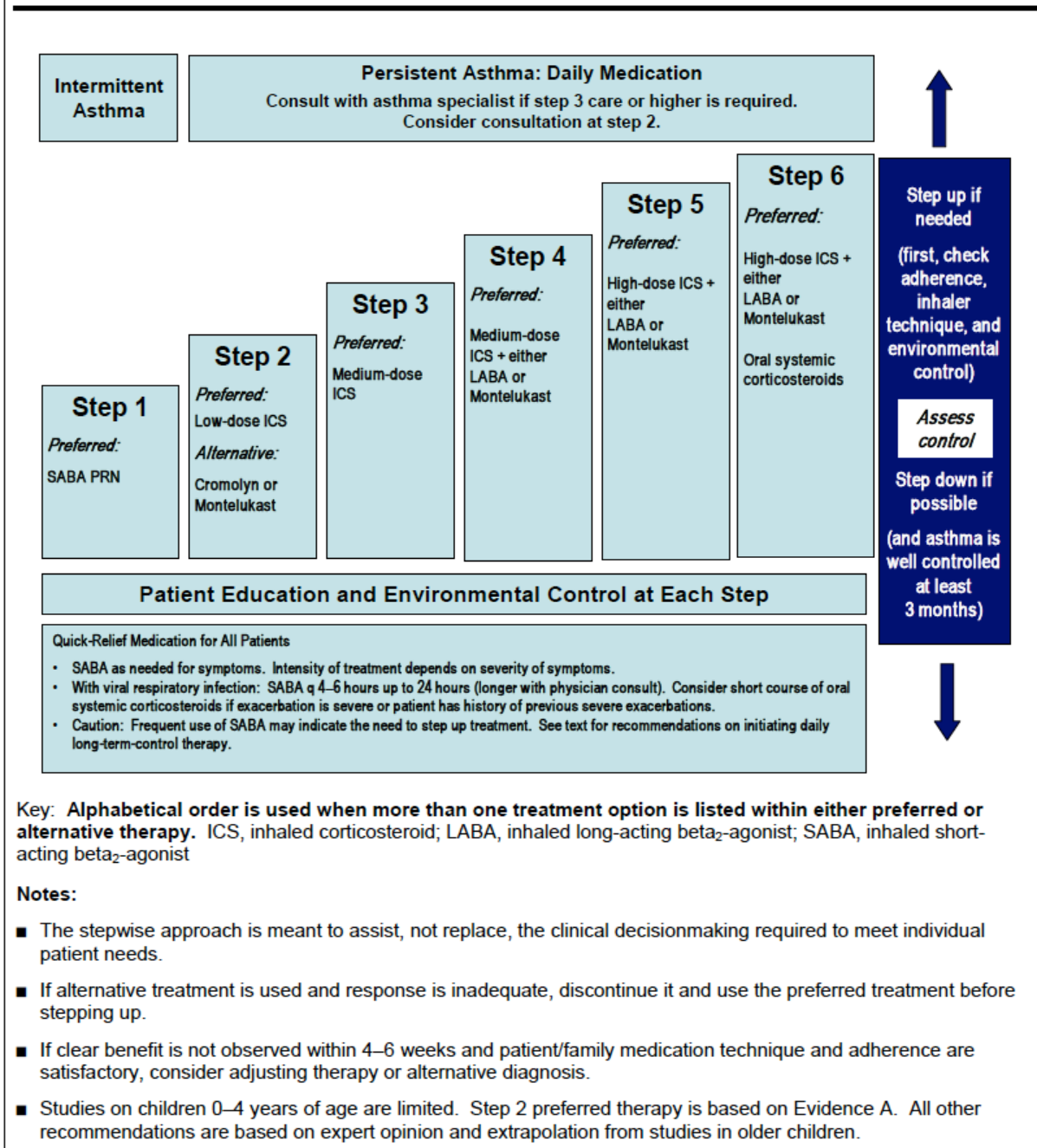
The usefulness of a peak flow meter is dependent upon having a baseline or “personal best” peak flow reading. The baseline is used in the development of an asthma management plan. Peak flow ‘zones’ are created based on the peak flow obtained when the student is feeling well and does not have symptoms. It is important to remember, however, that asthma control decisions should be based on symptoms as well as peak flow readings.

The school nurse may talk with the student’s family and health care provider about having a peak flow meter at home and another at school.

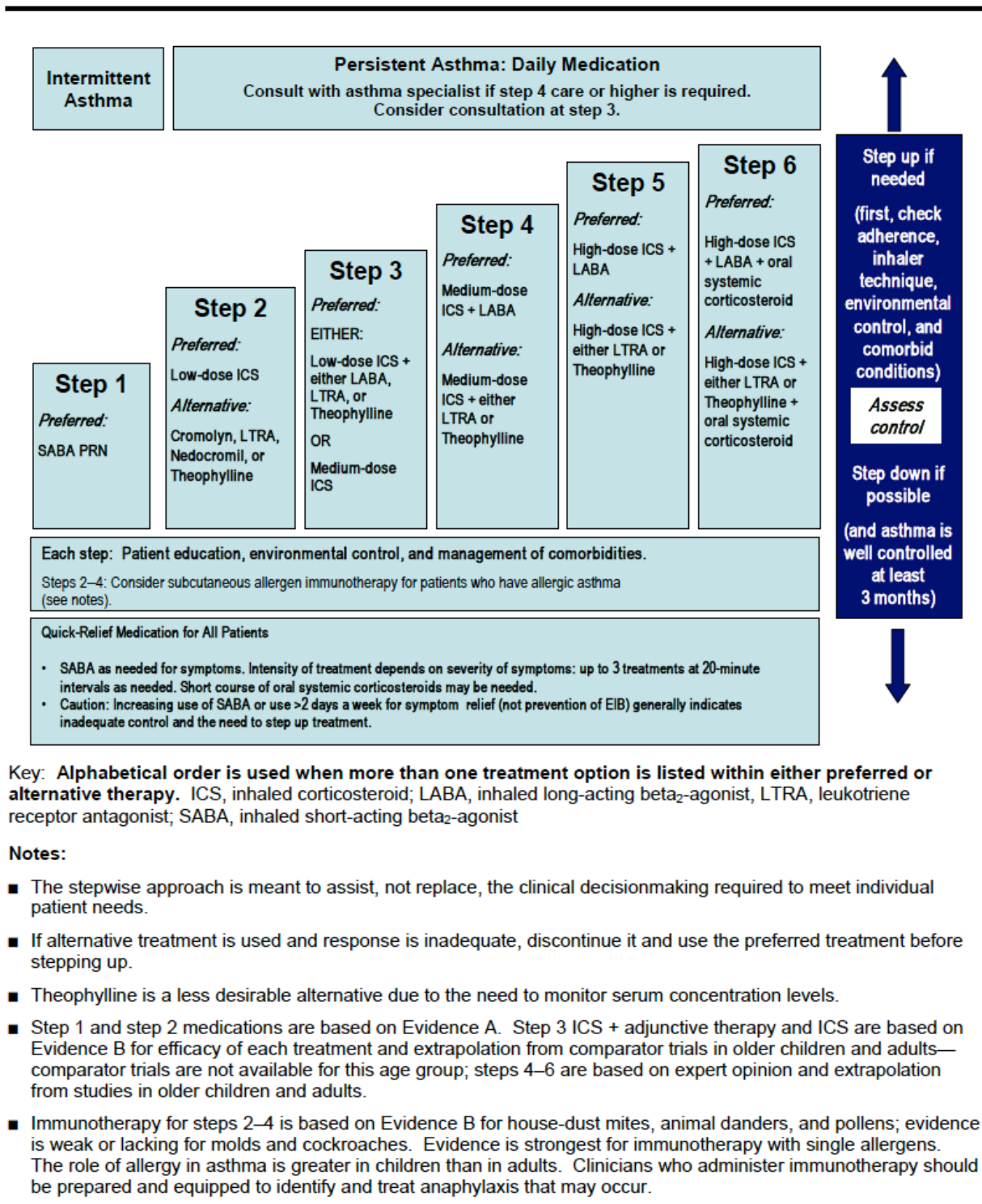
*CONTROLLING ASTHMA WITH MEDICATIONS: STEPWISE APPROACHES*

*Note: The following 14 pages were adapted and modified from Expert Panel Report 3:  
Guidelines for the Diagnosis and Management of Asthma [http://www.nhlbi.nih.gov/guidelines/  
asthma/asthgdln.htm](http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm)*

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

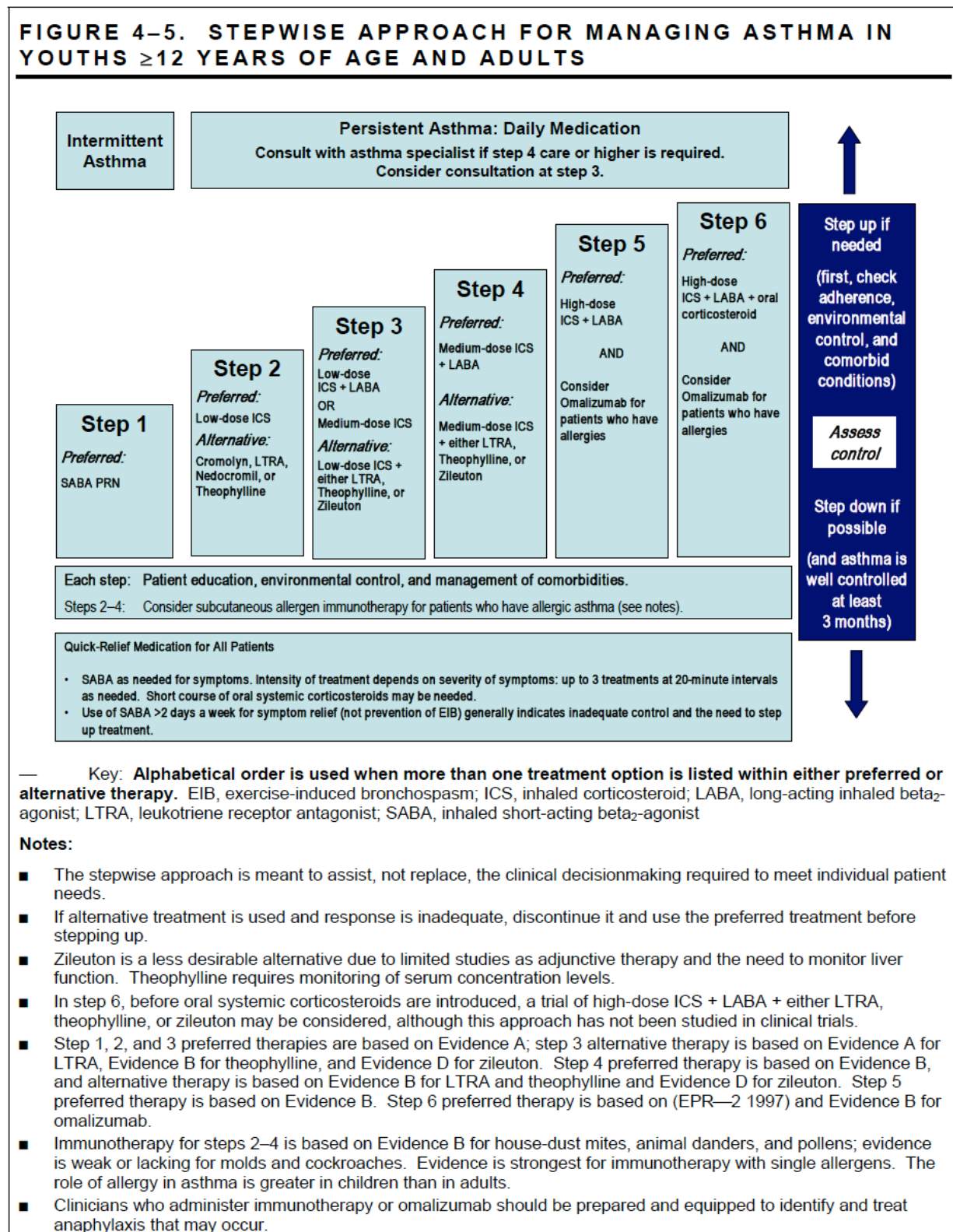


**FIGURE 4–1b. STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 5–11 YEARS OF AGE**



Above 12 years old

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



## QUICK-RELIEF MEDICATIONS

| Name/Products  | Indications/Mechanisms   | Potential Adverse Effects  | Therapeutic Issues  |
|--|--|--|---|
| <b>Short-Acting Beta<sub>2</sub>-Agonists (SABA)</b><br><br><i>Inhaled SABA:</i><br>Albuterol (Proair, Proventil)<br><br>Levalbuterol (Xopenex)<br><br>Pirbuterol (Maxair) | <p><i>Indications</i></p> <ul style="list-style-type: none"> <li>Relief of acute symptoms; quick-relief medication.</li> <li>Preventive treatment for EIB prior to exercise.</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li><b>Bronchodilation.</b> Binds to the beta<sub>2</sub>-adrenergic receptor, producing smooth muscle relaxation following adenylate cyclase activation and increase in cyclic AMP producing functional antagonism of bronchoconstriction.</li> </ul> | <p>Tachycardia, skeletal muscle tremor, hypokalemia, increased lactic acid, headache, hyperglycemia. Inhaled route, in general, causes few systemic adverse effects. Patients with preexisting cardiovascular disease, especially the elderly, may have adverse cardiovascular reactions with inhaled therapy.</p> | <ul style="list-style-type: none"> <li>Drugs of choice for acute bronchospasm. Inhaled route has faster onset, fewer adverse effects, and is more effective than systemic beta<sub>2</sub>-selective agents (isoproterenol, metaproterenol, isoetharine, and epinephrine) are not recommended due to their potential for excessive cardiac stimulation, especially in high doses. Oral systemic beta<sub>2</sub>-agonists are not recommended.</li> <li>For patients who have intermittent asthma, regularly scheduled daily use neither harms nor benefits asthma control (Drazen et al. 1996). Regularly scheduled daily use is not recommended.</li> <li>Regular use &gt;2 days/week for symptom control (not prevention of EIB), increasing use, or lack of expected effect indicates inadequate asthma control.</li> <li>For patients frequently using SABA, anti-inflammatory medication should be initiated or intensified.</li> <li>Levalbuterol at one-half the mcg dose produces clinically comparable bronchodilation and systemic side effects as racemic albuterol.</li> </ul> |

## QUICK-RELIEF MEDICATIONS (CONTINUED)

| Name/Products  | Indications/Mechanisms  | Potential Adverse Effects   | Therapeutic Issues  |
|--|---|---|---|
| <b>Anticholinergics</b><br><br>Ipratropium bromide<br>(Atrovent) | <p><i>Indications</i></p> <ul style="list-style-type: none"> <li>Relief of acute bronchospasm (See Therapeutic Issues column.).</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li><b>Bronchodilation.</b> Competitive inhibition of muscarinic cholinergic receptors.</li> <li>Reduces intrinsic vagal tone of the airways. May block reflex bronchoconstriction secondary to irritants or to reflux esophagitis.</li> <li>May decrease mucous gland secretion.</li> </ul> | <ul style="list-style-type: none"> <li>Drying of mouth and respiratory secretions, increased wheezing in some individuals, blurred vision if sprayed in eyes. If used in the ED, produces less cardiac stimulation than SABAs.</li> </ul> | <p>Reverses only cholinergically mediated bronchospasm; does not modify reaction to antigen. Does not block EIB.</p> <p>Multiple doses of ipratropium in the ED provide additive effects to SABA.</p> <p>May be alternative for patients who do not tolerate SABA.</p> <p>Treatment of choice for bronchospasm due to beta-blocker medication.</p> <p>Has not proven to be efficacious as long-term control therapy for asthma.</p> |

|   |  |  |  |
|---|--|--|--|
| <b>Corticosteroids</b>  | <i>Indications</i>   |  |  |
|   | <ul style="list-style-type: none"> <li>For moderate or severe exacerbations to prevent progression of exacerbation, reverse inflammation, speed recovery, and reduce rate of relapse.</li> </ul> | Short-term use: reversible abnormalities in glucose metabolism, increased appetite, fluid retention, weight gain, facial flushing, mood alteration, hypertension, peptic ulcer, and rarely aseptic necrosis.   | Short-term therapy should continue until patient's symptoms resolve. This usually requires 3–10 days but may require longer.                           |
| <i>Systemic:</i>  |  |  |  |
| Methylprednisolone<br>(Medrol)                                    | <i>Mechanisms</i>  |  |  |
| Prednisolone<br>(Prelone)   | <ul style="list-style-type: none"> <li><b>Anti-inflammatory.</b></li> </ul>  | Consideration should be given to coexisting conditions that could be worsened by systemic corticosteroids, such as herpes virus infections, varicella, tuberculosis, hypertension, peptic ulcer, diabetes mellitus, osteoporosis, and <i>Strongyloides</i> . | Action may begin within an hour.   |
| Prednisone<br>(Deltasone)   |  |  | There is no evidence that tapering the dose following improvement is useful in preventing a relapse in asthma exacerbations.                           |
|   |  |  | Other systemic corticosteroids such as hydrocortisone and dexamethasone given in equipotent daily doses are likely to be as effective as prednisolone. |
| Key: ED, emergency department; EIB, exercise-induced bronchospasm |  |  |  |

SABA treatment is recommended for all patients in managing exacerbations

- The repetitive or continuous administration of SABAs is the most effective means of reversing airflow obstruction (Camargo et al. 2003b; Karpel et al. 1997; McFadden 2003; Travers et al. 2001).
- In the ED, three treatments of SABA spaced every 20–30 minutes can be given safely as initial therapy. Thereafter, the frequency of administration varies according to the improvement in airflow obstruction and associated symptoms and the occurrence of side effects. Continuous administration of SABA may be more effective in more severely obstructed patients (Camargo et al. 2003b; Papo et al. 1993).
- Because of the risk of cardiotoxicity, use only selective SABA (albuterol, levalbuterol, pirbuterol) in high doses.
- The onset of action for SABAs is less than 5 minutes; repetitive administration produces incremental bronchodilation. In about 60–70 percent of patients, response to the initial three doses in the ED will be sufficient to discharge them, and most patients will have a significant response after the first dose (Karpel et al. 1997; Rodrigo and Rodrigo 1998b; Strauss et al. 1997).

| <b>AEROSOL DELIVERY DEVICES</b>   |   |  |   |
|---|---|--|---|
| <b>Device/Drugs</b>   | <b>Population</b>   | <b>Optimal Technique*</b>  | <b>Therapeutic Issues</b>   |
| <p>Metered-dose inhaler (MDI)</p> <p>Beta<sub>2</sub>-agonists<br/>Corticosteroids<br/>Anticholinergics</p> | <p>≥5 years old</p> <p>(&lt;5 with spacer or valved holding chamber (VHC) mask)</p> | <p>Actuation during a slow (30 L/min or 3–5 seconds) deep inhalation, followed by 10-second breathhold.</p> <p>Under laboratory conditions, open- mouth technique (holding MDI 2 inches away from open mouth) enhances delivery to the lung. This technique, however, has not been shown to enhance clinical benefit consistently compared to closed- mouth technique (inserting MDI mouthpiece between lips and teeth).</p> | <p>Slow inhalation and coordination of actuation during inhalation may be difficult, particularly in young children and elderly. Patients may incorrectly stop inhalation at actuation. Deposition of 50–80 percent of actuated dose in oropharynx. Mouth washing and spitting is effective in reducing the amount of drug swallowed and absorbed systemically (Selroos and Halme 1991).</p> <p>Lung delivery under ideal conditions varies significantly between MDIs due to differences in formulation (suspension versus solution), propellant (chlorofluorocarbon (CFC) versus hydrofluoralkane (HFA)), and valve design (Dolovich 2000). For example, inhaled corticosteroid (ICS) delivery varies from 5–50 percent (Kelly 2003).</p> |
| <p>Breath-actuated MDI</p> <p>Beta<sub>2</sub>-agonist</p>  | <p>≥5 years old</p>   | <p>Tight seal around mouthpiece and slightly more rapid inhalation than standard MDI (see above) followed by 10-second breathhold.</p>   | <p>May be particularly useful for patients unable to coordinate inhalation and actuation. May also be useful for elderly patients (Newman et al. 1991). Patients may incorrectly stop inhalation at actuation. Cannot be used with currently available spacer/ valved-holding chamber (VHC) devices.</p>  |

|   |                     |  |  |
|---|---------------------|--|--|
| <p>Dry powder inhaler (DPI)</p> <p>Beta<sub>2</sub>-agonists</p> <p>Corticosteroids</p> <p>Anticholinergics</p> | <p>≥4 years old</p> | <p>Rapid (60 L/min or 1–2 seconds), deep inhalation. Minimally effective inspiratory flow is device dependent.</p> <p>Most children &lt;4 years of age may not generate sufficient inspiratory flow to activate the inhaler.</p> | <p>Dose is lost if patient exhales through device after actuating. Delivery may be greater or lesser than MDI, depending on device and technique. Delivery is more flow dependent in devices with highest internal resistance. Rapid inhalation promotes greater deposition in larger central airways (Dolovich 2000). Mouth washing and spitting is effective in reducing amount of drug swallowed and absorbed (Selroos and Halme 1991).</p> |
|---|---------------------|--|--|

| <b>AEROSOL DELIVERY DEVICES (CONTINUED)</b> |                                 |   |  |
|---|---------------------------------|---|--|
| <b>Device/Drugs</b>                         | <b>Population</b>               | <b>Optimal Technique*</b>   | <b>Therapeutic Issues</b>  |
| Spacer or valved holding chamber (VHC)      | ≥4 years old                    | <p>Slow (30 L/min or 3–5 seconds) deep inhalation, followed by 10-second breathhold immediately following actuation.</p> <p>Actuate only once into spacer/VHC per inhalation (O'Callaghan et al. 1994).</p>   | <p>Indicated for patients who have difficulty performing adequate MDI technique.</p> <p>May be bulky. Simple tubes do not obviate coordinating actuation and inhalation. The VHCs are preferred.</p>   |
|   | <4 years old VHC with face mask | <p>If face mask is used, it should have a tight fit and allow 3–5 inhalations per actuation (Amirav and Newhouse 2001; Everard et al. 1992).</p> <p>Rinse plastic VHCs once a month with low concentration of liquid household dishwashing detergent (1:5,000 or 1–2 drops per cup of water) and let drip dry (Pierart et al. 1999; Wildhaber et al. 2000).</p> | <p>Face mask allows MDIs to be used with small children. However, use of a face mask reduces delivery to lungs by 50 percent (Wildhaber et al. 1999). The VHC improves lung delivery and response in patients who have poor MDI technique.</p> <p>The effect of a spacer or VHC on output from an MDI depends on both the MDI and device type; thus data from one combination should not be extrapolated to all others (Ahrens et al. 1995; Dolovich 2000). Spacers and/or VHCs decrease oropharyngeal deposition and thus decrease risk of topical side effects (e.g., thrush) (Salzman and Pyszczynski 1988; Toogood et al. 1984).</p> <p>Spacers will also reduce the potential systemic availability of ICSs with higher oral absorption (Brown et al. 1990; Selroos and Halme 1991). However, spacer/VHCs may increase systemic availability of ICSs that are poorly absorbed orally by enhancing delivery to lungs (Dempsey et al. 1999; Kelly 2003).</p> <p>No clinical data are available on use of spacers or VHCs with ultrafine-particle-generated HFA MDIs.</p> <p>Use antistatic VHCs or rinse plastic nonantistatic VHCs with dilute household detergents to enhance delivery to lungs and efficacy (Lipworth et al. 2002; Pierart et al. 1999; Wildhaber et al. 2000). This</p> |

|  |  |  |   |
|--|--|--|---|
|  |  |  | <p>effect is less pronounced for albuterol MDIs with HFA propellant than for albuterol MDIs with CFC propellant (Chuffart et al. 2001).</p> <p>As effective as nebulizer for delivering SABAs and anticholinergics in mild to moderate exacerbations; data in severe exacerbations are limited.</p> |
|--|--|--|---|

| <b>AEROSOL DELIVERY DEVICES (CONTINUED)</b>   |   |   |  |
|---|---|---|--|
| <b>Device/Drugs</b>   | <b>Population</b>   | <b>Optimal Technique*</b>   | <b>Therapeutic Issues</b>  |
| <p>Nebulizer</p> <p>Beta<sub>2</sub>-agonists</p> <p>Corticosteroids</p> <p>Anticholinergics</p>  | <p>Patients of any age who cannot use MDI with VHC and face mask.</p> | <p>Slow tidal breathing with occasional deep breaths. Tightly fitting face mask for those unable to use mouthpiece.</p> <p>Using the “blow by” technique (i.e., holding the mask or open tube near the infant’s nose and mouth) is not appropriate.</p> | <p>Less dependent on patient’s coordination and cooperation.</p> <p>May be expensive; time consuming; bulky; output is dependent on device and operating parameters (fill volume, driving gas flow); internebulizer and intranebulizer output variances are significant (Dolovich 2000). Use of a face mask reduces delivery to lungs by 50 percent (Wildhaber et al. 1999). Nebulizers are as effective as MDIs plus VHCs for delivering bronchodilators in the ED for mild to moderate exacerbations; data in severe exacerbations are limited. Choice of delivery system is dependent on resources, availability, and clinical judgment of the clinician caring for the patient (Cates et al. 2002; Dolovich et al. 2005).</p> <p>Potential for bacterial infections if not cleaned properly.</p> |
| <p>Key: ED, emergency department; SABAs, inhaled short-acting beta<sub>2</sub>-agonists</p> <p>*See figures in “Component 2: Education for a Partnership in Asthma Care” for description of MDI and DPI techniques.</p> |   |   |  |



| LONG-TERM CONTROL MEDICATIONS            |                        |                           |   |
|--|------------------------|---------------------------|---|
| Name/Products<br>(Listed Alphabetically) | Indications/Mechanisms | Potential Adverse Effects | Therapeutic Issues<br>(Not All Inclusive) |

|   |   |   |   |
|---|---|---|---|
| <b>Corticosteroids (Glucocorticoids)</b><br><br><b>Inhaled (ICS):</b><br>Beclomethasone dipropionate (QVAR)<br><br>Budesonide (Palmicort)<br><br>Flunisolide (Aerobid; phased out June 2011)<br><br>Fluticasone Propionate (Flovent)<br><br>Mometasone furoate (Asmanex)<br><br>Triamcinolone Acetonide (Azmacort; phased out Dec 2010)<br><br><b>Systemic:</b><br>Methylprednisolone<br>Prednisolone<br>Prednisone | <b>Indications</b> <ul style="list-style-type: none"> <li>Long-term prevention of symptoms; suppression, control, and reversal of inflammation.</li> <li>Reduce need for oral corticosteroid.</li> </ul>  | <ul style="list-style-type: none"> <li>Cough, dysphonia, oral thrush (candidiasis).</li> <li>In high doses (see figures 4-4b and 4-8b), systemic effects may occur, although studies are not conclusive, and clinical significance of these effects has not been established (e.g., adrenal suppression, osteoporosis, skin thinning, and easy bruising) (Barnes and Pedersen 1993; Kamada et al. 1996). In low-to-medium doses, suppression of growth velocity has been observed in children, but this effect may be transient, and the clinical significance has not been established (CAMP 2000; Guilbert et al. 2006).</li> </ul>   | <ul style="list-style-type: none"> <li>Spacer/holding chamber devices with nonbreath-activated MDIs and mouth washing after inhalation decrease local side effects.</li> <li>Preparations are not absolutely interchangeable on a mcg or per puff basis (see figures 4-4b and 4-8b for estimated clinical comparability). New delivery devices may provide greater delivery to airways; this change may affect dose.</li> <li>The risks of uncontrolled asthma should be weighed against the limited risks of ICS therapy. The potential but small risk of adverse events is well balanced by their efficacy. (See text.)</li> <li>“Adjustable dose” approach to treatment may enable reduction in cumulative dose of ICS treatment over time without sacrificing maintenance of asthma control.</li> <li>Dexamethasone is not included as an ICS for long-term control because it is highly absorbed and has long-term suppressive side effects.</li> <li>Use at lowest effective dose. For long-term use, alternate-day a.m. dosing produces the least toxicity. If daily doses are required, one study shows improved efficacy with no increase in adrenal suppression when administered at 3 p.m. rather than in the morning (Beam et al. 1992).</li> </ul> |
|   | <b>Mechanisms</b> <ul style="list-style-type: none"> <li><b>Anti-inflammatory.</b> Block late reaction to allergen and reduce airway hyperresponsiveness. Inhibit cytokine production, adhesion protein activation, and inflammatory cell migration and activation.</li> <li><b>Reverse <math>\beta_2</math>-receptor downregulation.</b> Inhibit microvascular leakage.</li> </ul> | <ul style="list-style-type: none"> <li>Short-term use: reversible abnormalities in glucose metabolism, increased appetite, fluid retention, weight gain, mood alteration, hypertension, peptic ulcer, and rarely aseptic necrosis.</li> <li>Long-term use: adrenal axis suppression, growth suppression, dermal thinning, hypertension, diabetes, Cushing’s syndrome, cataracts, muscle weakness, and—in rare instances—impaired immune function.</li> <li>Consideration should be given to coexisting conditions that could be worsened by systemic corticosteroids, such as herpes virus infections, varicella, tuberculosis, hypertension, peptic ulcer, diabetes mellitus, osteoporosis, and <i>Strongyloides</i>.</li> </ul> |   |
|   | <b>Indications</b> <ul style="list-style-type: none"> <li>For short-term (3–10 days) “burst”: to gain prompt control of inadequately controlled persistent asthma.</li> <li>For long-term prevention of symptoms in severe persistent asthma: suppression, control, and reversal of inflammation.</li> </ul>  |   |   |
|   | <b>Mechanisms</b> <ul style="list-style-type: none"> <li>Same as inhaled.</li> </ul>  |   |   |

## LONG-TERM CONTROL MEDICATIONS (CONTINUED)

| Name/Products<br>(Listed Alphabetically)  | Indications/Mechanisms  | Potential Adverse Effects   | Therapeutic Issues<br>(Not All Inclusive)   |
|---|---|---|---|
| <b>Cromolyn Sodium and Nedocromil</b><br><br><b>(Phased out Dec 2010 and June 2010)</b> | <p><i>Indications</i></p> <ul style="list-style-type: none"> <li>• Long-term prevention of symptoms in mild persistent asthma; may modify inflammation.</li> <li>• Preventive treatment prior to exposure to exercise or known allergen.</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>• <b>Anti-inflammatory.</b> Blocks <i>early</i> and late reaction to allergen. Interferes with chloride channel function. Stabilizes mast cell membranes and inhibits activation and release of mediators from eosinophils and epithelial cells.</li> <li>• Inhibits acute response to exercise, cold dry air, and SO<sub>2</sub>.</li> </ul> | <ul style="list-style-type: none"> <li>• Cough and irritation.</li> <li>• 15–20 percent of patients complain of an unpleasant taste from nedocromil.</li> </ul> | <ul style="list-style-type: none"> <li>• Therapeutic response to cromolyn and nedocromil often occurs within 2 weeks, but a 4- to 6-week trial may be needed to determine maximum</li> <li>• Dose of cromolyn by MDI (1 mg/puff) may be inadequate to affect airway</li> <li>• Nebulizer delivery (20 mg/ampule) may be preferred for some patients.</li> <li>• Safety is the primary advantage of these agents.</li> </ul> |

|                                   |   |  |   |
|-----------------------------------|---|--|---|
| <b>Immunomodulators</b>           | <i>Indications</i>  | Pain and bruising of injection sites has been reported in 5–20 percent of patients.  | Monitor patients following injection. Be prepared and equipped to identify                                      |
| Omalizumab (Xolair)<br>(Anti-IgE) | Long-term control and prevention of symptoms in adults (≥12 years old) who have moderate or severe persistent allergic asthma inadequately controlled with ICS. | Anaphylaxis has been reported in 0.2 percent of treated patients.  | and treat anaphylaxis that may occur.   |
| For subcutaneous use              | <i>Mechanisms</i>   | Malignant neoplasms were reported in 0.5 percent of patients compared to 0.2 percent receiving placebo; relationship to drug is unclear. | The dose is administered either every 2 or 4 weeks and is dependent on the patient's body weight and            |
|                                   | Binds to circulating IgE, preventing it from binding to the high-affinity (FcεRI) receptors on basophils and mast cells.  |  | IgE level before therapy.<br>A  |
|                                   | Decreases mast cell mediator release from allergen exposure.  |  | A maximum of 150 mg can be administered in one injection.   |
|                                   | Decreases the number of FcεRIs in basophils and submucosal cells.   |  | Whether patients will develop significant antibody titers to the drug with long-term administration is unknown. |

## LONG-TERM CONTROL MEDICATIONS (CONTINUED)

| Name/Products           | Indications/Mechanisms | Issues     | Potential Adverse Effects | Therapeutic<br>(Not All |
|-------------------------|------------------------|------------|---------------------------|-------------------------|
| (Listed Alphabetically) |                        | Inclusive) |                           |                         |

|   |  |   |  |
|---|--|---|--|
| <b>Leukotriene Receptor Antagonists (LTRAs)</b> | <i>Mechanisms</i>  |   |  |
|   | <b>Leukotriene receptor antagonist;</b><br>selective<br><br>competitive inhibitor of CysLT <sub>1</sub> receptor.  | No specific adverse effects have been identified.<br><br>Rare cases of Churg-Strauss have occurred, but the association is unclear.                           | May attenuate EIB in some patients, but less effective than ICS therapy (Vidal et al. 2001).<br><br>Do not use LTRA + LABA as a substitute for ICS + LABA.   |
| Montelukast tablets and granules (Singulair)    | <i>Indications</i><br><br>Long-term control and prevention of symptoms in mild persistent asthma for patients ≥1 year of age. May also be used with ICS as combination therapy in moderate persistent asthma.                                  | Postmarketing surveillance has reported cases of reversible hepatitis and, rarely, irreversible hepatic failure resulting in death and liver transplantation. | A flat dose-response curve, without further benefit, if dose is increased above those recommended.   |
| Zafirlukast tablets (Accolate)                  | Long-term control and prevention of symptoms<br><br>In mild persistent asthma for patients ≥7 years of age. May also be used with ICS as combination therapy in moderate persistent asthma.  | Elevation of liver enzymes has been reported. Limited case reports of reversible hepatitis and hyperbilirubinemia.  | Administration with meals decreases bioavailability; take at least 1 hour before or 2 hours after meals.<br><br>Zafirlukast is a microsomal P450 enzyme inhibitor that can inhibit the metabolism of warfarin. INRs should be monitored during coadministration.<br><br>Patients should be warned to discontinue use if they experience signs and symptoms of liver dysfunction (right upper quadrant pain, pruritis, lethargy, jaundice, nausea), and patients' ALTs should be monitored. |
| <b>5-Lipoxygenase Inhibitor</b>                 | <i>Mechanisms</i><br><br>Inhibits the production of leukotrienes from<br><br>arachidonic acid, both LTB <sub>4</sub> and the cysteinyl<br><br>leukotrienes.  |   | Zileuton is microsomal P450 enzyme inhibitor that can inhibit the metabolism of warfarin and theophylline. Doses of these drugs should   |
| Zileuton tablets (Zyflo)                        | <i>Indications</i><br><br>Long-term control and prevention of symptoms in mild persistent asthma for patients ≥12 years of age.<br><br>May be used with ICS as combination therapy in moderate persistent asthma in patients ≥12 years of age. |   | Monitor hepatic enzymes (ALT).   |

## LONG-TERM CONTROL MEDICATIONS (CONTINUED)

| Name/Products  | Indications/Mechanisms   | Potential Adverse Effects  | Therapeutic Issues  |
|--|--|--|---|
| (Listed Alphabetically)  |  |  | (Not All Inclusive)   |
| <b>Long-Acting Beta<sub>2</sub>-Agonists (LABA)</b><br><br><i>Inhaled LABA:</i><br><br>Formoterol (Foradil)<br><br>Salmeterol (Serevent) | <p><i>Indications</i></p> <p>Long-term prevention of symptoms, added to ICS</p> <p>Prevention of EIB.</p> <p><i>Not to be used to treat acute symptoms or exacerbations.</i></p> <p><i>Mechanisms</i></p> <p><b>Bronchodilation.</b> Smooth muscle relaxation following adenylate cyclase activation and increase in cyclic AMP, producing functional antagonism of bronchoconstriction.</p> <p>Compared to SABA, salmeterol (but not formoterol) has slower onset of action (15–30 minutes). Both salmeterol and formoterol have longer duration (&gt;12 hours) compared to SABA.</p> | <p>Tachycardia, skeletal muscle tremor, hypokalemia, prolongation of QTc interval in overdose.</p> <p>A diminished bronchoprotective effect may occur within 1 week of chronic therapy. Clinical significance has not been established.</p> <p>Potential risk of uncommon, severe, life-threatening or fatal exacerbation; see text for additional discussion regarding safety of LABAs.</p> | <p>Not to be used to treat acute symptoms or exacerbations.</p> <p>Should not be used as monotherapy for long-term control of asthma or as anti-inflammatory therapy.</p> <p>May provide more effective symptom control when added to standard doses of ICS compared to increasing the ICS dosage.</p> <p>Clinical significance of potentially developing tolerance is uncertain, because studies show symptom control and bronchodilation are maintained.</p> <p>Decreased duration of protection against EIB may occur</p> <p>protection against EIB may occur with regular use.</p> <p>Inhaled route is preferred because LABAs are longer-acting and have fewer side-effects than oral sustained-release agents. Oral agents have not been adequately studied as adjunctive therapy with ICS.</p> |
| Oral: Albuterol, sustained release   |  |  |   |



| LONG-TERM CONTROL MEDICATIONS(CONTINUED)  |   |   |   |
|---|---|---|---|
| Name/products   | Indications/Mechanisms  | Potential adverse effects   | Therapeutic issues (not all-inclusive)  |
| <b>Methylxanthines</b><br>Theophylline, sustained-release tablets and capsules  | <p><i>Indications</i><br/> Long-term control and prevention of symptoms in mild persistent asthma or as adjunctive with ICS, in moderate or persistent asthma.</p> <p><i>Mechanisms</i><br/> Bronchodilation. Smooth muscle relaxation from phosphodiesterase inhibition and possibly adenosine antagonism.</p> <p>May affect eosinophilic infiltration into bronchial mucosa as well as decreases T-lymphocyte numbers in epithelium. Increases diaphragm contractility and mucociliary clearance.</p> | <p>Dose-related acute toxicities include tachycardia, nausea and vomiting, tachyarrhythmias (SVT), central nervous system stimulation, headache, seizures, hematemesis, hyperglycemia, and hypokalemia.</p> <p>Adverse effects at usual therapeutic doses include insomnia, gastric upset, aggravation of ulcer or reflux, increase in hyperactivity in some children, difficulty in urination in elderly males who have prostatism</p> | <p>Maintain steady-state serum concentrations between 5 and 15 mcg/mL. Routine serum concentration monitoring is essential due to significant toxicities, narrow therapeutic range, and individual differences in metabolic clearance. Absorption and metabolism may be affected by numerous factors which can produce significant changes in steady-state serum theophylline concentrations.</p> <p>Patients should be told to discontinue if they experience toxicity.</p> <p>Not generally recommended for exacerbations. There is minimal evidence for added benefit to optimal doses of SABA. Serum concentration monitoring is mandatory.</p> |
| Key: anti-IgE, anti-immunoglobulin E, EIB, exercise-induced bronchospasm; INR, International Normalized Ratio; LABA, long-acting beta <sub>2</sub> -agonist; MDI, metered-dose inhaler; SABA, inhaled short-acting beta <sub>2</sub> -agonist |   |   |   |

*Note: The preceding 14 pages were adapted and modified from Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma <http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>*

## *DETAILED NOTES ON MEDICATIONS USED TO CONTROL ASTHMA*

### **LONG-TERM CONTROL**

Long-term control medications are taken daily on a long-term basis to achieve and maintain control of persistent asthma.

#### **A. Inhaled corticosteroids**

The most potent and consistently effective long-term anti-inflammatory medications for asthma, with fewer side effects than oral corticosteroids. Used for management of persistent asthma at all levels of severity to improve symptoms and pulmonary function.

What are the names of some commonly prescribed inhaled corticosteroids?  
Aerobid®, Asmanex®, Flovent®, Pulmicort® and QVAR®

When is it used?

Long-term prevention of symptoms; controls, reverses and prevents inflammation.  
Reduce the need for quick-relief medications.

How does it work?

Anti-inflammatory. Blocks late reaction to allergen and reduces airway sensitivity. Inhibit cytokine production, adhesion protein activation, and inflammatory cell migration and activation at the cellular level.

Reverse b2-receptor down-regulation. Inhibit microvascular leakage.

Possible side effects:

Cough, voice changes, oral thrush (candidiasis)

In high doses systemic effects may occur, although studies have not proven this, and clinical significance of these effects has not been established (e.g., adrenal suppression, osteoporosis, growth suppression, and skin thinning and easy bruising).

Some studies of inhaled corticosteroids to treat asthma in pre-pubertal children have identified growth delay or suppression that appears to be dose-dependent; others have not. The potential small risk of adverse effects on linear growth is well-balanced by efficacy. The clinical significance of the findings is unclear at this time. Monitoring growth is recommended.

Other information about using this type of medication:

Available as MDI and dry power inhaler (DPI).

Spacer/valved-holding chamber devices with MDIs improve delivery of medication to the lungs versus the mouth or throat. Mouth washing after inhalation decreases the risk of oral side effects (candidiasis) and systemic absorption.

Preparations are not absolutely interchangeable on a mcg or per puff basis. New delivery devices may provide greater delivery to airways, which may affect dose.

The risks of uncontrolled asthma should be weighed against the limited risks of inhaled corticosteroids. The possible but small risk of harmful effects is well balanced by their value in controlling asthma.

## **B. Long-acting b2-agonists**

Should be used in combination with anti-inflammatory inhaled corticosteroid medications for long-term control of asthma symptoms. Should not replace anti-inflammatory medications. Not to be used to as rescue medication to treat acute symptoms or flare-ups.

What are the names of some commonly prescribed long-acting b2-agonists?  
Serevent®, Foradil®

When is it used?

To improve symptoms and reduce need for quick-relief medication.

For long-term control of symptoms, especially nighttime symptoms.

To prevent exercise-induced bronchospasm. However, in some patients this effect may be reduced when used daily as continuous therapy. The clinical significance of this finding is unclear.

How does it work?

Slower onset but longer duration (approximately 12 hours) than short-acting b2-agonists.

May get better symptom control in moderate and severe persistent asthma when added to inhaled corticosteroids rather than just increasing the corticosteroid dose.

Bronchodilation: relax bronchial smooth muscle following adenylate cyclase activation and increase in cyclic AMP producing functional antagonism of bronchoconstriction at the cellular level.

In vitro, inhibit mast cell mediator release, decrease vascular permeability, and increase mucociliary clearance.

Possible side effects:

Increased heart rate, shakiness, hypokalemia, prolongation of QTc interval in overdose.

A diminished bronchoprotective effect may occur within 1 week of chronic therapy. Clinical significance has not been established.

Other information about using this type of medication:

Available as metered-dose inhaler (MDI) and dry powder inhaler (DPI), Diskus®.

Should not replace anti-inflammatory medications.

Not to be used as rescue medication to treat acute symptoms or flare-ups.

Clinical significance of potentially developing tolerance is not clear because studies show symptom control and bronchodilation are maintained.

May provide better symptom control when added to standard doses of inhaled corticosteroid instead of increasing the corticosteroid dosage.

## **C. Combination medications**

Prescribed for patients that need inhaled corticosteroid and long-acting b2-agonist. Advantage is one device that delivers both medications. This also prevents the possibility of patient using long-acting b2-agonist inappropriately (as rescue, not in combination with inhaled corticosteroids). Disadvantage is that it dose of individual component cannot be increased or decreased.

What are the names of some commonly prescribed combination medications?  
Advair®, Dulera, Symbicort

When is it used?

May be considered when patient needs inhaled corticosteroids and long-acting b2-agonist, moderate to severe persistent asthma.

Side effects:

Same as inhaled corticosteroids and long-acting b2-agonists

Other information about using this type of medication

Combination medications are available as Metered Dose Inhalers and as Diskus. These are considered controller, not rescue, medications; therefore should not be used for acute symptoms.

#### **D. Leukotriene modifiers**

May be considered an alternative therapy to low doses of inhaled corticosteroids for patients with mild persistent asthma. Can also be used in combination with inhaled corticosteroids +/- long-acting b2 agonists for moderate to severe persistent asthma.

What are the names of some commonly prescribed leukotriene modifiers?  
Accolate®, Singulair®, and Zflo®

When is it used?

May be considered as alternative therapy to low dose inhaled corticosteroids for patients with mild persistent asthma, or in combination with inhaled corticosteroids for moderate to severe persistent asthma. The position of leukotriene modifiers in therapy has not been fully established. Some studies suggest that leukotriene modifiers may be effective when added to inhaled corticosteroids in the management of moderate persistent asthma (step 3) and when given the night before exercise to prevent exercise-induced bronchospasm.

Improve symptoms and pulmonary function.

Reduce the need for quick-relief medications.

How does it work?

Leukotriene receptor antagonists (e.g. montelukast, zafirlukast) block LTD4 receptors; 5-lipoxygenase inhibitors (e.g. zileuton) block synthesis of all leukotrienes at the cellular level.

Possible side effects:

Elevations of liver enzymes have been reported with zileuton in some patients. Monitoring is recommended.

In rare cases, adult patients have presented with systemic eosinophilia and vasculitis with clinical features consistent with Churg Strauss syndrome. These events usually have been associated with reducing oral corticosteroid therapy while initiating a leukotriene modifier therapy. No causal relationship has been established. There have also been rare cases of reported suicidality with Singulair.

Other information about using this type of medication:

Available as tablets. Tablets should be taken at least 1 hour before or 2 hours after meals for optimum effects.

Zafirlukast inhibits the metabolism of warfarin and increases prothrombin time; it is a competitive inhibitor of the CYP2C9 hepatic microsomal isozymes. (It has not affected elimination of terfenadine, theophylline, or ethinyl estradiol drugs metabolized by the CYP3A4 isozymes.)

Zileuton is microsomal CYP3A4 enzyme inhibitor that can inhibit the metabolism of terfenadine, theophylline, and warfarin. Doses of these drugs should be monitored accordingly. Hepatic enzymes (ALT) should also be monitored.

## **F. Cromolyn Sodium/Nedocromil Sodium**

Mild to moderate anti-inflammatory medications. Alternative therapy to low-doses of inhaled corticosteroids in mild persistent asthma.

What are the names of some commonly prescribed cromolyn sodium/nedocromil medications?  
Intal®

When is it used?

May be used as alternative to inhaled corticosteroids in mild persistent asthma.

Can also be used as preventive treatment prior to exercise or unavoidable exposure to known allergens (cold air, exercise, allergens) on an as-needed basis.

To improve symptoms and pulmonary function.

To reduce the need for quick-relief medications.

How does it work?

Anti-inflammatory: Block early and late reaction to allergen.

Interfere with chloride channel function at the cellular level. Stabilize mast cell membranes and inhibit activation and release of mediators from eosinophils and epithelial cells (which cause swelling).

Inhibit acute response to exercise, cold dry air, and SO<sub>2</sub>.

Possible side effects:

15 to 20 percent of patients complain of an unpleasant taste from nedocromil.

Other information about using this type of medication:

Available as metered-dose inhaler (MDI). Cromolyn sodium is also available as nebulizer solution. Both are considered very safe.

Therapeutic response to cromolyn and nedocromil often occurs within 2 weeks, but a 4 to 6 week trial may be needed to determine maximum benefit.

Dose of cromolyn MDI (1 mg/puff) may not be enough to change airway sensitivity. Nebulizer delivery (20 mg/ampule) may be better for some patients.

## **G. Methylxanthines (Theophylline)**

Used as add-on therapy to anti-inflammatory medications for long-term control of asthma symptoms, especially nighttime symptoms.

What are the names of some commonly prescribed methylxanthines?

When is it used?

Long-term control and prevention of symptoms, especially nocturnal symptoms.

Produces mild to moderate bronchodilation.

Theophylline is an alternative, but not preferred, therapy for mild persistent asthma, or may be used in addition to inhaled corticosteroids in moderate to severe persistent asthma.

How does it work?

Bronchodilation: Smooth muscle relaxation from phosphodiesterase inhibition and possibly adenosine antagonism (to open up the airways).

May affect eosinophilic infiltration into bronchial mucosa as well as decrease T-lymphocyte numbers in epithelium (to slow mucus production).

Increases diaphragm contractility and mucociliary clearance (to clear mucus from airways).

Possible side effects:

Side effects at usual therapeutic doses include stomach upset, difficulty in urination in elderly males with prostate disease, sleeplessness, and hyperactivity in some children.

Dose-related acute toxicities include increased heart rate, nausea and vomiting, irregular heart beats (SVT), central nervous system

stimulation, headache, seizures, vomiting blood, high blood sugar, and hypokalemia.

Side effects increase with increasing levels of the medication in the body. In some children, side effects may occur with lower levels of the medication in the body.

Other information about using this type of medication:

Available as time-release pills and capsules.

Monitoring is required to maintain serum levels between 5 and 15 mcg/mL. Viral illnesses with fever, age, certain medications (e.g. erythromycin), and diet can increase absorption and bioavailability, which can increase levels of the medication in the body.

Not generally recommended for asthma flare-ups. There is little proof of added benefit to optimal doses of inhaled  $\beta_2$ -agonists.

Blood concentration of this drug must be monitored closely.

## H. QUICK-RELIEF:

Quick-relief medications give fast relief for tight, narrowed airways and the symptoms of coughing, wheezing, and chest tightness that happen with asthma.

### Short-acting b2-agonists

Inhaled short-acting b2-agonists are the drug of choice for treating acute asthma symptoms and attacks, or flare-ups. These are considered rescue medications.

What are the names of some commonly prescribed short-acting b2-agonists?

Albuterol®, ProAir HFA®, Proventil HFA®, Ventolin HFA, Xopenex®

When is it used?

For relief of acute symptoms and prevent exercise-induced bronchospasm

How does it work?

Bronchodilation: relax bronchial smooth muscle following adenylate cyclase activation and increase in cyclic AMP producing functional antagonism of bronchoconstriction, usually within 5 to 10 minutes of administration (opens up the airways by working on a cellular level).

Possible side effects:

Increased heart rate, shakiness, hypokalemia, increased lactic acid, headache, high blood sugar. Inhaled route, in general, causes few side effects.

Patients who already have heart disease, especially the elderly, may have harmful cardiovascular reactions with inhaled therapy. For these patients, Xopenex often preferred due to fewer cardiac side effects.

Other information about using this type of medication:

Inhaled route starts working faster, has fewer side effects, and works better than oral medication. The less b2-selective agents (isoproterenol, metaproterenol, isoetharine, and epinephrine) are not recommended due to their potential for excessive cardiac stimulation, especially in high doses. Albuterol liquid is not recommended.

For patients with mild intermittent asthma, regularly scheduled daily use neither harms nor benefits asthma control. Regularly scheduled daily use is not generally recommended.

Rescue medications are available as nebulized medications (Albuterol, Xopenex) or as inhaled Metered Dose Inhaler (ProAir HFA, Proventil HFA, Ventolin HFA). Evidence suggests slightly improved medication delivery if using inhaler with spacer, but generally patients/families select preferred device.

If the medication does not seem to be working, or if it needs to be used too often (more than 1 canister/month) means that the asthma is not under control, and a health care provider needs to evaluate and consider increase (or start) long-term control therapy. Use of greater than 2 canisters/month poses additional adverse risks.

Short-term therapy should continue until patient achieves 80% Peak Expiratory Flow personal best or symptoms resolve. This usually requires 3 to 10 days, but may require longer. There is no evidence that tapering the dose following improvement prevents relapse.

## **Anticholinergics (ipratropium bromide)**

May provide some additive benefit to inhaled b2-agonists in severe asthma exacerbations. May be an alternative bronchodilator for patients who do not tolerate inhaled b2-agonists.

What is the name of a commonly prescribed anticholinergic medication?  
Atrovent®

When is it used?  
For relief of acute bronchospasm.

How does it work?  
Bronchodilation. Competitive inhibition of muscarinic cholinergic receptors (opens the airways by working at the cellular level).  
Reduces intrinsic vagal tone to the airways. May block reflex bronchoconstriction secondary to irritants or to reflux esophagitis.  
May decrease mucus gland secretion (so body makes less mucus).

Possible side effects:  
Drying of mouth and respiratory secretions, increased wheezing in some people, blurred vision if sprayed in eyes.

Other information about using this type of medication:  
Reverses only cholinergically mediated bronchospasm; does not modify reaction to antigen.  
Does not block exercise-induced bronchospasm. May provide additive effects to b2-agonist but has slower onset of action.  
Is an alternative for patients with intolerance to b2-agonists, though typical use is in combination with b2-agonists.  
Treatment of choice for bronchospasm due to beta-blocker medication.

## **Oral (systemic) corticosteroids**

Often used to treat acute asthma exacerbations; also may be considered in poorly controlled persistent asthma or when starting long-term therapy.

What are the names of some commonly prescribed oral corticosteroids?  
Decadron®, Orapred, Prednisone®

When is it used?  
For short-term (2-10 days) “burst”, broad anti-inflammatory effects.  
For long-term prevention of symptoms in severe persistent asthma; controls, reverses and keeps inflammation down.

How does it work?  
Anti-inflammatory. Blocks late reaction to allergen and reduce airway sensitivity. Inhibits cytokine production, adhesion protein activation, and inflammatory cell migration and activation at the cellular level.  
Reverse b2-receptor down-regulation. Inhibit microvascular leakage.

Possible side effects:

Short-term use: reversible, abnormalities in sugar metabolism, increased appetite, fluid retention, weight gain, mood change, sleep disruption, high blood pressure, peptic ulcer, and rarely aseptic necrosis of femur.

Long-term use is associated with systemic effects: adrenal axis suppression, growth suppression, dermal thinning, hypertension, diabetes, Cushing's syndrome, cataracts, muscle weakness, and – in rare cases – impaired immune function.

Consideration should be given to coexisting conditions that could be worsened by systemic corticosteroids, such as herpes virus infections, varicella, tuberculosis, hypertension, peptic ulcer, and Strongyloides.

Other information about using this type of medication:

Use at lowest effective dose.

For long-term use in severe persistent asthma, fewer harmful effects have been seen with every-other-day morning dosing.

### **Over-the-Counter Medications**

NOTE: Over-the-counter asthma medications do not contain the same ingredients as prescribed asthma medications. They have many more side effects, and may actually worsen asthma symptoms.

*Adapted from the Guidelines for the Diagnosis and Management of Asthma, National Asthma Education and Prevention Program (NAEPP), National Institutes of Health, 2007*  
<http://www.nhlbi.nih.gov/guidelines/asthma/>

## APPENDIX L: FORMS

1. Asthma History Update
2. Individualized Emergency Medical Plan
3. Authorization for Exchange of Medical Information
4. Parent notification for non-routine med admin
5. Medication Authorization Form Version I
6. Medication Authorization Form Version II
7. Agreement of Exemption to Self-Carry Medication
8. Asthma Action Plan

### ASTHMA HISTORY UPDATE

Student's Name \_\_\_\_\_ Date of Birth \_\_\_\_\_  
School \_\_\_\_\_ Grade/Teacher \_\_\_\_\_

Parent/Guardian Name (s) \_\_\_\_\_

Home phone \_\_\_\_\_ Work phone \_\_\_\_\_ Cell phone \_\_\_\_\_

Alternate contact \_\_\_\_\_ Phone \_\_\_\_\_

Primary Health Care Provider \_\_\_\_\_ Phone \_\_\_\_\_

Has your primary health care provider provided you with an asthma management plan? \_\_\_\_\_

How many times has this student been to the emergency room for asthma in the past year? \_\_\_\_\_

How do you rate the severity of this student's asthma where 1 is not severe and 10 is severe? \_\_\_\_\_

How many days would you estimate this student miss last school year because of asthma? \_\_\_\_\_

Has this student developed any new asthma triggers in the past year? \_\_\_\_\_

If yes, please list \_\_\_\_\_

**Please list the medications this student takes for asthma, both daily and as needed (PRN):**

| Medication name | Delivery method (oral, inhaler, nebulizer, etc.) | Amount | How often? |
|-----------------|--|--------|------------|
| _____           | _____  | _____  | _____      |
| _____           | _____  | _____  | _____      |
| _____           | _____  | _____  | _____      |
| _____           | _____  | _____  | _____      |

What herbal remedies, if any, does this student take for asthma? \_\_\_\_\_

**Which, if any, of the following aids does this student use for managing asthma?**

(Please circle)

Peak flow meter (personal best reading, if known \_\_\_\_\_)

Spacer

Holding chamber with mask

Holding chamber

Other (please specify) \_\_\_\_\_

**Please indicate by circling any of the special needs below this student has related to asthma**

Physical education class

Animals in the classroom

Recess

Avoidance of certain foods

Access to water

Observation of medication side effects

Transportation to/from school

Field trips

**If you circled any of the above items, please describe those needs:**

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---

---

**Parent signature and date**

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**Nurse signature and date**

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*INDIVIDUALIZED EMERGENCY MEDICAL PLAN (IEMP)*

**Student Information**

**Section 504 Plan** 

|                          |                    |
|--------------------------|--------------------|
| Name:                    | Birth date:        |
| Teacher:                 | Grade:             |
| Parent/Guardian:         | Address:           |
| Home Phone:              | Work Phone:        |
| Other Contact:           | Phone:             |
| Other Contact:           | Phone:             |
| DIAGNOSIS: <b>Asthma</b> | <b>Medication:</b> |
| <b>Triggers:</b>         |                    |

| IF YOU SEE THIS  | DO THIS   |
|--|---|
| Wheezing<br>Coughing<br>Shortness of breath/dyspnea<br>Complaining of chest tightness  | Accompany student to health room.<br>Give medication as prescribed:<br>Keep student sitting up and reassure student.<br>Encourage student to drink warm fluids. |
| If student's symptoms do not improve in 10-15 minutes or if cough becomes productive, exhalation longer than inhalation, retractions seen in area below rib cage or in neck & student becomes pale and sweaty. | Notify parent.<br>Call school nurse<br>If parents are unable to come within 10 min call 911   |
| If student is in severe distress   | <b>Call 911.</b> Notify parent, principal and school nurse.   |

| Emergency Numbers:    | Phone Number |
|-----------------------|--------------|
| Preferred Hospital:   |              |
| Local Emergency Room: |              |
| Primary Physician:    |              |
| Specialists:          |              |
|                       |              |

\_\_\_\_\_  
R.N. Signature/Date

\_\_\_\_\_  
Parent Signature/Date

\_\_\_\_\_  
Physician Signature/Date

*AUTHORIZATION FOR RELEASE OF MEDICAL INFORMATION*

| <b>SECTION I – AGENCY RELEASING INFORMATION</b>  |  |
|--|--|
| NAME/AGENCY  | NAME OF PERSON DISCLOSING  |
| ADDRESS  | INFORMATION TITLE  |
| <b>SECTION II – AUTHORIZATION</b>  |  |
| <p>I hereby authorize the release of medical information as described in section I to the individuals who are affiliated with the school/agency indicated in Section III.</p> <p>This authorization expires 90 days after it is signed, on _____ (MM/DD/YYYY)</p> <p>_____</p> <p>Parent signature/Date</p> <p>_____</p> <p>Student Signature/Date</p> <p>If the student is a minor but is authorized to consent to health care without parental consent under federal and state law only the student shall sign this authorization form.</p> <p><i>Student's Consent:</i></p> <p>HIV AIDS status, diagnosis, treatment – 14 years of age</p> <p>Family Planning/Abortion – No age limit</p> <p>Alcohol/Drug Treatment – 13 years of age</p> <p>Mental Health Services – 13 years of age</p> |  |
| <b>SECTION III – AGENCY RECEIVING INFORMATION</b>  |  |
| Name/Agency  | <p>This information disclosed to you is protected by state and federal law. You are prohibited from releasing it to an agency or person not listed on this form without specific written consent of the person to whom it pertains. A general authorization for release of medical or other information is not sufficient. See chapter 70.02RCW.</p> |
| Address  |  |
| Name of School Psychologist  |  |
| Name of School Nurse   |  |
| Name of Other (Indicate position title)  |  |
| Fax number   |  |

*PARENT NOTIFICATION OF NON-ROUTINE MEDICATION ADMINISTRATION*

**NOTIFICATION OF NON-ROUTINE MEDICATION ADMINISTRATION**

Your child, \_\_\_\_\_, in grade \_\_\_\_\_  
came to the health office today because of difficulty with his/her asthma.

Your child was

- ☐ complaining of chest pressure/tightness
- ☐ complaining of inability to exercise
- ☐ complaining of shortness of breath
- ☐ complaining of cold symptoms
- ☐ wheezing
- ☐ coughing
- ☐ other \_\_\_\_\_

Your child was given the following medication at \_\_\_\_\_ o'clock:

\_\_\_\_\_  
Medication Name and Dosage

If you have any questions, please feel free to call us at \_\_\_\_\_

\_\_\_\_\_  
Staff Signature/Date

*AGREEMENT OF EXEMPTION FOR SELF-ADMINISTRATION AND CARRYING OF MEDICATION*

The parents/guardians shall hold harmless and indemnify the school and the \_\_\_\_\_  
Public School District's officers, employees, and agents against all claims, judgments or  
liabilities arising out of the self-administration and carrying of medication by their child.

Parent/Guardian, Date

School Principal, Date

Parent/Guardian, Date

Licensed Health Care Provider, Date

Whenever possible we encourage medication doses to be scheduled during non-school  
hours. For those students who need medication at school the following is required by  
Washington State Law and **must be completed and on file before any medications may  
be given.**

Authorization for Medications to Be Taken at School Form completed by both parent AND  
health care provider.

Medication must be in a properly labeled container from the dispensing pharmacy.

- o Student's Name
- o Name and Strength of Medication
- o Time and Method of Administration
- o Length of Time/Days to be Given

*Adapted from information prepared by Sara Easter RN BSN, Seattle School Nurse*

*MEDICATION AUTHORIZATION FORM, VERSION 1*

**MEDICAL AUTHORIZATION FOR ASTHMA MANAGEMENT AT SCHOOL**

[Click here to enter text.](#) School District [Click here to enter text.](#) Fax# [Click here to enter text.](#)

Student: \_\_\_\_\_ Birth Date: \_\_\_\_\_ Grade: \_\_\_\_\_

I request that the school nurse, or designated staff member, administer the following medication in accordance with healthcare provider instructions. *Yo pido que la enfermera o personal designado le administre el medicamento recetado de acuerdo con las instrucciones del médico.*

I give permission for the nurse to initiate an Emergency Care Plan/504 Plan.

Parent Section Section des Parents

April 2013

*MEDICATION AUTHORIZATION FORM, VERSION 2*

|   |        |                          |                   |
|---|--------|--------------------------|-------------------|
| Student Name: _ Birth Date: _   |        |                          |                   |
| School: _____   |        | Grade: _____             |                   |
| <b>THIS PORTION TO BE COMPLETED BY THE LICENSED HEALTH PROFESSIONAL (LHP) PRESCRIBING WITHIN THE SCOPE OF THEIR PRESCRIPTIVE AUTHORITY</b>  |        |                          |                   |
| <b>Asthma Management Care Plan given to family?      Yes   No</b>   |        |                          |                   |
| Name of Medication  | Dosage | Method of Administration | Time of Day Taken |
|   |        |                          |                   |
| Diagnosis or reason for medication: _____   |        |                          |                   |
| If given PRN, specify the length of time between doses: _____   |        |                          |                   |
| Inhalers: _____   |        |                          |                   |
| Indicate if student carry on his/her person   |        |                          |                   |
| Student is capable of self-administration of medication: _____ Yes ____ No  |        |                          |                   |
| Possible side effects of medication: _____  |        |                          |                   |
| <b>Emergency procedure in case of serious side effects: _</b>   |        |                          |                   |
| I request and authorize that the above-named student be administered the above identified oral medication in accordance with the instructions indicated above from _____(date) to _____(date) (not to exceed current school year) as there exists a valid health reason which makes administration of the medication advisable during school hours. |        |                          |                   |
| If Air Quality Index >101 (Alert Brown), student <u>should/should not</u> participate in outdoor activities.  |        |                          |                   |
| Licensed Health Professional Signature, Date  |        | Name (Printed or typed)  | Phone             |
| <b>Please note: If samples of medication are to be given, they must be labeled with the name of the student, dosage, and time to be given.</b>  |        |                          |                   |

**THIS PORTION TO BE COMPLETED BY THE PARENT/GUARDIAN**

I request the school administer medication to the above-identified student in accordance with the LHP's instructions for the period from \_\_\_\_\_ to \_\_\_\_\_ (not to exceed current school year). I understand staff will make every effort to administer the medication in a timely manner.

Permission to carry inhaler: \_\_\_ Yes \_\_\_\_\_ No

**Permission to self-administer medication:** \_\_\_\_\_ Yes \_\_\_ No

Parent/Guardian signature, Date

\_\_\_\_\_

Phone Number: \_\_\_\_\_(home) \_\_\_\_\_(work)

*Adapted with permission from the Central Valley School District*

*AMERICAN LUNG ASSOCIATION'S ASTHMA ACTION PLAN*

# Asthma Action Plan

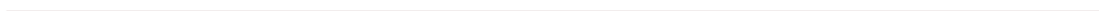


## General Information:

■ Name \_\_\_\_\_  
■ Emergency contact \_\_\_\_\_ Phone numbers \_\_\_\_\_  
■ Physician/healthcare provider \_\_\_\_\_ Phone numbers \_\_\_\_\_  
■ Physician signature \_\_\_\_\_ Date \_\_\_\_\_

## Severity Classification

- ☐ Intermittent    ☐ Moderate Persistent  
☐ Mild Persistent    ☐ Severe Persistent



## APPENDIX M: ASSESSMENTS

1. Asthma Control Test for Children ages 4 to 11
2. Asthma Control Test for Children ages 12 and Up
3. Is the Asthma Plan Working? (NASN Tool for School Nurses)
4. Asthma Symptom Diary
5. Asthma severity assessment--from EPR3? pages 72-4
6. Asthma instructions to use as checklist

# ASTHMA CONTROL TEST FOR CHILDREN AGES 4 TO 11

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

### How to take the Childhood Asthma Control Test





- ▶ **Step 1** Let your child respond to the **first 4 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 **3 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?





|   |  |   |  |
|---|--|---|--|
| <br><b>0</b><br>Very bad | <br><b>1</b><br>Bad | <br><b>2</b><br>Good | <br><b>3</b><br>Very good |
|---|--|---|--|

SCORE





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

|  |  |   |  |
|--|--|---|--|
| <br><b>0</b><br>It's a big problem, I can't do what I want to do. | <br><b>1</b><br>It's a problem and I don't like it. | <br><b>2</b><br>It's a little problem but it's okay. | <br><b>3</b><br>It's not a problem. |
|--|--|---|--|

3. Do you cough because of your asthma?

|   |  |  |   |
|---|--|--|---|
| <br><b>0</b><br>Yes, all of the time. | <br><b>1</b><br>Yes, most of the time. | <br><b>2</b><br>Yes, some of the time. | <br><b>3</b><br>No, none of the time. |
|---|--|--|---|

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

|  |   |   |  |
|--|---|---|--|
| <br><b>0</b><br>Yes, all of the time. | <br><b>1</b><br>Yes, most of the time. | <br><b>2</b><br>Yes, some of the time. | <br><b>3</b><br>No, none of the time. |
|--|---|---|--|

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

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

|                        |                      |                       |                        |                        |                      |
|------------------------|----------------------|-----------------------|------------------------|------------------------|----------------------|
| <b>5</b><br>Not at all | <b>4</b><br>1-3 days | <b>3</b><br>4-10 days | <b>2</b><br>11-18 days | <b>1</b><br>19-24 days | <b>0</b><br>Everyday |
|------------------------|----------------------|-----------------------|------------------------|------------------------|----------------------|

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

|                        |                      |                       |                        |                        |                      |
|------------------------|----------------------|-----------------------|------------------------|------------------------|----------------------|
| <b>5</b><br>Not at all | <b>4</b><br>1-3 days | <b>3</b><br>4-10 days | <b>2</b><br>11-18 days | <b>1</b><br>19-24 days | <b>0</b><br>Everyday |
|------------------------|----------------------|-----------------------|------------------------|------------------------|----------------------|

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

|                        |                      |                       |                        |                        |                      |
|------------------------|----------------------|-----------------------|------------------------|------------------------|----------------------|
| <b>5</b><br>Not at all | <b>4</b><br>1-3 days | <b>3</b><br>4-10 days | <b>2</b><br>11-18 days | <b>1</b><br>19-24 days | <b>0</b><br>Everyday |
|------------------------|----------------------|-----------------------|------------------------|------------------------|----------------------|

TOTAL

The answers below should not be added to the total score. These answers should be discussed with your child's doctor.

In the past 12 months, how many emergency department visits has your child had due to asthma (that did not result in a hospitalization)? \_\_\_\_\_

In the past 12 months, how many inpatient hospitalizations has your child had due to asthma? \_\_\_\_\_



## ASTHMA CONTROL TEST FOR CHILDREN AGES 12 AND UP

Today's Date:

### Asthma Control Test™ (ACT) is:

- ▶ A quick test that provides a numerical score to assess asthma control.
- ▶ Recognized by the National Institutes of Health (NIH) in its 2007 asthma guidelines.<sup>1</sup>
- ▶ Clinically validated against spirometry and specialist assessment.<sup>2</sup>

**PATIENTS:**

1. Answer each question and write the answer number in the box to the right of each question.
2. Add your answers and write your total score in the TOTAL box shown below.
3. Discuss your results with your doctor.

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 |
|-----------------|---|------------------|---|------------------|---|----------------------|---|------------------|---|

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

|                      |   |            |   |                     |   |                      |   |            |   |
|----------------------|---|------------|---|---------------------|---|----------------------|---|------------|---|
| More than once a day | 1 | Once a day | 2 | 3 to 6 times a week | 3 | Once or twice a week | 4 | Not at all | 5 |
|----------------------|---|------------|---|---------------------|---|----------------------|---|------------|---|

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 | 4 | Not at all | 5 |
|-------------------------|---|----------------------|---|-------------|---|---------------|---|------------|---|

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 |
|-------------------------|---|----------------------|---|-----------------------|---|---------------------|---|------------|---|

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

|                       |   |                   |   |                     |   |                 |   |                       |   |
|-----------------------|---|-------------------|---|---------------------|---|-----------------|---|-----------------------|---|
| Not controlled at all | 1 | Poorly controlled | 2 | Somewhat controlled | 3 | Well controlled | 4 | Completely controlled | 5 |
|-----------------------|---|-------------------|---|---------------------|---|-----------------|---|-----------------------|---|

SCORE






TOTAL

If your score is 19 or less, your asthma may not be under control.

### HEALTHCARE PROVIDER:

- ▶ Include the ACT score in your patient's chart to track asthma control.

**References:** 1. US Department of Health and Human Services, National Institutes of Health, National Heart, Lung and Blood Institute. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR-3 2007)*. NIH Item No. 08-4051. <http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>. Accessed September 10, 2007. 2. Nathan RA et al. *J Allergy Clin Immunol*. 2004;113:59-65.

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## IS THE ASTHMA PLAN WORKING? (NASN TOOL FOR SCHOOL NURSES)

National Asthma Education and Prevention Program  
NAEPP School Asthma Education Subcommittee

### Is the Asthma Action Plan Working? A Tool for School Nurse Assessment

Assessment for: \_\_\_\_\_ Completed by: \_\_\_\_\_ Date: \_\_\_\_\_  
(Student) (Nurse or Parent)

This tool assists the school nurse in assessing if students are achieving good control of their asthma. Its use is particularly indicated for students receiving intensive case management services at school.

#### With good asthma management, students should:

- Be free from asthma symptoms or have only minor symptoms:
  - no coughing or wheezing
  - no difficulty breathing or chest-tightness
  - no wakening at night due to asthma symptoms
- Be able to go to school every day, unhampered by asthma.
- Be able to participate fully in regular school and daycare activities, including play, sports, and exercise.
- Have no bothersome side effects from medications.
- Have no emergency room or hospital visits.
- Have no missed class time for asthma-related interventions or missed class time is minimized.

#### Signs that a student's asthma is not well controlled:

Indicate by checking the appropriate box whether any of the signs or symptoms listed below have been observed or reported by parents or children within the past 2-4 weeks (6 months for history). If any boxes are marked, this suggests difficulty with following the treatment plan or need for a change in treatment or intervention (e.g., different or additional medications, better identification or avoidance of triggers).

- |  |   |
|--|---|
| <input type="checkbox"/> Asthma symptoms more than two days a week or multiple times in one day that require quick-relief medicine (short-acting beta2-agonists, e.g., albuterol). | <input type="checkbox"/> Having to stop and rest at PE, recess, or during activities at home because of symptoms. |
| <input type="checkbox"/> Symptoms get worse even with quick-relief meds.   | <input type="checkbox"/> Exacerbations requiring oral systemic corticosteroids more than once a year.             |
| <input type="checkbox"/> Waking up at night because of coughing or wheezing.   | <input type="checkbox"/> Symptoms require unscheduled visit to doctor, emergency room, or hospitalization.        |
| <input type="checkbox"/> Frequent or irregular heartbeat, headache, upset stomach, irritability, feeling shaky or dizzy.   | <input type="checkbox"/> 911 call required.   |
| <input type="checkbox"/> Missing school or classroom time because of asthma symptoms.  |   |

### ASTHMA SYMPTOM DIARY

If you are not sure what is making you sick, keep a diary describing the circumstances surrounding each episode.

[illegible]

## ASTHMA INHALER USE CHECKLIST

**Follow medication administration instructions for number of puffs from inhaler.  
Student should have clean hands.**

*Adapted from Nursing Corps's Asthma Inhaler Use Instructions*

- \_\_\_\_\_ 1. Student removes the cap from the mouthpiece and if needed places inhaler onto the mouthpiece. If an aerochamber spacer is ordered by the Healthcare Provider (HCP), the student connects it to the mouthpiece.
- \_\_\_\_\_ 2. Student shakes the metered dose inhaler (MDI) unit rapidly for 3 seconds.
- \_\_\_\_\_ 3. Student primes the inhaler -- spray inhaler 1-2 times into the air if it is new or has not been used in 2 or more weeks.
- \_\_\_\_\_ 4. Student blows air all the way out of his/her lungs.
- \_\_\_\_\_ 5. Student opens mouth and places the mouthpiece of the inhaler inside his/her mouth sealing lips around mouthpiece, pointing it towards the back of his/her mouth.
- \_\_\_\_\_ 6. Student presses down on the inhaler releasing the puff of medicine and begins taking a slow, deep inspiration. The mist may feel soft and warm.
- \_\_\_\_\_ 7. Student holds his/her breath while slowly counting to 10.
- \_\_\_\_\_ 8. Student breathes out slowly with pursed lips and breathes normally.
- \_\_\_\_\_ 9. Student waits 1 to 2 minutes between puffs or per HCP orders.
- \_\_\_\_\_ 10. Student repeats the procedure for each additional prescribed puff, shaking the inhaler again between puffs. No priming is necessary with second puff.

School staff trained in medication administration assist the student as needed.

Documentation of the medication administration is done by staff on the Medication Administration Record.



## APPENDIX N: MANAGING ASTHMA EPISODES

### *FOR LICENSED PROVIDER*

## MANAGEMENT OF AN ACUTE ASTHMA EPISODE IN THE SCHOOL

Adapted from the Asthma and Allergy Foundation of America (AAFA), Washington State Chapter, with permission

Asthma is the leading cause of absenteeism in school-aged children. A school-based asthma management program should allow children with asthma or allergies to participate in all school learning and recreational activities with few restrictions. An effective program will ultimately help to minimize school absences.

| WHAT TO LOOK FOR   | WHAT TO LISTEN FOR  |
|--|---|
| <ul style="list-style-type: none"> <li>○ Anxious look</li> <li>○ Stooped body posture</li> <li>○ Diaphoresis (sweating)</li> <li>○ Dyspnea (shortness of breath)</li> <li>○ Rapid respirations (greater than 25-30 at rest)</li> <li>○ Retractions</li> <li>○ Nasal flaring</li> <li>○ Depressed sternal notch</li> <li>○ Nausea/vomiting</li> <li>○ Fatigue</li> <li>○ Decreased peak flow value</li> </ul>   | <ul style="list-style-type: none"> <li>○ Complaints of chest tightness</li> <li>○ Coughing</li> <li>○ Irregular breathing</li> <li>○ Abnormal breathe sound:               <ul style="list-style-type: none"> <li>○ Decreased or absent breath sounds</li> <li>○ Wheezing</li> <li>○ Rales (rattling)</li> <li>○ Rhonchi (coarse rattling)</li> </ul> </li> <li>○ Prolonged expiration</li> <li>○ Rapid heart rate</li> </ul>   |
| WHAT TO DO IN AN ASTHMA CRISIS AT SCHOOL   | SEEK IMMEDIATE EMERGENCY CARE IF STUDENT:   |
| <ul style="list-style-type: none"> <li>○ If possible review the students' Asthma Action Plan for Personal Best, current medications and emergency medications.</li> <li>○ Have student sit upright and check breathing with peak flow meter – if possible.</li> <li>○ Administer prescribed medication by inhaler (medication should be inhaled slowly and fully).</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>○ Administer medication by nebulizer if prescribed.</li> <li>○ Reassure student and attempt to keep him/her calm and breathing slowly and deeply.</li> </ul> <p>Student should respond to treatment within 15 – 20 minutes. Recheck with peak flow meter.</p> <p>If NO change, or breathing becomes significantly worse, contact parent immediately and call for emergency help.</p> | <p>Use the child's prescribed acute therapy and call 911 if any of the following:</p> <ul style="list-style-type: none"> <li>○ Coughs constantly</li> <li>○ Is unable to speak in complete sentences without taking a breath</li> <li>○ Has lips, nails, mucous membranes that are gray or blue</li> <li>○ Demonstrates severe retractions and /or nasal flaring</li> <li>○ Is vomiting persistently</li> <li>○ Has 50% reduced peak flow reading</li> <li>○ Has pulse greater than 120/minute</li> <li>○ Has respirations greater than 30/minute</li> <li>○ Is severely restless</li> <li>○ Shows no improvement after 15 minutes</li> </ul> |

**If you notice any of the above symptoms please recommend further follow-up with the student's licensed health care provider (LHCP)**

*FOR SCHOOL STAFF*

## ASTHMA ATTACK SIGNS AND SYMPTOMS

### Early Warning Signs and Symptoms

Most people think that an asthma attack starts suddenly. Many students show “early warning signs” before the episode begins. Consider developing a list, with the student, of his or her early warning signs and symptoms. If they occur, follow the student’s Individual Health or School Emergency Asthma Plan.

|   |   |
|---|---|
| coughing  | agitation                                     |
| itchy throat or chin (tickle in throat)         | persistent                                    |
| coughing funny feeling in chest (younger child) | behavioral                                    |
| changes   |   |
| grumpiness or irritability                      | drop in peak flow meter to yellow or red zone |

If you are made aware of an increase in any of the above signs or symptoms, please communicate that to the school nurse for follow-up with the family.

### Signs and Symptoms

Early warning signs may progress to an asthma attack. Asthma attack signs and symptoms may include: *(Not all students will experience all symptoms during an asthma attack.)*

|  |                                  |
|--|----------------------------------|
| becoming anxious or scared                         | tightness in chest               |
| shortness of breath                                | wheezing while breathing in or   |
| out rapid labored breathing                        | vomiting from hard coughing      |
| incessant coughing                                 | unable to talk in full sentences |
| nasal flaring                                      | shoulders hunched over           |
| “pull in” of neck and chest with breathing         | sweaty, clammy                   |
| skin requiring rescue medications every four hours |                                  |
| or more often                                      |                                  |

**In the event of an asthma attack, the student’s  
School Emergency Asthma Plan should be  
followed.**

**When a student is having asthma symptoms and is sent to the  
office or nurse’s office, always have someone accompany the  
student**

**Call 911 for the following signs and symptoms**

- ☐ No improvement 15-20 minutes after initial treatment with medication and a parent cannot be reached
- ☐ Medications are not available and the student is exhibiting the following: wheezing or incessant coughing, difficulty breathing, chest and neck “pulling in” with breathing, shoulders hunched over; struggling to breathe
- ☐ Lips or nail beds turning gray or blue (students with light complexions)
- ☐ Paling of lips or nail beds (students with dark complexions)
- ☐ Decreasing or loss of consciousness

**Parent or student reported signs and symptoms that may indicate asthma *is not* under control**

- Increase in night time symptoms
- Increased general fatigue
- Difficulty with school related activities due to symptoms
- Increased health room visits
- Harder time recovering from illnesses
- Increased absenteeism
- Peak flow readings consistently low in caution zone
- Increased use of rescue inhaler or nebulizer treatments
- Reported emergency room or urgent care visit and or hospitalization
- Co-morbid conditions untreated contributing to increased symptoms
  - Sinusitis
  - Allergic Rhinitis
  - NSAIDS: (non-steroidal anti-inflammatory medications)
    - Such as: ibuprofen, aspirin, etc. Recognize the use of these medications could lead to worsening of asthma symptoms
  - Gastro-Esophageal Reflux Disease (GERD)

**If you note an increase in any of the signs and symptoms listed above, please inform your health care provider. They may want to alter your child's medication by either changing the number of times a day he/she takes it, by changing the dose, or by adding a medication.**

## APPENDIX O: LEGAL RESOURCES

### Nursing Opinions

#### Definitions

#### Emergency Rules - WAC 180-38

- WAC 180-38-005 Purpose and Authority
- WAC 180-38-020 Definitions

#### Related Nurse Practice Act RCWs and WACs

- RCW 18.79.040 Registered Nursing - Practice Defined
- RCW 18.79.260 Registered Nurse – Activities Allowed
- WAC 246-840-01 Definitions
- WAC 246-840-700 Standards of Nursing Conduct
- WAC 246-840-71 Violations of Standards

#### Levels of Nursing Care for Student Diseases and Conditions: Severity Coding

#### Full Text of Washington State Laws Relevant to Asthma and/or School Nurses

## *NURSING OPINIONS*

**The Washington State Nursing Care Quality Assurance Commission, Practice Committee in a September 8<sup>th</sup>, 2000 advisory opinion: Online at <http://www.k12.wa.us/HealthServices/default.aspx> OSPI Medication Bulletin**

The opinion provides the following guidance regarding inhaled medications:

Question: May an RN in a school setting delegate to an unlicensed school employee, the following task related to the care of children with asthma?

- Assist a student who uses a mask of Aerochamber-style spacer for inhaled medication for asthma if the medication is ordered “by mouth” but the device also covers the nose.

Response: Yes. If the medication is ordered for oral inhalation, it falls within the category of “po” or “by mouth” whether or not the mask or spacer covers the mouth or the mouth and the nose. Medications ordered to be administered intranasally are not included within this category. The administration of medications by routes other than by mouth cannot be delegated to unlicensed school staff except in an emergency situation.

### **Student Self-Administration of Medication OSPI Medication Bulletin no.34.01:**

There are instances in which a LHP and parent may request that a student be permitted to carry his/her own medication and/or to self-administer the medication. Self-administration of medication is not within the purview of the statute which addresses no-nurse school district staff administering oral medications to students. Given no statutory or regulatory guidance on this issue, the issue falls under school district policy. In developing policy on the self-administration of medication, the WSSDA policy is very useful. We suggest school districts may want to consider several adaptations to the WSSDA model policy that would address who approves the student self-administration and consideration of the developmental/grade level of students permitted to self-administer medications. The district may want to consider developing two different lists of individuals who must approve of students carrying their own medications: an approval list for prescription medications and a second approval list for OTC medications. For OTC medications, you may require building principal, parent, and school nurse approval for self-administration.

The district may want to consider permitting students at certain grade levels or developmental level to carry their own medication, prescription and/or OTC, e.g. high school students only. These determinations are within the purview of school boards and district administration because no statute governs self-administration of medication. We strongly recommend that the school nurse be involved in the development of all district policies on medication administration.

## Emergency Medications

Emergency medications administered by injection are addressed in the rules and regulations governing the practice of the registered nurse. WAC 246-840-010(10)(b) states: "Nursing acts delegated by the licensed registered nurse shall not require the unlicensed person to exercise nursing judgment nor perform acts which must only be performed by a licensed practical nurse or registered nurse, except in an emergency situation (RCW 8.79.240[1][b] and [2][b]. " We recommend training and supervision by an RN of non-nurse school staff in the administration of epinephrine to prevent anaphylactic shock in students with known sensitivity to bee stings, foods, latex, etc. WSSDA policy 3416, Students, Medication at School states: "No medication shall be administered by injection except when a student is susceptible to a predetermined, life- endangering situation. In such an instance, the parent shall submit a written and signed permission statement. Such an authorization shall be supported by signed and dated written orders accompanied by supporting directions from the LHP. A staff member shall be trained prior to injecting a medication."

We recommend that the LHP provide specific orders and protocols for the student that include a description of expected symptoms or indicators of when to administer the epinephrine or other drugs and any other first aid measures that might be indicated. In any situation, if a student who has a history of severe reaction to insect bites, stings, latex, food, etc. is exposed to the known allergen and/or develops symptoms of anaphylaxis, call 911 and implement the emergency plan for the student. We recommend that the care plan include:

- a. Written, signed, current permission from parent or guardian.
- b. Identification of who may administer the medication and inservice requirements for doing so.

Note: Training material may be available from the manufacturer of automatic injectable medication administration systems.

## **Life Threatening Bulletin no.61-01 Lats September 2002**

Life-threatening conditioning is defined as a health condition that will put a child in danger of death during the school day if a medication or treatment order and a nursing plan are not in place. The medication or treatment order must be presented prior to the student's attendance or continued attendance already in school.

## DEFINITIONS

### **HIPAA**

Health Insurance Portability and Accountability Act (HIPAA) is a federal law that protects the security and privacy of protected health information (PHI). It covers written, oral, and electronic material. It sets security standards for transmission and storage of PHI. More information is available at: [www.hhs.gov/ocr/hipaa](http://www.hhs.gov/ocr/hipaa)

### **FERPA**

Family Rights and Privacy Act (FERPA) sets standards of confidentiality for education records. Education records are any records containing personally identifiable information about a student that is maintained by the school, its staff members, or contracted employees. Districts must notify parents annually about FERPA restrictions. More FERPA information is available at: [www.ed.gov/offices/OM/fplco](http://www.ed.gov/offices/OM/fplco)

### **Home/Hospital Instruction WAC 392-172-218**

Home or hospital instruction shall be provided to both special education students and other students who are unable to attend school for an estimated period of four weeks or more due to physical disability or illness. As a condition to such services, the parents of a student or the adult student shall request the services and provide written documentation to the district or other public agency from a qualified medical practitioner that states the student will not be able to attend school for an estimated period of at least four weeks. Home/Hospital Instruction Program Procedures for School Districts – August 2003 <http://www.k12.wa.us/HealthServices/homehospital.aspx>

### **House Bill 2821 Biodiesel Bill, July 2004**

This is an act relating to protecting student health by providing incentives for the use of clean-burning alternative fuels in school buses.

### **Integrated Pest Management Bill (IPM) RCW 17.21.415, 2001**

State Law that schools will provide written notification annually or upon enrollment to parents, students, and employees describing the school's pest control policies. The law also specifies that all parents, students, and staff will be notified at least 48 hours before and after pesticides or herbicides are applied. This law requires a general posting, and a written notice must be sent home to parents that have requested notification.

### **IDEA Individuals with Disabilities Act**

The five principles of the law are:

- 1.) Free appropriate public education
- 2.) Appropriate evaluation Individualized Education Program
- 3.) Least restrictive environment
- 4.) Parent and student participation in decision making
- 5.) Procedural due process

This includes the right to appropriate services such as special education, speech and language pathology, audiology, psychological services, PT and OT, therapeutic recreation and social services, school health services, and assistive technology devices that are used to increase, maintain, or improve functional capabilities.

For more info, go to OSPI Special Ed Website at:

<http://www.k12.wa.us/SpecialEd/regulations.aspx>

## **504**

Section 504 of the Rehabilitation Act, 1973, amended, guarantees non-discrimination of handicapped individuals and entitles those individuals to services if they have one or more impediments in activities of living such as breathing, walking, talking, hearing, seeing, caring for oneself, working, eating or learning.

*EMERGENCY RULES*

**Chapter 180-38 WAC**  
**PUPILS -- IMMUNIZATION REQUIREMENT AND LIFE-THREATENING HEALTH**  
**CONDITION**

**WAC 180-38-005 Purpose and authority**

(1) The purpose of this chapter is to establish the procedural and substantive due process requirements governing the exclusion of students from public and private schools for failure to comply with the immunization requirement of the state of Washington or, in the case of public schools only, failure to present a medication or treatment order for a life-threatening health condition.

(2) The authority for this chapter is RCW 28A.210.160 and 28A.210.xxx.

[Statutory Authority: RCW 28A.210.160. 02-24-019, § 180-38-005, filed 11/26/02, effective 12/27/02. Statutory Authority: 1990 c 33. 90-17-009, § 180-38-005, filed 8/6/90, effective 9/6/90. Statutory Authority: RCW 28A.31.118. 85-20-040 (Order 20-85), § 180-38-005, filed 9/25/85.]

**WAC 180-38-020 Definitions**

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise:

(1) "Student" shall mean the same as defined for "child" in RCW 28A.210.070(6). (2)

"Chief administrator" shall mean the same as defined in RCW 28A.210.070(1). (3) "Full immunization" shall mean the same as defined in RCW 28A.210.070(2).

(4) "Schedule of immunization" shall mean the beginning or continuing of a course of immunization, including the conditions for school attendance when a child is not fully immunized, as prescribed by the state board of health (WAC 246-100-166(5)).

(5) "Certificate of exemption" shall mean the filing of a statement exempting the child from immunizations with the chief administrator of the school, on a form prescribed by the department of health, which complies with RCW 28A.210.090.

(6) "Life-threatening condition" shall mean a health condition that will put the child in danger of death during the school day if a medication or treatment order and a nursing plan are not in place.

(7) "Medication or treatment order" shall mean the authority a registered nurse obtains under RCW 18.79.260(2). The order shall be signed by a licensed health care practitioner listed under RCW 18.79.260(2).

**(8)** "Nursing plan" shall mean a plan of care developed for the student consistent with the standards of nursing conduct or practice set out in department of health regulations, WAC 246-840-700 et seq. The nursing plan implements the medication or treatment order.

**(9)** "Exclusion" shall mean the case or instance when the student is denied initial or continued attendance:

(a) Due to failure to submit a schedule of immunization, or a certificate of exemption;  
or

(b) In the case of a life-threatening health condition, due to failure to submit a medication or treatment order and any medication or equipment identified in the order, unless the school district is required to provide the medication or equipment as a related service under federal law.

**(10)** "School day" shall mean the same as in RCW 28A.150.030 and shall be inclusive of school or district sponsored field trip experiences and extracurricular activities and summer school.

**(11)** "Parent" shall mean parent, legal guardian, or other adult *in loco parentis*.

[Statutory Authority: RCW 28A.210.160. 02-24-019, § 180-38-020, filed 11/26/02, effective 12/27/02. Statutory Authority: RCW 28A.31.118. 85-20-040 (Order 20-85), § 180-38-020, filed 9/25/85.]

*RELATED NURSE PRACTICE ACT RCWS AND WACS*

**RCW 18.79.040**

**"Registered nursing practice" defined -- Exceptions.**

(1) "Registered nursing practice" means the performance of acts requiring substantial specialized knowledge, judgment, and skill based on the principles of the biological, physiological, behavioral, and sociological sciences in either:

- (a) The observation, assessment, diagnosis, care or counsel, and health teaching of the ill, injured, or infirm, or in the maintenance of health or prevention of illness of others;
- (b) The performance of such additional acts requiring education and training and that are recognized by the medical and nursing professions as proper and recognized by the commission to be performed by registered nurses licensed under this chapter and that are authorized by the commission through its rules;
- (c) The administration, supervision, delegation, and evaluation of nursing practice. However, nothing in this subsection affects the authority of a hospital, hospital district, medical clinic, or office, concerning its administration and supervision;
- (d) The teaching of nursing;
- (e) The executing of medical regimen as prescribed by a licensed physician and surgeon, dentist, osteopathic physician and surgeon, podiatric physician and surgeon, physician assistant, osteopathic physician assistant, or advanced registered nurse practitioner.

(2) Nothing in this section prohibits a person from practicing a profession for which a license has been issued under the laws of this state or specifically authorized by any other law of the state of Washington.

(3) This section does not prohibit

- (a) the nursing care of the sick, without compensation, by an unlicensed person who does not hold himself or herself out to be a registered nurse,
- (b) the practice of licensed practical nursing by a licensed practical nurse, or
- (c) the practice of a nursing assistant, providing delegated nursing tasks under chapter 18.88A RCW.

**NOTES:**

**Conflict with federal requirements -- Severability -- Effective date -- 1995**

**1st sp.s. c 18:** See notes following RCW 74.39A.030.

**RCW 18.79.260**

**Registered nurse -- Activities allowed -- Delegation of tasks.**

**(1)** A registered nurse under his or her license may perform for compensation nursing care, as that term is usually understood, of the ill, injured, or infirm.

**(2)** A registered nurse may, at or under the general direction of a licensed physician and surgeon, dentist, osteopathic physician and surgeon, naturopathic physician, podiatric physician and surgeon, physician assistant, osteopathic physician assistant, or advanced registered nurse practitioner acting within the scope of his or her license, administer medications, treatments, tests, and inoculations, whether or not the severing or penetrating of tissues is involved and whether or not a degree of independent judgment and skill is required. Such direction must be for acts which are within the scope of registered nursing practice.

**(3)** A registered nurse may delegate tasks of nursing care to other individuals where the registered nurse determines that it is in the best interest of the patient.

(a) The delegating nurse shall:

- (i) Determine the competency of the individual to perform the tasks; (ii) Evaluate the appropriateness of the delegation;
- (iii) Supervise the actions of the person performing the delegated task; and
- (iv) Delegate only those tasks that are within the registered nurse's scope of practice.

(b) A registered nurse may not delegate acts requiring substantial skill, the administration of medications, or piercing or severing of tissues except to registered or certified nursing assistants who provide care to individuals in community-based care settings as authorized under (d) of this subsection. Acts that require nursing judgment shall not be delegated.

(c) No person may coerce a nurse into compromising patient safety by requiring the nurse to delegate if the nurse determines that it is inappropriate to do so. Nurses shall not be subject to any employer reprisal or disciplinary action by the nursing care quality assurance commission for refusing to delegate tasks or refusing to provide the required training for delegation if the nurse determines delegation may compromise patient safety.

(d) For delegation in community-based care settings, a registered nurse may delegate nursing care tasks only to registered or certified nursing assistants. Simple care tasks such as blood pressure monitoring, personal care service or other tasks as defined by the nursing care quality assurance commission are exempted from this requirement. "Community-based care settings" includes: Community residential programs for the developmentally disabled, certified by

the department of social and health services under chapter 71A.12 RCW; adult family homes licensed under chapter 70.128 RCW; and boarding homes licensed under chapter 18.20 RCW. Community based care settings do not include acute care or skilled nursing facilities.

(i) Delegation of nursing care tasks in community-based care settings is only allowed for individuals who have a stable and predictable condition. "Stable and predictable condition" means a situation in which the individual's clinical and behavioral status is known and does not require the frequent presence and evaluation of a registered nurse.

(ii) The determination of the appropriateness of delegation of a nursing task is at the discretion of the registered nurse. However, the administration of medications by injection, sterile procedures, and central line maintenance may never be delegated.

(iii) The registered nurse shall verify that the nursing assistant has completed the required core nurse delegation training required in chapter 18.88A RCW prior to authorizing delegation.

(iv) The nurse is accountable for his or her own individual actions in the delegation process. Nurses acting within the protocols of their delegation authority are immune from liability for any action performed in the course of their delegation duties.

(v) On or before June 30, 2001, the nursing care quality assurance commission, in conjunction with the professional nursing organizations and the department of social and health services, shall make any needed revisions or additions to nurse delegation protocols by rule, including standards for nurses to obtain informed consent prior to the delegation of nursing care tasks. Nursing task delegation protocols are not intended to regulate the settings in which delegation may occur, but are intended to ensure that nursing care services have a consistent standard of practice upon which the public and the profession may rely, and to safeguard the authority of the nurse to make independent professional decisions regarding the delegation of a task.

(e) The nursing care quality assurance commission may adopt rules to implement this section.

**(4)** Only a person licensed as a registered nurse may instruct nurses in technical subjects pertaining to nursing.

**(5)** Only a person licensed as a registered nurse may hold herself or himself out to the public or designate herself or himself as a registered nurse.

#### **WAC 246-840-01 Definitions.**

**(1)** "Auxiliary services" are all nursing services provided to patients by persons other than the licensed practical nurse, the registered nurse and the nursing student.

**(2)** "Beginning practitioner" means a newly licensed nurse beginning to function in the nurse role.

**(3)** "Behavioral objectives" means the measurable outcomes of specific content.

**(4)** "Client" means the person who receives the services of the practical nurse or registered nurse.

**(5)** "Client advocate" means a supporter of client rights and choices.

**(6)** "Commission" means the Washington state nursing care quality assurance commission.

**(7)** "Competencies" means the tasks necessary to perform the standards.

**(8)** "Conceptual framework" means the theoretical base around which the curriculum is developed.

**(9)** "Conditional approval" of a school of nursing is the approval given a school of nursing that has failed to meet the requirements of the law and the rules and regulations of the commission, and it specifies conditions that must be met within a designated time to rectify the failure.

**(10)** "Delegation" means the licensed practical nurse or registered nurse transfers the performance of selected nursing tasks to competent individuals in selected situations. The licensed practical nurse or registered nurse delegating the task retains the responsibility and accountability for the nursing care of the client. The licensed practical nurse or registered nurse delegating the task supervises the performance of the unlicensed person;

(a) Nursing acts delegated by the licensed practical nurse or registered nurse shall:

- (i) Be within the area of responsibility of the licensed practical nurse or registered nurse delegating the act;
- (ii) Be such that, in the opinion of the licensed practical nurse or registered nurse, it can be properly and safely performed by the person without jeopardizing the patient welfare;
- (iii) Be acts that a reasonable and prudent licensed practical nurse or registered nurse would find are within the scope of sound nursing judgment.

(b) Nursing acts delegated by the licensed practical nurse or registered nurse shall not require the unlicensed person to exercise nursing judgment nor perform acts which must only be performed by a licensed practical nurse or registered nurse, except in an emergency situation (RCW 18.79.240 (1)(b) and (2)(b)).

(c) When delegating a nursing act to an unlicensed person it is the registered nurse who shall:

- (i) Make an assessment of the patient's nursing care need before delegating the task;

- (ii) Instruct the unlicensed person in the delegated task or verify competency to perform or be assured that the person is competent to perform the nursing task as a result of the systems in place by the health care agency;
- (iii) Recognize that some nursing interventions require nursing knowledge, judgment, and skill and therefore may not lawfully be delegated to unlicensed persons.

**(11) Direction and Supervision:**

- (a) "Supervision" of licensed or unlicensed nursing personnel means the provision of guidance and evaluation for the accomplishment of a nursing task or activity with the initial direction of the task or activity; periodic inspection of the actual act of accomplishing the task or activity; and the authority to require corrective action.
- (b) "Consulting capacity" shall mean the recommendations to a professional entity, employed at that facility, which may be accepted, rejected, or modified. These recommendations shall not be held out as providing nursing services by the consulting nurse to the patient or public.
- (c) "Direct supervision" shall mean the licensed registered nurse is on the premises, is quickly and easily available and the patient has been assessed by the licensed registered nurse prior to the delegation of the duties to any caregiver.
- (d) "Immediate supervision" shall mean the registered nurse is on the premises and is within audible and visual range of the patient and the patient has been assessed by the registered nurse prior to the delegation of duties to any caregiver.
- (e) "Indirect supervision" shall mean the registered nurse is not on the premises but has given either written or oral instructions for the care and treatment of the patient and the patient has been assessed by the registered nurse prior to the delegation of duties to any caregiver.

**(12)** "Extended learning sites" refers to any area external to the parent organization selected by faculty for student learning experiences.

**(13)** "Faculty" means persons who are responsible for the educational

program of the school of nursing and who hold faculty appointment in the school.

**(14)** "Full approval" of a school of nursing is the approval given a school of nursing that meets the requirements of the law and the rules and regulations of the commission.

**(15)** "Minor nursing services." The techniques and procedures used by the nursing profession are extremely difficult to categorize as major or minor nursing services. The important factor with which this law is concerned is the determination of which nursing person and at what level of preparation that person may perform said technique or procedure in relation to the condition of a given patient, and this kind of determination rests with the registered nurse.

**(16)** "Minimum standards of competency" means the functions that are expected of the beginning level nurse.

(17) "Nurse administrator" is an individual who meets the qualifications contained in WAC 246-840-555 and who has been designated as the person primarily responsible for the direction of the program in nursing. Titles for this position may include, among others, dean, director, coordinator or chairperson.

(18) The phrase "nursing aide" used in RCW 18.79.240 (l)(c) shall mean a "nursing technician." "Nursing technician" is a nursing student currently enrolled in a commission or state board of nursing approved nursing education program and employed for the purpose of giving help, assistance and support in the performance of those services which constitute the practice of registered nursing. The nursing student shall use the title "nursing technician" while employed.

(19) "Nursing student" is a person currently enrolled in an approved school of nursing.

(20) "Philosophy" means the beliefs and principles upon which the curriculum is based.

(21) "Program" means a division or department within a state supported educational institution, or other institution of higher learning charged with the responsibility of preparing persons to qualify for the licensing examination.

(22) "Provisional approval" of schools of nursing is the approval given a new school of nursing based on its proposed program prior to the admission of its first class.

(23) "Registered nurse" as used in these rules shall mean a nurse as defined by RCW 18.79.030(1).

(24) "School" means an educational unit charged with the responsibility of preparing persons to practice as practical nurses or registered nurses. Three types of basic schools of nursing are distinguished by the certificate awarded to the graduate. Schools of nursing within colleges and universities award the associate degree or baccalaureate degree. Schools of nursing sponsored by a hospital award a diploma.

(25) "Standards" means the overall behavior which is the desired outcome.

(26) "Terminal objectives" means the statements of goals which reflect the philosophy and are the measurable outcomes of the total curriculum.

(27) An "unapproved school of nursing" is a school of nursing that has been removed from the list of approved schools for failure to meet the requirements of the law and the rules and regulations of the commission or a school that has never been approved by the commission.

[Statutory Authority: RCW 43.70.280. 98-05-060, 5 246-840-01 0, filed 211 3/98, effective 311 6/98. Statutory Authority: Chapter 18.79 RCW. 97-1 3-1 00, 5 246-840-01 0, filed 611 8/97, effective 711 9/97.]

## **WAC 246-840-700 Standards of nursing conduct or practice.**

(1) The purpose of defining standards of nursing conduct or practice through WAC 246-

840-700 and 246-840-7 10 is to identify responsibilities of the professional registered nurse and the licensed practical nurse in health care settings and as provided in the Nursing Practice Act, chapter 18.79 RCW. Violation of these standards may be grounds for disciplinary action under chapter 18.130 RCW. Each individual, upon entering the practice of nursing, assumes a measure of responsibility and public trust and the corresponding obligation to adhere to the professional and ethical standards of nursing practice. The nurse shall be responsible and accountable for the quality of nursing care given to clients. This responsibility cannot be avoided by accepting the orders or directions of another person. The standards of nursing conduct or practice include, but are not limited to the following;

(2) The nursing process is defined as a systematic problem-solving approach to nursing care which has the goal of facilitating an optimal level of functioning and health for the client, recognizing diversity. It consists of a series of phases: Assessment and planning, intervention and evaluation with each phase building upon the preceding phases.

| <b>(a) Registered Nurse:</b>   | <b>(b) Licensed Practical Nurse:</b>  |
|--|---|
| Minimum standards for registered nurses include the licensed practical nurses following:   | Minimum standards include the following   |
| <b>(i) Standard I<br/>Initiating the Nursing Process</b>   | <b>(i) Standard I<br/>Implementing the Nursing Process</b><br>The practical nurse assists in implementing the nursing process;  |
| <b>(A) Assessment and Analysis:</b> The registered nurse initiates data collection and analysis that includes pertinent objective and subjective data regarding the health status of the clients. The RN is responsible for ongoing client assessment, including assimilation of data gathered from LPNs and other members of the healthcare team. | <b>(A) Assessment:</b> The licensed practical nurse makes basic observations, gathers data and assists in the identification of needs and problems relevant to the clients, collects specific data as directed, and communicates outcomes of the data collection process in a timely fashion to the appropriate supervising person. |
| <b>(B) Nursing Diagnosis/Problem Identification:</b> The RN uses client data and scientific nursing principles to develop nursing diagnosis and to identify client problems in order to deliver effective nursing care.  | <b>(B) Nursing Diagnosis/Problem Identification:</b> The LPN provides data to assist in the development of nursing diagnoses which are central to the plan of care.   |
| <b>(C) Planning:</b> The RN plans nursing care that will assist clients and families with maintaining or restoring health and wellness or supporting a dignified death.  | <b>(C) Planning:</b> The LPN contributes to the development of approaches to meet the needs of clients and families, and develops client care plans utilizing a standardized nursing care plan and assists in setting priorities for care   |
| <b>(D) Implementation:</b> The RN implements the plan of care by initiating nursing interventions through direct care and supervising other members of the care team.  | <b>(D) Implementation:</b> The LPN carries out planned approaches to client care and performs common therapeutic nursing techniques.  |
| <b>(E) Evaluation:</b> The RN evaluates the responses of individuals to nursing interventions and is responsible for the analysis and modification of the nursing care plan consistent with intended outcomes.   | <b>(E) Evaluation:</b> The LPN, in collaboration with the RN, assists adjusting the care plan. The LPN reports outcomes of care to the RN or supervising health care provider.  |

|   |  |
|---|--|
| <b>(ii) Standard II Delegation and Supervision</b>  | <b>(ii) Standard II Delegation and Supervision</b>   |
| The RN is accountable for the safety of clients receiving nursing service by  | Under direction, the LPN is accountable for the safety of clients receiving nursing care   |
| (A) delegating selected nursing functions to others in accordance with their education, credentials, and demonstrated competence as defined in WAC 246-840-010 (10)                         | (A) the LPN may delegate selected nursing tasks to competent individuals in selected situations, in accordance with their education, credentials, and demonstrated competence as defined in WAC 246-840-010 (10) |
| (B) Supervising others to whom he/she has delegated nursing functions as defined in WAC 246-840-010 (10)  | (B) The LPN in delegating functions shall supervise the person(s) to whom the functions have been delegated  |
| (C) Evaluating the outcomes of care provided by licensed and other paraprofessional staff   | (C) The LPN reports outcomes of delegated nursing care tasks to the RN or supervising health care provider   |
| (D) The RN may delegate certain additional acts to certain individuals in community-based long-term care settings as provided by WAC 246-840-910 through 246-840-980 and WAC 246-841-405    | (D) In community-based long-term care settings as provided by WAC 246-840-910 through 246-840-980 and WAC 246-841-405, the LPN may delegate only personal care tasks to qualified care givers                    |
| <b>(iii) Standard III Health Teaching</b>   | <b>(iii) Standard III Health Teaching</b>  |
| The RN assesses learning needs including learning readiness for patients and families, develops plans to meet those learning needs, implements the teaching plan and evaluates the outcome. | The LPN assists in health teaching of clients and provides routine health information and instruction recognizing individual differences.  |

**(3) The following standards apply to registered nurses and licensed practical nurses**

(a) The registered nurse and licensed practical nurse shall communicate significant changes in the client's status to appropriate members of the health care team. This communication shall take place in a time period consistent with the client's need for care. Communication is defined as a process by which information is exchanged between individuals through a common system of speech, symbols, signs, and written communication or behaviors that serves as both a means of gathering information and of influencing the behavior, actions, attitudes, and feelings of others; and

(b) The registered nurse and licensed practical nurse shall document, on essential client records, the nursing care given and the client's response to that care; and

(c) The registered nurse and licensed practical nurse act as client advocates in health maintenance and clinical care.

**(4) Other responsibilities:**

(a) The registered nurse and the licensed practical nurse shall have knowledge and understanding of the laws and rules regulating nursing and shall function within the legal scope of nursing practice;

(b) The registered nurse and the licensed practical nurse shall be responsible and accountable for his or her practice based upon and limited to the scope of his/her education, demonstrated competence, and nursing experience consistent with the scope of practice set forth in this document; and

(c) The registered nurse and the licensed practical nurse shall obtain instruction, supervision and consultation as necessary before implementing new or unfamiliar techniques or procedures which are in his/her scope of practice.

(d) The registered nurse and the licensed practical nurse shall be responsible for maintaining current knowledge in his/her field of practice; and

(e) The registered nurse and the licensed practical nurse shall respect the client's right to privacy by protecting confidential information and shall not use confidential health care information for other than legitimate patient care purposes or as otherwise provided in the Health Care Information Act, chapter 70.02 RCW.

[Statutory Authority: RCW 18.79.110. 02-06- 117, § 246-840-700, filed 3/6/02, effective 4/6/02. Statutory Authority: Chapter 18.79 RCW. 97- 13- 100, § 246-840-700, filed 6/18/97, effective 7/19/97.]

## **WAC 246-840-71 Violations of standards of nursing conduct or practice.**

The following conduct may subject a nurse to disciplinary action under the Uniform Disciplinary Act, chapter 18.130 RCW:

**(1)** Engaging in conduct described in RCW 18.1 30.1 80;

**(2)** Failure to adhere to the standards enumerated in WAC 246-840-700 which may include, but are not limited to:

(a) Failing to assess and evaluate a client's status or failing to institute nursing intervention as required by the client's condition;

(b) Willfully or repeatedly failing to report or document a client's symptoms, responses, progress, medication, or other nursing care accurately and/or legibly;

(c) Willfully or repeatedly failing to make entries, altering entries, destroying entries, making incorrect or illegible entries and/or making false entries in employer or employee records or client records pertaining to the giving of medication, treatments, or other nursing care;

(d) Willfully or repeatedly failing to administer medications and/or treatments in accordance with nursing standards;

(e) Willfully or repeatedly failing to follow the policy and procedure for the wastage of medications where the nurse is employed or working;

(f) Nurses shall not sign any record attesting to the wastage of controlled substances unless the wastage was personally witnessed;

(g) Willfully causing or contributing to physical or emotional abuse to the client;

(h) Engaging in sexual misconduct with a client as defined in WAC 246-840-740; or -

(i) Failure to protect clients from unsafe practices or conditions, abusive acts, and neglect;

**(3)** Failure to adhere to the standards enumerated in WAC 246-840-700(2) which may include:

(a) Delegating nursing care function or responsibilities to a person the nurse knows or has reason to know lacks the ability or knowledge to perform the function or responsibility, or delegating to unlicensed persons those functions or responsibilities the nurse knows or has reason to know are to be performed only by licensed persons. This section should not be construed as prohibiting

delegation to family members and other caregivers exempted by RCW 18.79.040(3), 18.79.050, 18.79.060 or 18.79.240 ; or

(b) Failure to supervise those to whom nursing activities have been delegated. Such supervision shall be adequate to prevent an unreasonable risk of harm to clients;

**(4)**

(a) Performing or attempting to perform nursing techniques and/or procedures for which the nurse lacks the appropriate knowledge, experience, and education and/or failing to obtain instruction, supervision and/or consultation for client safety;

(b) Violating the confidentiality of information or knowledge concerning the client, except where required by law or for the protection of the client; or

(c) Writing prescriptions for drugs unless authorized to do so by the commission;

**(5) Other violations:**

(a) Appropriating for personal use medication, supplies, equipment, or personal items of the client, agency, or institution. The nurse shall not solicit or borrow money, materials or property from clients;

(b) Practicing nursing while affected by alcohol or drugs, or by a mental, physical or emotional condition to the extent that there is an undue risk that he or she, as a nurse, would cause harm to him or herself or other persons; or

(c) Willfully abandoning clients by leaving a nursing assignment, when continued nursing care is required by the condition of the client(s), without transferring responsibilities to appropriate personnel or caregiver;

(d) Conviction of a crime involving physical abuse or sexual abuse including convictions of any crime or plea of guilty, including crimes against persons as defined in chapter 43.830 RCW and crimes involving the personal property of a patient, whether or not the crime relates to the practice of nursing; or

(e) Failure to make mandatory reports to the Nursing Care Quality Assurance Commission concerning unsafe or unprofessional conduct as required in WAC 246-840-730;

**Other:**

**(6)** The nurse shall only practice nursing in the state of Washington with a current Washington license;

**(7)** The licensed nurse shall not permit his or her license to be used by another person;

**(8)** The nurse shall have knowledge of the statutes and rules governing nursing practice and shall function within the legal scope of nursing practice;

**(9)** The nurse shall not aid, abet or assist any other person in violating or circumventing the laws or rules pertaining to the conduct and practice of professional registered nursing and licensed practical nursing; or

**(10)** The nurse shall not disclose the contents of any licensing examination or solicit, accept or compile information regarding the contents of any examination before, during or after its administration.

[Statutory Authority: RCW 18.79.1 10. 02-06-1 17, 5 246-840-71 0, filed 3/6/02, effective 4/6/02. Statutory Authority: Chapter 1 8.79 RCW. 97-1 3-1 00, 5 246-840-71 0, filed 6/11/97, effective 7/11/97.]

## *LEVELS OF NURSING CARE FOR STUDENT DISEASES AND CONDITIONS: SEVERITY CODING*

Students attend school with a broad range of health conditions, from potentially life threatening acute and chronic conditions to correctable vision problems and everything in between which could impede the student's ability to fully participate in the educational process. Severity coding is a method for planning adequate staffing to meet the varying needs of students.

Severity of condition does not always translate directly into nursing time with the students. Many students with significant chronic conditions **predictably** require daily nursing time. For example, a student with spina bifida who is not yet independent with urinary bladder management requires 40 minutes every day of the nurse's time for catheterizations at the same time every school day. Other students such as those with severe asthma may experience an acute asthma attack and require nursing assessment and care **at any time** during a school day.

Examples of treatments/intervention that may be performed in schools at all levels of severity are (these are only a few examples and not meant to be an exclusive list):

|                                    |                                   |
|------------------------------------|-----------------------------------|
| Blood glucose test                 | Monitor illness Continuous        |
| oxygen administration              | Monitor weight Dressing           |
| change                             | Nebulizer treatments              |
| Gastric tube feeding               | Peak flow monitoring              |
| Intermittent oxygen administration | Sterile bladder catheterization   |
| Laboratory tests                   | Suctioning                        |
| Medication management              | Toileting                         |
| Monitor blood pressure             | Tracheostomy care                 |
| Monitor disability                 | Unsterile bladder catheterization |

In order to plan, care for, and monitor the students with special health care needs, the school nurse will assign each qualifying student to a level of care based on the following categories: nursing dependent, medically fragile, medically complex, and health concerns. In addition to children being considered for assignment to these levels of severity, there are many other students not requiring care on a daily basis. Therefore, the School District Model for the Delivery of Health Services (pages 12–14) has been recommended for this larger population of students. This model is to be used in conjunction with severity coding which establishes the nursing staff needs of students within a school building.

### **Level A: Nursing Dependent**

Nursing dependent students require 24 hours/day, frequently one-to-one, skilled nursing care for survival. Many are dependent on technological devices for breathing, for example, a child on a respirator, and/or for continuous nursing assessment and intervention. Without effective use of medical technology and availability of nursing care, the student will experience irreversible damage or death. Before a student enters school, a registered nurse will complete a nursing assessment of the student and determine an appropriate plan of care/individual health care plan.

**Staffing requirements:** Immediate availability of the nurse (registered nurse or licensed practical nurse as determined by the R.N.) "on the premises and is within audible and visual range of the patient [student] and the patient [student] has been

assessed by the registered nurse prior to the delegation of duties to any care giver” (WAC 246-840-010[11][d]).

### **Statutory Authority**

- RCW 18.79.260 Registered nurse—Activities allowed.
- RCW 18.79.270 Licensed practical nurse—Activities allowed.
- RCW 18.79.280 Medication, tests, treatments allowed.
- RCW 18.79.290 Catheterization of students—Rules.
- WAC 246-840-010 Definitions.
- WAC 246-840-700 Standards of nursing conduct or practice.
- WAC 246-840-705 Functions of a licensed practical nurse.
- WAC 246-840-710 Violations of standards on nursing conduct or practice.
- WAC 246-840-715 Standards/competencies.

### **Level B: Medically Fragile**

Students with complex health care needs in this category face daily the possibility of a life-threatening emergency requiring the skill and judgment of a professional nurse.

An individual health care plan or plan of nursing care developed by a registered nurse must be complete, current, and available at all times to personnel in contact with these children. This includes bus drivers for daily transportation and special events, sports coaches and school personnel assigned to extracurricular activities. Every child in this category requires a full-time nurse in the building. Children in this category may be transported to school. Someone must be trained and available on the bus to provide care during transport to the school. This training must include the primary bus driver, the child, and back-up personnel. The registered nurse makes the decision of who will be trained and what level of preparation is required, and uses the nurse delegation principles described on pages 4–5.

Examples may include, but are not limited to:

- Severe seizure disorder, requiring medications that can be administered only by a nurse.
- Severe asthma with potential for status asthmatics.
- Sterile procedures.
- Tracheostomy with frequent and/or unpredictable suctioning.
- Unstable and/or newly diagnosed diabetic with unscheduled blood sugar monitoring and insulin injections.

**Staffing requirements:** Every child in the medically fragile category requires a fulltime nurse in the building. The nurse “is on the premises, is quickly and easily available and the patient [student] has been assessed by the licensed registered nurse prior to the delegation of the duties to any caregiver” (WAC 246-840-010[11][c]).

The child may need to transfer to a school where full-time nursing staff is provided if not available at the local school. If the child needs a high level of nursing service, but is not willing to move or the parents object to the move to the school where the service is provided, the parents, school administrators, and school nurse should meet and discuss options. Options **may** include a waiver signed by the parent in compliance with school district policy for the student to remain in the local school. In these cases, a move toward students attending their neighborhood schools works against the provision of adequate care if there is not a full-time nurse in the neighborhood school. Parents need to be fully aware of the services that are offered by a school. Placement of their children in schools where

services are not available to the degree required, could present undue stress on the child, the nursing staff, parents, and school staff. If a waiver has been signed, the professional registered nurse in the school the child is attending must be aware of the child's condition and needs and develop emergency care plans for these children. Reasonable accommodation and provision of education and health services under Section 504 or under IDEA must be considered and addressed in each child's individual health care plan.

### **Statutory Authority**

- RCW 18.79.260 Registered nurse—Activities allowed.
- RCW 18.79.270 Licensed practical nurse—Activities allowed.
- RCW 18.79.280 Medication, tests, treatments allowed.
- RCW 18.79.290 Catheterization of students—Rules.
- WAC 246-840-010 Definitions.
- WAC 246-840-700 Standards of nursing conduct or practice.
- WAC 246-840-705 Functions of a licensed practical nurse.
- WAC 246-840-710 Violations of standards on nursing conduct or practice.
- WAC 246-840-715 Standards/competencies.

### **Level C: Medically Complex**

The medically complex student has a complex and/or unstable physical and/or social-emotional condition that requires daily treatments and close monitoring by a professional registered nurse. Life-threatening events are unpredictable.

Treatments, medications, and reporting of current signs and symptoms can be delegated, but delegation requires a trained, willing, and competent staff person and close supervision of that staff person by a registered nurse. The level of supervision required is determined by the R.N. but must be adequate to maintain safety and ensure competence of the direct caregiver. Adaptations of the medically complex student to the educational system must be negotiated and maintained with the student, family, school staff (classroom and administrative), and community healthcare provider(s).

Examples include, but are not limited to:

|                                       |  |
|---------------------------------------|--|
| ADHD and on medications               | Moderate to severe asthma; inhaler         |
| Anaphylactic event                    | at school and peak flow meter              |
| Cancer                                | Oxygen, continuous or intermittent         |
| Complex mental or emotional disorders | Preteen or teenage pregnancy               |
| Immune disorders                      | Taking carefully timed medications         |
|                                       | Taking medications with major side effects |
|                                       | Unstable metabolic conditions              |

Emotional disorders and homicidal and/or suicidal behaviors may be assessed and categorized at this level. These conditions require collaboration with school counselors. The registered nurse's role must be identified and defined and mutually agreed to in these cases. Pregnancy may also be classified at this level. Pregnancy issues must be assessed and may require weekly evaluation.

**Staffing requirements:** Children placed in this category require a professional registered nurse in the building a full day a week who is available on a daily basis when not in the school building. The registered nurse prioritizes issues weekly and provides a face-to-face assessment of these children at least one day a week. If children in this category become more fragile and meet the definition of Level A or Level B care, they may need to transfer to a school that meets the staffing requirements of the higher categories. This is

dependent on the registered nurse's judgment and district policy. At Level C, the registered nurse "is not on the premises but has given either written or oral instructions for the care and treatment of the patient [student] and the patient [student] has been assessed by the registered nurse prior to the delegation of duties to any caregiver" (WAC 246-840-010[11][e]). If any alteration of the written care plan is required, it must be done by the registered nurse and must be documented. Licensed practical nurses can revise the care plans and consult with the registered nurse.

### **Statutory Authority**

- RCW 18.79.260 Registered nurse—Activities allowed.
- RCW 18.79.270 Licensed practical nurse—Activities allowed.
- RCW 18.79.280 Medication, tests, treatments allowed.
- RCW 18.79.290 Catheterization of students—Rules.
- WAC 246-840-010 Definitions.
- WAC 246-840-700 Standards of nursing conduct or practice.
- WAC 246-840-705 Functions of a licensed practical nurse.
- WAC 246-840-710 Violations of standards on nursing conduct or practice.
- WAC 246-840-715 Standards/competencies.

### **Level D: Health Concerns**

The student's physical and/or social-emotional condition is currently uncomplicated and predictable. Occasional monitoring is required. Required monitoring varies from biweekly to annually.

Examples include, but are not limited to:

|                                      |  |
|--------------------------------------|--|
| Dental disease                       | Headaches, migraines                           |
| Diabetes self-managed by the student | Sensory impairments                            |
| Dietary restrictions                 | Orthopedic conditions requiring accommodations |
| Eating disorders                     | Uncomplicated Pregnancy                        |
| Encopresis                           |  |

**Staffing Requirements:** Children placed in this category should have their health needs assessed at least once a school year by the registered nurse at the beginning of the school year or at the time of diagnosis. Reassessment occurs as the condition requires and the nurse's judgment determines.

### **Statutory Authority**

- RCW 18.79.260 Registered nurse—Activities allowed.
- RCW 18.79.270 Licensed practical nurse—Activities allowed.
- RCW 18.79.280 Medication, tests, treatments allowed.
- RCW 18.79.290 Catheterization of students—Rules.
- WAC 246-840-010 Definitions.
- WAC 246-840-700 Standards of nursing conduct or practice.
- WAC 246-840-705 Functions of a licensed practical nurse.
- WAC 246-840-710 Violations of standards on nursing conduct or practice.
- WAC 246-840-715 Standards/competencies.

### **Social/Emotional Factors, Comorbidity**

Classification of students by the severity of their condition(s) remains the responsibility of the registered nurse. The registered nurse may factor into his/her decision any of the following or other significant factors that increase health care need:

Chronic illness stressors  
stressors

English-as-second language

High mobility/turnover

Homeless Drug/alcohol

Poverty/low income

Reentry

Special education, enrolled

The student's diagnosis may place him or her at Level D, but if the student has more than one diagnosis (comorbidity) or any of the above risk factors, the nurse may place the student in a higher level of severity and increase monitoring, at least initially.

## Transportation

A student may need transportation as a related service, as determined under procedures provided under IDEA and chapter 392-172 WAC, because of student characteristics which could require nursing care, or intervention, or require the use of adaptive or assistive equipment. In these situations, the pupil transportation staff should be invited to participate in the nursing assessment and care planning process as a resource person and potential provider of care.

Time allotted for training by the registered nurse and for the pupil transportation personnel need to be considered in the staffing model. Informing and training transportation staff prior to the first transport is essential to ensure safe transport. The degree of ongoing nursing supervision must also be addressed and provided. Appropriate substitutes for the transportation personnel must be trained as well. Liability questions associated with the provision of nursing care and supervision need to be addressed. The registered nurse will assess the student and secure answers to the following questions prior to transportation arrangements being made:

1. Can the student be safely transported?
2. Can the student's medical equipment be transported?
3. What inservice training is necessary to safely transport this student, e.g., use of medical equipment, signs and symptoms of illness or disease progression, universal precautions, etc.?
4. Is an additional staff person necessary in the vehicle to observe and care for the student during transport?
5. What level and degree of nursing supervision is required by the transportation staff for the student?

Level C or D students may require some adaptations but not require nursing staff to be on the bus. If a student in Level C or D experiences deterioration in condition or an acute episode requiring increased nursing care, the nurse will reassess the student. If the student is then categorized as Level A or B, the student may be transported to a school with full-time nursing services depending on district policy and/or additional or licensed personnel resources may be added to the bus.

*FULL TEXT OF WASHINGTON STATE LAWS RELEVANT TO ASTHMA AND/OR SCHOOL NURSES*

Laws Related to Asthma

CERTIFICATION OF ENROLLMENT

**HOUSE BILL 2247**

62nd Legislature

2012 Regular Session

Passed by the House January 30, 2012

Yeas 96 Nays 0

Speaker of the House of Representatives

Passed by the Senate February 24, 2012

Yeas 49 Nays 0

President of the Senate

CERTIFICATE

I, Barbara Baker, Chief Clerk of  
the House of Representatives of the  
State of Washington, do hereby  
certify that the attached is HOUSE  
BILL 2247 as passed by the House of  
Representatives and the Senate on  
the dates hereon set forth.

Chief Clerk

Approved

Governor of the State of Washington

FILED

Secretary of State

State of Washington

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HOUSE BILL 2247

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Passed Legislature - 2012 Regular Session

State of Washington 62nd Legislature 2012 Regular Session

By Representatives Green, Cody, Billig, Fitzgibbon, Reykdal, Maxwell,  
Jenkins, Finn, Moeller, and Ryu

Read first time 01/10/12. Referred to Committee on Health Care & Wellness.

1 AN ACT Relating to expanding the types of medications that a public

2 or private school employee may administer to include topical

3 medication, eye drops, and ear drops; and amending RCW 28A.210.260 and

4 28A.210.270.

5 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

6 Sec. 1. RCW 28A.210.260 and 2000 c 63 s 1 are each amended to read

7 as follows:

8 Public school districts and private schools which conduct any of

9 grades kindergarten through the twelfth grade may provide for the

10 administration of oral medication, topical medication, eye drops, or

11 ear drops of any nature to students who are in the custody of the  
12 school district or school at the time of administration, but are not  
13 required to do so by this section, subject to the following conditions:

14 (1) The board of directors of the public school district or the  
15 governing board of the private school or, if none, the chief  
16 administrator of the private school shall adopt policies which address  
17 the designation of employees who may administer oral medications,  
18 topical medications, eye drops, or ear drops to students, the  
19 acquisition of parent requests and instructions, and the acquisition of  
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1 requests from licensed health professionals prescribing within the  
2 scope of their prescriptive authority and instructions regarding  
3 students who require medication for more than fifteen consecutive  
4 school days, the identification of the medication to be administered,  
5 the means of safekeeping medications with special attention given to  
6 the safeguarding of legend drugs as defined in chapter 69.41 RCW, and  
7 the means of maintaining a record of the administration of such  
8 medication;

9 (2) The board of directors shall seek advice from one or more  
10 licensed physicians or nurses in the course of developing the foregoing  
11 policies;

12 (3) The public school district or private school is in receipt of  
13 a written, current and unexpired request from a parent, or a legal  
14 guardian, or other person having legal control over the student to  
15 administer the medication to the student;

16 (4) The public school district or the private school is in receipt  
17 of (a) a written, current and unexpired request from a licensed health  
18 professional prescribing within the scope of his or her prescriptive  
19 authority for administration of the medication, as there exists a valid  
20 health reason which makes administration of such medication advisable  
21 during the hours when school is in session or the hours in which the  
22 student is under the supervision of school officials, and (b) written,  
23 current and unexpired instructions from such licensed health  
24 professional prescribing within the scope of his or her prescriptive  
25 authority regarding the administration of prescribed medication to  
26 students who require medication for more than fifteen consecutive  
27 workdays;

28 (5) The medication is administered by an employee designated by or  
29 pursuant to the policies adopted pursuant to subsection (1) of this  
30 section and in substantial compliance with the prescription of a  
31 licensed health professional prescribing within the scope of his or her  
32 prescriptive authority or the written instructions provided pursuant to  
33 subsection (4) of this section;

34 (6) The medication is first examined by the employee administering  
35 the same to determine in his or her judgment that it appears to be in  
36 the original container and to be properly labeled; and

37 (7) The board of directors shall designate a professional person  
38 licensed pursuant to chapter 18.71 RCW or chapter 18.79 RCW as it

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1 applies to registered nurses and advanced registered nurse

2 practitioners, to delegate to, train, and supervise the designated

3 school district personnel in proper medication procedures.

4 Sec. 2. RCW 28A.210.270 and 2000 c 63 s 2 are each amended to read

5 as follows:

6 (1) In the event a school employee administers oral medication,

7 topical medication, eye drops, or ear drops to a student pursuant to

8 RCW 28A.210.260 in substantial compliance with the prescription of the

9 student's licensed health professional prescribing within the scope of

10 the professional's prescriptive authority or the written instructions

11 provided pursuant to RCW 28A.210.260(4), and the other conditions set

12 forth in RCW 28A.210.260 have been substantially complied with, then

13 the employee, the employee's school district or school of employment,

14 and the members of the governing board and chief administrator thereof

15 shall not be liable in any criminal action or for civil damages in

16 their individual or marital or governmental or corporate or other

17 capacities as a result of the administration of the medication.

18 (2) The administration of oral medication, topical medication, eye

19 drops, or ear drops to any student pursuant to RCW 28A.210.260 may be

20 discontinued by a public school district or private school and the

21 school district or school, its employees, its chief administrator, and

22 members of its governing board shall not be liable in any criminal

23 action or for civil damages in their governmental or corporate or

24 individual or marital or other capacities as a result of the

25 discontinuance of such administration: PROVIDED, That the chief

26 administrator of the public school district or private school, or his

27 or her designee, has first provided actual notice orally or in writing

28 in advance of the date of discontinuance to a parent or legal guardian

29 of the student or other person having legal control over the student.

--- END ---

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### **RCW 28A.210.260**

Public and private schools — Administration of oral medication by — Conditions.

\*\*\* CHANGE IN 2012 \*\*\* (SEE 2247.SL) \*\*\*

Public school districts and private schools which conduct any of grades kindergarten through the twelfth grade may provide for the administration of oral medication of any nature to students who are in the custody of the school district or school at the time of administration, but are not required to do so by this section, subject to the following conditions:

(1) The board of directors of the public school district or the governing board of the private school or, if none, the chief administrator of the private school shall adopt policies which address the designation of employees who may administer oral medications to students, the acquisition of parent requests and instructions, and the acquisition of requests from licensed health professionals prescribing within the scope of their prescriptive authority and instructions regarding students who require medication for more than fifteen consecutive school days, the identification of the medication to be administered, the means of safekeeping medications with

special attention given to the safeguarding of legend drugs as defined in chapter 69.41 RCW, and the means of maintaining a record of the administration of such medication;

(2) The board of directors shall seek advice from one or more licensed physicians or nurses in the course of developing the foregoing policies;

(3) The public school district or private school is in receipt of a written, current and unexpired request from a parent, or a legal guardian, or other person having legal control over the student to administer the medication to the student;

(4) The public school district or the private school is in receipt of (a) a written, current and unexpired request from a licensed health professional prescribing within the scope of his or her prescriptive authority for administration of the medication, as there exists a valid health reason which makes administration of such medication advisable during the hours when school is in session or the hours in which the student is under the supervision of school officials, and (b) written, current and unexpired instructions from such licensed health professional prescribing within the scope of his or her prescriptive authority regarding the administration of prescribed medication to students who require medication for more than fifteen consecutive workdays;

(5) The medication is administered by an employee designated by or pursuant to the policies adopted pursuant to subsection (1) of this section and in substantial compliance with the prescription of a licensed health professional prescribing within the scope of his or her prescriptive authority or the written instructions provided pursuant to subsection (4) of this section;

(6) The medication is first examined by the employee administering the same to determine in his or her judgment that it appears to be in the original container and to be properly labeled; and

(7) The board of directors shall designate a professional person licensed pursuant to chapter 18.71 RCW or chapter 18.79 RCW as it applies to registered nurses and advanced registered nurse practitioners, to train and supervise the designated school district personnel in proper medication procedures.

[2000 c 63 § 1; 1994 sp.s. c 9 § 720; 1982 c 195 § 1. Formerly RCW 28A.31.150.]

Notes:

Severability -- Headings and captions not law -- Effective date -- 1994 sp.s. c 9: See RCW 18.79.900 through 18.79.902 .

Severability -- 1982 c 195: "If any provision of this amendatory act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected." [1982 c 195 § 4.]

RCW 28A.210.260: Public and private schools — Administrati... <http://apps.leg.wa.gov/rcw/default.aspx?cite=28A.210.260>

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#### RCW 28A.210.270

Public and private schools — Administration of oral medication by — Immunity from liability — Discontinuance, procedure.

\*\*\* CHANGE IN 2012 \*\*\* (SEE 2247.SL) \*\*\*

(1) In the event a school employee administers oral medication to a student pursuant to RCW 28A.210.260 in substantial compliance with the prescription of the student's licensed health professional prescribing within the scope of the professional's prescriptive authority or the written instructions provided pursuant to RCW 28A.210.260(4), and the other conditions set forth in RCW 28A.210.260 have been substantially complied with, then the employee, the employee's school district or school of employment, and the members of the governing board and chief administrator thereof shall not be liable in any criminal action or for civil damages in

their individual or marital or governmental or corporate or other capacities as a result of the administration of the medication.

(2) The administration of oral medication to any student pursuant to RCW 28A.210.260 may be discontinued by a public school district or private school and the school district or school, its employees, its chief administrator, and members of its governing board shall not be liable in any criminal action or for civil damages in their governmental or corporate or individual or marital or other capacities as a result of the discontinuance of such administration: PROVIDED, That the chief administrator of the public school district or private school, or his or her designee, has first provided actual notice orally or in writing in advance of the date of discontinuance to a parent or legal guardian of the student or other person having legal control over the student. [2000 c 63 § 2; 1990 c 33 § 208; 1982 c 195 § 2. Formerly RCW 28A.31.155.]

Notes:

Severability -- 1982 c 195: See note following RCW 28A.210.260 .

RCW 28A.210.270: Public and private schools — Administrati... <http://apps.leg.wa.gov/rcw/default.aspx?cite=28A.210.270>

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## RCW 28A.210.370

### Students with asthma.

(1) The superintendent of public instruction and the secretary of the department of health shall develop a uniform policy for all school districts providing for the in-service training for school staff on symptoms, treatment, and monitoring of students with asthma and on the additional observations that may be needed in different situations that may arise during the school day and during school-sponsored events. The policy shall include the standards and skills that must be in place for in-service training of school staff.

(2) All school districts shall adopt policies regarding asthma rescue procedures for each school within the district.

(3) All school districts must require that each public elementary school and secondary school grant to any student in the school authorization for the self-administration of medication to treat that student's asthma or anaphylaxis, if:

(a) A health care practitioner prescribed the medication for use by the student during school hours and instructed the student in the correct and responsible use of the medication;

(b) The student has demonstrated to the health care practitioner, or the practitioner's designee, and a professional registered nurse at the school, the skill level necessary to use the medication and any device that is necessary to administer the medication as prescribed;

(c) The health care practitioner formulates a written treatment plan for managing asthma or anaphylaxis episodes of the student and for medication use by the student during school hours; and

(d) The student's parent or guardian has completed and submitted to the school any written documentation required by the school, including the treatment plan formulated under (c) of this subsection and other documents related to liability.

(4) An authorization granted under subsection (3) of this section must allow the student involved to possess and use his or her medication:

(a) While in school;

(b) While at a school-sponsored activity, such as a sporting event; and

(c) In transit to or from school or school-sponsored activities.

(5) An authorization granted under subsection (3) of this section:

(a) Must be effective only for the same school and school year for which it is granted; and

(b) Must be renewed by the parent or guardian each subsequent school year in accordance with this subsection.

(6) School districts must require that backup medication, if provided by a student's parent or guardian, be kept at a student's school in a location to which the student has immediate access in the event of an asthma or anaphylaxis emergency.

(7) School districts must require that information described in subsection (3)(c) and (d) of this section be kept on file at the student's school in a location easily accessible in the event of an asthma or anaphylaxis emergency.

(8) Nothing in this section creates a cause of action or in any other way increases or diminishes the liability of any person under any other law.

[2005 c 462 § 2.]

Notes:

Findings -- 2005 c 462: "The legislature finds that:

(1) Asthma is a dangerous disease that is growing in prevalence in Washington state. An estimated five hundred thousand residents of the state suffer from asthma. Since 1995, asthma has claimed more than five hundred lives, caused more than twenty-five thousand hospitalizations with costs of more than one hundred twelve million dollars, and resulted in seven million five hundred thousand missed school days. School nurses have identified over four thousand children with life-threatening asthma in the state's schools.

(2) While asthma is found among all populations, its prevalence disproportionately affects low-income and minority populations. Untreated asthma affects worker productivity and results in unnecessary absences from work. In many cases, asthma triggers present in substandard housing and poorly ventilated workplaces contribute directly to asthma.

(3) Although research continues into the causes and cures for asthma, national consensus has been reached on treatment guidelines. People with asthma who are being treated in accordance with these guidelines are far more likely to control the disease than those who are not being treated and therefore are less likely to experience debilitating or life-threatening asthma episodes, less likely to be hospitalized, and less likely to need to curtail normal school or work activities. With treatment, most people with asthma are able to live normal, active lives.

(4) Up to one-third of the people with asthma have not had their disease diagnosed. Among those with diagnosed asthma, thirty to fifty percent are not receiving medicines that are needed to control the disease, and approximately eighty percent of diagnosed asthmatics are not getting yearly spirometry measurements that are a key element in monitoring the disease."

RCW 28A.210.380

Anaphylaxis — Policy guidelines — Procedures — Reports.

(1) The office of the superintendent of public instruction, in consultation with the department of health, shall develop anaphylactic policy guidelines for schools to prevent anaphylaxis and deal with medical emergencies resulting from it. The policy guidelines shall be developed with input from pediatricians, school nurses, other health care providers, parents of children with life-threatening allergies, school administrators, teachers, and food service directors. The policy guidelines shall include, but need not be limited to:

(a) A procedure for each school to follow to develop a treatment plan including the responsibilities for [of] school nurses and other appropriate school personnel responsible for responding to a student who may be experiencing anaphylaxis;

(b) The content of a training course for appropriate school personnel for preventing and responding to a student who may be experiencing anaphylaxis;

(c) A procedure for the development of an individualized emergency health care plan for children with food or other allergies that could result in anaphylaxis;

(d) A communication plan for the school to follow to gather and disseminate information on students with food or other allergies who may experience anaphylaxis;

(e) Strategies for reduction of the risk of exposure to anaphylactic causative agents including food and other allergens.

(2) For the purpose of this section "anaphylaxis" means a severe allergic and life-threatening reaction that is a collection of symptoms, which may include breathing difficulties and a drop in blood pressure or shock.

(3)(a) By October 15, 2008, the superintendent of public instruction shall report to the select interim legislative task force on comprehensive school health reform created in section 6, chapter 5, Laws of 2007, on the following:

(i) The implementation within school districts of the 2008 guidelines for care of students with life-threatening food allergies developed by the superintendent pursuant to section 501, chapter 522, Laws of 2007, including a review of policies developed by the school districts, the training provided to school personnel, and plans for follow-up monitoring of policy implementation; and

(ii) Recommendations on requirements for effectively implementing the school anaphylactic policy guidelines developed under this section.

(b) By March 31, 2009, the superintendent of public instruction shall report policy guidelines to the appropriate committees of the legislature and to school districts for the districts to use to develop and adopt their policies.

(4) By September 1, 2009, each school district shall use the guidelines developed under subsection (1) of this section to develop and adopt a school district policy for each school in the district to follow to assist schools to prevent anaphylaxis.

[2008 c 173 § 1.]

RCW 28A.210.380: Anaphylaxis — Policy guidelines — Proce... <http://apps.leg.wa.gov/rcw/default.aspx?cite=28A.210.380>

### **WAC 392-380-045**

School attendance conditioned upon presentation of proofs.

(1) The initial attendance of every student at every public school in the state is conditioned upon proof of immunization as set forth in RCW 28A.210.080.

(2) The chief administrator of each public school shall prohibit the further presence at school of each student already in attendance and who has failed to provide proof of immunization in accordance with RCW 28A.210.080(1). Such exclusion shall be preceded by written notice as set forth in WAC 392-380-050. If written notice has not been provided, any exclusion shall be stayed until notice is received by a parent, guardian or other adult in loco parentis.

(3) The initial attendance of every student at every public school who has a life-threatening health condition is conditioned upon:

(a) Presentation by the parent of a medication or treatment order addressing any life-threatening health condition the child has that may require medical services to be performed at the school; and

(b) Formulation of a nursing plan to implement the order.

The parent shall also provide any medication or equipment identified in the medication or treatment order necessary to carry out the order, unless the school district is required to provide the medication or equipment as a related service under federal law.

(4) The chief administrator of each public school shall prohibit the further attendance of each student already in attendance for whom a medication or treatment order has not been provided if the child has a life-threatening health condition that may require medical services to be performed at the school. Any such exclusion shall be preceded by written notice as set forth in WAC 392-380-050. If written notice has not been provided, any exclusion shall be stayed until notice is received by a parent. The school shall continue to prohibit the child's presence until the school:

(a) Receives a medication or treatment order and any medication or equipment identified in the order necessary to carry out the order, unless the school district is required to provide such medication or equipment as a related service under federal law; and

(b) Has a nursing plan in place.

A new medication or treatment order must be submitted whenever there are changes in the medication or treatment needs of the child. The nursing plan shall be amended accordingly.

(5) Upon receipt of a medication or treatment order, the school shall develop a nursing plan.

(6) The requirements of this chapter shall be applied consistent with the requirements of section 504 of the Rehabilitation Act of 1973 and the Individuals with Disabilities Education Act (IDEA).

[Statutory Authority: RCW 28A.210.160. 07-12-020, § 392-380-045, filed 5/25/07, effective 6/25/07.]

WAC 392-380-045: School attendance conditioned upon present... <http://apps.leg.wa.gov/WAC/default.aspx?cite=392-380-045>

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## **WAC 246-840-010**

### **Definitions.**

(1) An "advanced registered nurse practitioner (ARNP)" is a registered nurse who has had formal graduate education and has achieved national specialty certification for the nurse practitioner, nurse anesthetist, or nurse midwife role. A nurse with this preparation may qualify as an ARNP as described in WAC 246-840-300.

(2) "Advanced nursing practice" is the delivery of nursing care by registered nurses who have acquired experience and formal education that prepares them for independent practice.

(3) "Client advocate" means a licensed registered nurse or practical nurse who actively supports client's rights and choices, including the client's right to receive safe, high quality care, and who facilitates the client's ability to exercise those rights and/or choices by providing the client with adequate information about their care and options.

(4) "Commission" means the Washington state nursing care quality assurance commission.

(5) "Competency" means demonstrated knowledge, skill and ability in the practice of nursing.

(6) "Conditional approval" of a school of nursing is the approval given a school of nursing that has not met the requirements of the law and the rules and regulations of the commission; conditions are specified that must be met within a designated time to rectify the deficiency.

(7) "Delegation" means the licensed practical nurse or registered nurse transfers the performance of selected nursing tasks to competent individuals in selected situations. The licensed practical nurse or registered nurse delegating the task retains the responsibility and accountability for the nursing care of the client. The licensed practical nurse or registered nurse delegating the task supervises the performance of the unlicensed person. Delegation in community and in-home care settings is defined by WAC 246-840-910 through 246-840-970.

(a) Nursing acts delegated by the licensed practical nurse or registered nurse shall:

(i) Be within the area of responsibility of the licensed practical nurse or registered nurse delegating the act;

- (ii) Be such that, in the opinion of the licensed practical nurse or registered nurse, it can be properly and safely performed by the unlicensed person without jeopardizing the patient welfare;
  - (iii) Be acts that a reasonable and prudent licensed practical nurse or registered nurse would find are within the scope of sound nursing judgment.
  - (b) Nursing acts delegated by the licensed practical nurse or registered nurse shall not require the unlicensed person to exercise nursing judgment nor perform acts which must only be performed by a licensed practical nurse or registered nurse, except in an emergency situation (RCW 18.79.240 (1)(b) and (2)(b)).
  - (c) When delegating a nursing act to an unlicensed person it is the licensed practical nurse or the registered nurse who shall:
    - (i) Make an assessment of the patient's nursing care need before delegating the task;
    - (ii) Instruct the unlicensed person in the delegated task or verify competency to perform or be assured that the person is competent to perform the nursing task as a result of the systems in place by the health care agency;
    - (iii) Recognize that some nursing interventions require nursing knowledge, judgment, and skill and therefore may not lawfully be delegated to unlicensed persons.
  - (8) "Faculty" means persons who are responsible for the educational nursing program and who hold faculty appointment in the school.
  - (9) "Full approval" of a school of nursing is the approval signifying that a nursing program meets the requirements of the law and the rules and regulations of the commission.
- WAC 246-840-010: Definitions. <http://apps.leg.wa.gov/wac/default.aspx?cite=246-840-010>  
 1 of 3 6/27/12 4:24 PM
- (10) "Good cause" as used in WAC 246-840-860 for extension of a nurse technician registration means that the nurse technician has had undue hardship such as difficulty scheduling the examination through no fault of their own, receipt of the examination results after thirty days after the nurse technician's date of graduation, or an unexpected family crisis which caused him or her to delay sitting for the examination. Failure of the examination is not "good cause."
  - (11) "Good standing" as applied to a nursing technician, means the nursing technician is enrolled in a registered nursing program approved by the commission and is successfully meeting all program requirements.
  - (12) "Immediately available" as applied to nursing technicians, means that a registered nurse who has agreed to act as supervisor is on the premises and is within audible range and available for immediate response as needed. This may include the use of two-way communication devices which allow conversation between the nursing technician and a registered nurse who has agreed to act as supervisor.
    - (a) In a hospital setting, a registered nurse who has agreed to act as supervisor is on the same patient care unit as the nursing technician and the patient has been assessed by the registered nurse prior to the delegation of duties to the nursing technician.
    - (b) In a nursing home setting, a registered nurse who has agreed to act as supervisor is in the same building and on the same floor as the nursing technician and the patient has been assessed by the registered nurse prior to the delegation of duties to the nursing technician.
  - (13) "Initial approval" of nursing programs is the approval given a new nursing program based on its proposal prior to the graduation of its first class.
  - (14) "Limited educational authorization" is an authorization to perform clinical training through a commission approved refresher course. This authorization does not permit practice for employment. A limited educational authorization may be issued to:

- (a) A person whose Washington state license has been expired or inactive for three years or more and who applies for reinstatement and enrolls in a refresher course; or
- (b) An applicant endorsing from another state or territory if the applicant's license from that jurisdiction is on inactive or expired status. The applicant must be enrolled in a refresher course.
- (15) "Minimum standards of competency" means the knowledge, skills and abilities that are expected of the beginning practitioner.
- (16) "Nontraditional program of nursing" means a school that has a curriculum which does not include a faculty supervised teaching/learning component in clinical settings.
- (17) "Nurse administrator" is an individual who meets the qualifications contained in WAC 246-840-555 and who has been designated as the person primarily responsible for the direction of the program in nursing. Titles for this position may include, among others, dean, director, coordinator or chairperson.
- (18) "Nursing technician" means a nursing student preparing for registered nurse licensure who is employed in a hospital licensed under chapter 70.41 RCW or a nursing home licensed under chapter 18.51 RCW, and who:
  - (a) Is currently enrolled in good standing and attending a nursing program approved by the commission and has not graduated; or
  - (b) Is a graduate of a nursing program approved by the commission who graduated:
    - (i) Within the past thirty days; or
    - (ii) Within the past sixty days and has received a determination that there is good cause to continue the registration period.
  - (c) Approved schools for nursing technicians include the list of registered nursing programs (schools) approved by state boards of nursing as preparation for the NCLEX registered nurse examination, and listed in the NCLEX bulletin as meeting minimum standards. Approved schools do not include nontraditional schools as defined in subsection (16) of this section.
- (19) "Philosophy" means the beliefs and principles upon which the curriculum is based.
- (20) "Program" means a division or department within a state supported educational institution, or other institution of higher learning charged with the responsibility of preparing persons to qualify for the licensing examination.
- (21) "Registered nurse" as used in these rules shall mean a nurse as defined by RCW 18.79.030(1).
- (22) "Supervision" of licensed or unlicensed nursing personnel means the provision of guidance and evaluation for the accomplishment of a nursing task or activity with the initial direction of the task or activity; periodic inspection of the actual act of accomplishing the task or activity; and the authority to require corrective action.
  - (a) "Direct supervision" means the licensed registered nurse who provides guidance to nursing personnel and evaluation of nursing tasks is on the premises, is quickly and easily available, and has assessed the patient prior to the delegation of the duties.
  - (b) "Immediate supervision" means the licensed registered nurse who provides guidance to nursing personnel and evaluation of nursing tasks is on the premises, is within audible and visual range of the patient, and has assessed the patient prior to the delegation of duties.
  - (c) "Indirect supervision" means the licensed registered nurse who provides guidance to nursing personnel and evaluation of nursing tasks is not on the premises but has given either written or oral instructions for the care and treatment of the patient and the patient has been assessed by the registered nurse prior to the delegation of duties.
- (23) "Traditional program of nursing" means a program that has a curriculum which includes a faculty supervised teaching/learning component in clinical settings.

[Statutory Authority: RCW 18.79.010 and 18.79.110. 10-24-047, § 246-840-010, filed 11/24/10, effective 1/1/11. Statutory Authority: RCW 18.79.110. 08-11-019, § 246-840-010, filed 5/12/08, effective 6/12/08. Statutory Authority: Chapter 18.79 RCW and 2003 c 258. 04-13-053, § 246-840-010, filed 6/11/04, effective 6/11/04. Statutory Authority: RCW 43.70.280. 98-05-060, § 246-840-010, filed 2/13/98, effective 3/16/98. Statutory Authority: Chapter 18.79 RCW. 97-13-100, § 246-840-010, filed 6/18/97, effective 7/19/97.]  
WAC 246-840-010: Definitions. <http://apps.leg.wa.gov/wac/default.aspx?cite=246-840-010>  
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#### WAC 246-840-930

##### Criteria for delegation.

(1) Before delegating a nursing task, the registered nurse delegator decides the task is appropriate to delegate based on the elements of the nursing process: ASSESS, PLAN, IMPLEMENT, EVALUATE.

##### ASSESS

(2) The setting allows delegation because it is a community-based care setting as defined by RCW 18.79.260 (3)(e)(i) or an in-home care setting as defined by RCW 18.79.260 (3)(e)(ii).

(3) Assess the patient's nursing care needs and determine the patient's condition is stable and predictable. A patient may be stable and predictable with an order for sliding scale insulin or terminal condition.

(4) Determine the task to be delegated is within the delegating nurse's area of responsibility.

(5) Determine the task to be delegated can be properly and safely performed by the nursing assistant. The registered nurse delegator assesses the potential risk of harm for the individual patient.

(6) Analyze the complexity of the nursing task and determine the required training or additional training needed by the nursing assistant to competently accomplish the task. The registered nurse delegator identifies and facilitates any additional training of the nursing assistant needed prior to delegation. The registered nurse delegator ensures the task to be delegated can be properly and safely performed by the nursing assistant.

(7) Assess the level of interaction required. Consider language or cultural diversity affecting communication or the ability to accomplish the task and to facilitate the interaction.

(8) Verify that the nursing assistant:

(a) Is currently registered or certified as a nursing assistant in Washington state without restriction;

(b) As required in WAC 246-841-405 (2)(a), nursing assistants registered have completed both the basic caregiver training and core delegation training before performing any delegated task;

(c) Has a certificate of completion issued by the department of social and health services indicating completion of the required core nurse delegation training;

(d) Has a certificate of completion issued by the department of social and health services indicating completion of diabetes training when providing insulin injections to a diabetic client; and

(e) Is willing and able to perform the task in the absence of direct or immediate nurse supervision and accept responsibility for their actions.

(9) Assess the ability of the nursing assistant to competently perform the delegated nursing task in the absence of direct or immediate nurse.

(10) If the registered nurse delegator determines delegation is appropriate, the nurse:

(a) Discusses the delegation process with the patient or authorized representative, including the level of training of the nursing assistant delivering care.

(b) Obtains written consent. The patient, or authorized representative, must give written, consent to the delegation process under chapter 7.70 RCW. Documented verbal consent of patient or authorized representative may be acceptable if written consent is obtained within thirty days; electronic consent is an acceptable format. Written consent is only necessary at the initial use of the nurse delegation process for each patient and is not necessary for task additions or changes or if a different nurse or nursing assistant will be participating in the process.

#### PLAN

(11) Document in the patient's record the rationale for delegating or not delegating nursing tasks.

(12) Provide specific, written delegation instructions to the nursing assistant with a copy maintained in the patient's record that includes:

(a) The rationale for delegating the nursing task;

(b) The delegated nursing task is specific to one patient and is not transferable to another patient;

(c) The delegated nursing task is specific to one nursing assistant and is not transferable to another nursing assistant;

(d) The nature of the condition requiring treatment and purpose of the delegated nursing task;

(e) A clear description of the procedure or steps to follow to perform the task;

(f) The predictable outcomes of the nursing task and how to effectively deal with them;

(g) The risks of the treatment;

(h) The interactions of prescribed medications;

(i) How to observe and report side effects, complications, or unexpected outcomes and appropriate actions to deal with them, including specific parameters for notifying the registered nurse delegator, health care provider, or emergency services;

(j) The action to take in situations where medications and/or treatments and/or procedures are altered by health care provider orders, including:

(i) How to notify the registered nurse delegator of the change;

(ii) The process the registered nurse delegator uses to obtain verification from the health care provider of the change in the medical order; and

(iii) The process to notify the nursing assistant of whether administration of the medication or performance of the procedure and/or treatment is delegated or not;

(k) How to document the task in the patient's record;

(l) Document teaching done and a return demonstration, or other method for verification of competency; and

(m) Supervision shall occur at least every ninety days. With delegation of insulin injections, the supervision occurs at least weekly for the first four weeks, and may be more frequent.

(13) The administration of medications may be delegated at the discretion of the registered nurse delegator, including insulin injections. Any other injection (intramuscular, intradermal, subcutaneous, intraosseous, intravenous, or otherwise) is prohibited. The registered nurse delegator provides to the nursing assistant written directions specific to an individual patient.

## IMPLEMENT

(14) Delegation requires the registered nurse delegator teach the nursing assistant how to perform the task, including return demonstration or other method of verification of competency as determined by the registered nurse delegator.

(15) The registered nurse delegator is accountable and responsible for the delegated nursing task. The registered nurse delegator monitors the performance of the task(s) to assure compliance with established standards of practice, policies and procedures and appropriate documentation of the task(s).

## EVALUATE

(16) The registered nurse delegator evaluates the patient's responses to the delegated nursing care and to any modification of the nursing components of the patient's plan of care.

(17) The registered nurse delegator supervises and evaluates the performance of the nursing assistant, including direct observation or other method of verification of competency of the nursing assistant. The registered nurse delegator reevaluates the patient's condition, the care provided to the patient, the capability of the nursing assistant, the outcome of the task, and any problems.

(18) The registered nurse delegator ensures safe and effective services are provided.

Reevaluation and documentation occurs at least every ninety days. Frequency of supervision is at the discretion of the registered nurse delegator and may be more often based upon nursing assessment.

(19) The registered nurse must supervise and evaluate the performance of the nursing assistant with delegated insulin injection authority at least weekly for the first four weeks. After the first four weeks the supervision shall occur at least every ninety days.

[Statutory Authority: RCW 18.79.110, 18.79.260, 18.88A.060 [18.88A.060], and 18.88A.210. 09-06-006, § 246-840-930, filed 2/18/09, effective 3/21/09.

Statutory Authority: RCW 18.79.110, 18.79.260 (3)(f), 18.88A.210, 2003 c 140. 04-14-065, § 246-840-930, filed 7/2/04, effective 7/2/04. Statutory Authority:

Chapters 18.79 and 18.88A RCW. 02-02-047, § 246-840-930, filed 12/27/01, effective 1/27/02.

Statutory Authority: Chapter 18.79 RCW. 97-13-100, §

246-840-930, filed 6/18/97, effective 7/19/97; 96-05-060, § 246-840-930, filed 2/19/96, effective 3/21/96.]

## RCW 18.79.270

Licensed practical nurse — Activities allowed.

\*\*\* CHANGE IN 2012 \*\*\* (SEE 2186.SL) \*\*\*

A licensed practical nurse under his or her license may perform nursing care, as that term is usually understood, of the ill, injured, or infirm, and in the course thereof may, under the direction of a licensed physician and surgeon, osteopathic physician and surgeon, dentist, naturopathic physician, podiatric physician and surgeon, physician assistant, osteopathic physician assistant, advanced registered nurse practitioner acting under the scope of his or her license, or at the direction and under the supervision of a registered nurse, administer drugs, medications, treatments, tests, injections, and inoculations, whether or not the piercing of tissues is involved and whether or not a degree of independent judgment and skill is required, when selected to do so by one of the licensed practitioners designated in this section, or by a registered nurse who need not be physically present; if the order given is reduced to writing

within a reasonable time and made a part of the patient's record. Such direction must be for acts within the scope of licensed practical nurse practice.

[1995 c 295 § 2; 1994 sp.s. c 9 § 427.]

Notes:

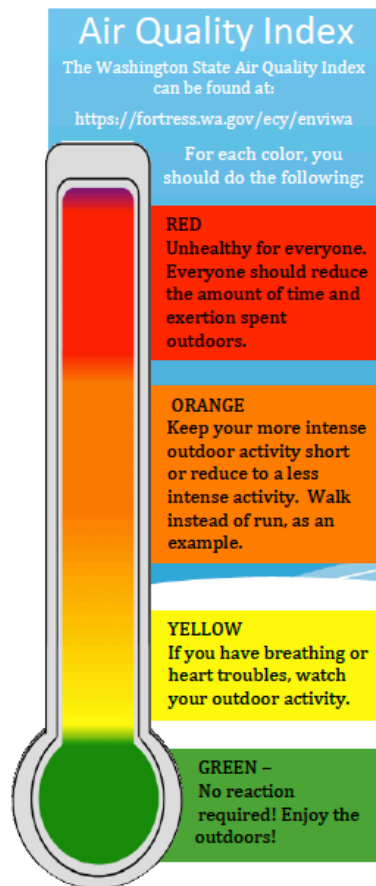
Effective date -- 1995 c 295: See note following RCW 18.79.260 .

RCW 18.79.270: Licensed practical nurse — Activities allowed. <http://apps.leg.wa.gov/rcw/default.aspx?cite=18.79.270>

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## APPENDIX P: MISCELLANEOUS RESOURCES

### WASHINGTON STATE AIR QUALITY INDEX



**Resources Available for You:**

[www.ecy.wa.gov/air.html](http://www.ecy.wa.gov/air.html)  
[www.pscleanair.org](http://www.pscleanair.org)  
[www.airnow.gov](http://www.airnow.gov)  
[www.airsafepiercecounty.org](http://www.airsafepiercecounty.org)  
[www.waburnbans.net](http://www.waburnbans.net)

Produced by:  
The BSN Students at the  
University of Washington Tacoma  
Spring 2013

In Partnership with:  
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Tacoma, Washington 98418  
(253) 798-6500  
(800) 992-2456 x6500



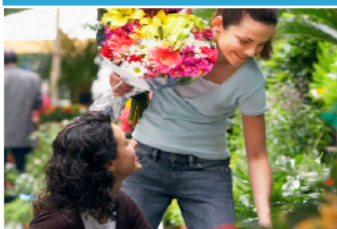
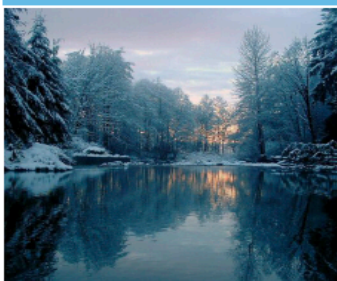
## Care About Your Air

Tips for improving air quality and  
what to do when air quality changes

## Air Quality Changes with the Seasons

In Washington State, the air quality changes with the seasons. Knowing this can be the difference between good days and bad days when it comes to controlling air quality's effect on your lungs. People with breathing and heart troubles can be especially affected.

You can help improve the air quality around you by following these tips and share this information with others.



### Fall and Winter

Most of the air pollutants during this time are from wood burning.

#### **Burn only clean, untreated wood**

For tips, check out:  
[www.mastersweep.com/wood.htm](http://www.mastersweep.com/wood.htm)

#### **Trade out your old wood stove for a certified wood stove**

Pierce County residents, who qualify, may be able to get financial assistance for a stove trade out. For more info, visit:  
[www.airsafepiercecounty.org](http://www.airsafepiercecounty.org)

#### **Observe burn bans by checking burn ban status before you burn.**

For up to date burn ban information, visit: [www.waburnbans.net](http://www.waburnbans.net)

### Spring and Summer

Most of the air pollutants during this time are from vehicle emissions and charcoal grilling.

#### **Use a gas grill when possible.**

For more information and pros and cons to help make a decision, check out:  
[www.bbqu.net/gratedebate.html](http://www.bbqu.net/gratedebate.html)

#### **Use public transportation or carpool when you can.**

For more information, visit:  
[www.rideshareonline.com](http://www.rideshareonline.com)  
[www.wsdot.wa.gov/transit](http://www.wsdot.wa.gov/transit)

WASHINGTON STATE DEPARTMENT OF HEALTH RECOMMENDATIONS REGARDING AIR  
POLLUTION AND SCHOOL ACTIVITIES

## Air Pollution and School Activities

Public Health Recommendations for Schools on Fine Particle Air Pollution



| Air Quality Conditions  |                  |  |  |  |  |
|---|------------------|--|--|--|--|
| First, check local air conditions at <a href="https://fortress.wa.gov/ecy/enviwa/">https://fortress.wa.gov/ecy/enviwa/</a> and then use this chart. |                  |  |  |  |  |
|   | Good             | Moderate   | Unhealthy for Sensitive Groups   | Unhealthy  | Very Unhealthy/<br>Hazardous   |
| <b>Recess</b><br>(15 minutes)   | No restrictions. | Allow students with asthma, respiratory infection, lung or heart disease to stay indoors.  | Keep students with asthma, respiratory infection, and lung or heart disease indoors.   | Keep all students indoors and keep activity levels light.  | Keep all students indoors and keep activity levels light.  |
| <b>P.E.</b><br>(1 hour)   | No restrictions. | Monitor students with asthma, respiratory infection, lung or heart disease. Increase rest periods or substitutions for these students as needed.   | Limit to light outdoor activities. Allow any student to stay indoors if they don't want to go outside.<br><br>Keep students with asthma, respiratory infection, lung or heart disease, and diabetes indoors. Limit these students to moderate activities. Students with asthma should follow their Asthma Action Plan.       | Conduct P.E. indoors. Limit students to light indoor activities. Students with asthma should be following their Asthma Action Plan.                                  | Keep all students indoors and keep activity levels light. Students with asthma should be following their Asthma Action Plan.   |
| <b>Athletic Events and Practices</b><br>(Vigorous activity 2-3 hours)   | No restrictions. | Monitor students with asthma, respiratory infection, lung or heart disease. Increase rest periods and substitutions for these students as needed. Students with asthma should follow their Asthma Action Plan. | Consider moving event indoors. If event is not cancelled, increase rest periods and substitutions to allow for lower breathing rates. Students with asthma, respiratory infection, lung and heart disease, or conditions like diabetes shouldn't play outdoors. Students with asthma should follow their Asthma Action Plan. | Cancel the event. Or move the event to an area with "Good" air quality — if this can be done without much time spent in transit through areas with poor air quality. | Cancel the event. Or move the event to an area with "Good" air quality — if this can be done without much time spent in transit through areas with poor air quality. |

**Light Activities:** Playing board games, throwing and catching while standing, and cup stacking.

**Moderate Activities:** Yoga, shooting basketballs, dance instruction, and ping pong.

**Vigorous Activities:** Running, jogging, basketball, football, soccer, swimming, cheerleading, and jumping rope.

#### **School Closures**

School closures are the decision of the individual school district, usually in consultation with the local health department. Consult your local health department ([www.doh.wa.gov/localhealth](http://www.doh.wa.gov/localhealth)) if you have questions about air pollution and health.

#### **WAQA Index**

Activity recommendations are based on the Washington Air Quality Advisory (WAQA) index. The WAQA uses the same color-coded categories as the EPA's Air Quality Index (AQI), but the WAQA fine particulate matter (PM<sub>2.5</sub>) categories are set at lower levels of air pollution to be more protective of health. The WAQA shows air quality as poor earlier, with less pollution in the air.

#### **Fine Particulate Matter, Indoor Air Quality, and Health**

Wildfires, wood burning, and air stagnation increase the fine particulate matter in the air we breathe. Fine particulate matter travels easily indoors, especially if ventilation systems are drawing outside air into their system. It also comes in through doors, windows, and small openings. Over time, concentrations of fine particulate matter indoors can approach concentrations outdoors.

Exercising students breathe deeper and more often and take in more air, and more air pollution, into their lungs. Breathing polluted air can cause health problems, including aggravating asthma and other respiratory diseases. Anyone experiencing symptoms such as wheezing, shortness of breath, chest pain, headache, and dizziness should be seen by a medical provider.

Schools should reduce student activities once air quality has reached or exceeds the "Unhealthy for Sensitive Groups" category. Increased physical activity requires students to breathe faster and use more oxygen. More outside air is then needed to keep carbon dioxide levels down.

School buildings with enhanced filtration will have improved indoor air quality. Supplemental use of properly sized HEPA-Charcoal air filters, that do not produce ozone, have been shown to improve indoor air quality by reducing particulate matter and chemicals in smoke.

#### **Asthma Action Plan**

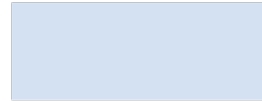
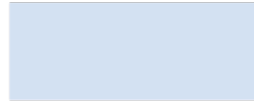
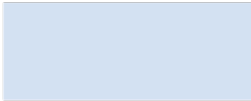
<http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/Asthma/WhatShouldIExpectfrommyHealthCareProvider.aspx>

#### **More Information**

For more information on indoor or outdoor air quality issues, including wildfire smoke, see <http://www.doh.wa.gov/CommunityandEnvironment/AirQuality.aspx> or contact us toll free at 1-877-485-7316.

*WASHINGTON STATE DEPARTMENT OF HEALTH SUMMARIZED RECOMMENDATIONS TO  
PROVIDERS*

([http://www.doh.wa.gov/portals/1/Documents/Pubs/345-261\\_AsthmaManagement.pdf](http://www.doh.wa.gov/portals/1/Documents/Pubs/345-261_AsthmaManagement.pdf))



## The Four Pillars of Asthma Management

### Planned Visits for Asthma Management

- Make a diagnosis of asthma.
- Assess asthma severity.
- Test lung function with spirometry.
- Assess control at every visit.
- Schedule follow-up every 2–6 weeks until well-controlled; then, every 1–6 months to monitor control.
- Provide a written asthma action plan.
- Recommend annual flu vaccine.

### Appropriate Use of Asthma Medications

- Daily inhaled corticosteroids are the preferred treatment for persistent asthma.
- Monitor patient's use of rescue medication.
- Assess patient's inhaler technique.
- Use stepwise approach to identify appropriate treatment.
- Refer to specialist if cannot achieve or maintain control.

### Education for a Partnership in Care

- Provide self-management education.
- Develop self-management goals and an action plan with the patient.
- Encourage self-monitoring.
- Encourage adherence to the action plan.
- Teach and reinforce at every opportunity.

### Assessment of Environmental Triggers

- Identify allergen/irritant exposures.
- Assess for smoking or secondhand smoke exposure.
- Provide cessation counseling if needed.
- Perform allergy testing.
- Teach ways to reduce exposure to triggers.
- Consider allergen immunotherapy.

Reference: National Heart, Lung, and Blood Institute Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007, Bethesda, MD: National Institutes of Health, August 2007. NIH Publication 07-4051. This summary is designed to assist the clinician in the diagnosis and management of asthma and is not intended to replace the clinician's judgment or establish a protocol for all patients. This summary and additional clinical tools for treating patients with asthma may be found at [www.doh.wa.gov/chi/asthma/default.htm](http://www.doh.wa.gov/chi/asthma/default.htm). This publication was supported by Cooperative Agreement # U59/CCU025030-03 from the Centers for Disease Control and Prevention.

DOH 345-261  
August 2009

## Consider the diagnosis of "asthma" if:

1. **RECURRENT** coughing, wheezing, or shortness of breath relieved by a bronchodilator
2. **SPIROMETRY** demonstrates obstruction and reversibility by an increase in FEV<sub>1</sub> of  $\geq 12\%$  after bronchodilator
3. Rule out conditions such as aspiration, GERD, airway anomaly, foreign body, cystic fibrosis, vocal cord dysfunction, or COPD. GERD is a common co-morbidity. (If diagnosis in doubt, consult with an asthma specialist.)

## Assess Asthma Severity: Persistent vs. Intermittent

### Persistent Asthma

1. Symptoms  $>2$  days per week **OR**
2. Awaken at night from asthma  $>2X$  per month **OR**
3. Short-acting beta<sub>2</sub>-agonist use  $>2$  days/week **OR**
4. Limitation of activities, despite pretreatment for exercise induced asthma **OR**
5. More than 2 steroid bursts in 1 year **OR**
6. FEV<sub>1</sub>  $<80\%$  predicted **OR** low FEV<sub>1</sub>/FVC ratio (see below)
7. For children  $<4$  years consider "persistent" if more than 4 episodes of wheezing in a year **AND** parental history of asthma or eczema or wheezing between illnesses.

See "Assessing Asthma Severity" chart for more detailed information.

## Treatment for Persistent Asthma: Daily Inhaled Corticosteroids (steps 2, 3 or higher)

## Assess Response within 2–6 weeks

### "Well Controlled" Asthma

1. Daytime symptoms  $\leq 2$  days per week **AND**
2. Awakening at night from asthma  $<2X$  per month **AND**
3. No limitation of activities **AND**
4. Less than 2 steroid bursts per year
5. FEV<sub>1</sub>  $\geq 80\%$  predicted
6. FEV<sub>1</sub>/FVC

|                        |
|------------------------|
| FEV <sub>1</sub> /FVC: |
| 5–19 yrs $\geq 85\%$   |
| 20–39 yrs $\geq 80\%$  |
| 40–59 yrs $\geq 75\%$  |
| 60–80 yrs $\geq 70\%$  |

See "Assessing  
Asthma Severity"  
chart for more  
detailed information.

**YES**

Follow the **Stepwise  
Approach Guideline**  
and consider **step down**  
if well controlled for 3  
consecutive months.  
Then re-assess every  
3 to 6 months.

**NO**

Follow the **Stepwise  
Approach Guideline**  
and **step up** until well  
controlled is achieved.  
Re-assess in 2 to 6 weeks.

## Quick Tips for All Patients with Asthma

- ☐ **Planned Visits:** schedule planned visits to achieve and maintain asthma control.
- ☐ **Environmental Control:** identify and avoid triggers such as tobacco smoke, pollens, molds, animal dander, cockroaches, and dust mites.
- ☐ **Flu Vaccine:** recommend annually. Pneumococcal vaccine is also recommended.
- ☐ **Spirometry:** at diagnosis and at least annually.
- ☐ **Asthma Score:** use tools such as ACQ<sup>®</sup>, ACT<sup>™</sup> or ATAQ<sup>®</sup> to assess asthma control.
- ☐ **Asthma Education:** review correct inhaled medication device technique every visit, if needed.
- ☐ **Asthma Action Plan:** provide written action plan at diagnosis; review and update at each visit.
- ☐ **Short-Acting Beta-Agonist (e.g., albuterol):**
  - 1) quick relief every 4–6 hours, 2) pretreat with 2 puffs for exercise-induced bronchospasm.
- ☐ **Oral Corticosteroids:** consider for acute exacerbation.
- ☐ **Valved Holding Chamber or Spacer:** recommend for use with all metered dose inhalers (MDI).
- ☐ **Masks:** use with spacer with valve and with nebulizer for children  $<5$  years and anyone unable to use correct mouthpiece technique.

See [www.doh.wa.gov/cfh/asthma](http://www.doh.wa.gov/cfh/asthma)  
for additional asthma resources.

Consider referral to a specialist if not well controlled  
within 3–6 months using stepwise approach **OR** 2 or  
more ED visits or hospitalizations for asthma in a year.

Summary based on the National Heart, Lung, and Blood Institute's Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma 2007, NIH Publication 07-4051. This tool, adapted from the Colorado Clinical Guidelines Collaborative guideline summary ([www.coloradoguidelines.org](http://www.coloradoguidelines.org)) is designed to assist the clinician in the diagnosis and management of asthma and is not intended to replace the clinician's judgement or establish a protocol for all patients with a particular condition. Additional asthma resources may be found at [www.doh.wa.gov/cfh/asthma](http://www.doh.wa.gov/cfh/asthma) or call 206-326-2851. This publication was supported by Cooperative Agreement #U59CE002503-02 from the Centers for Disease Control and Prevention.

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August 2008

# Asthma Stepwise Approach

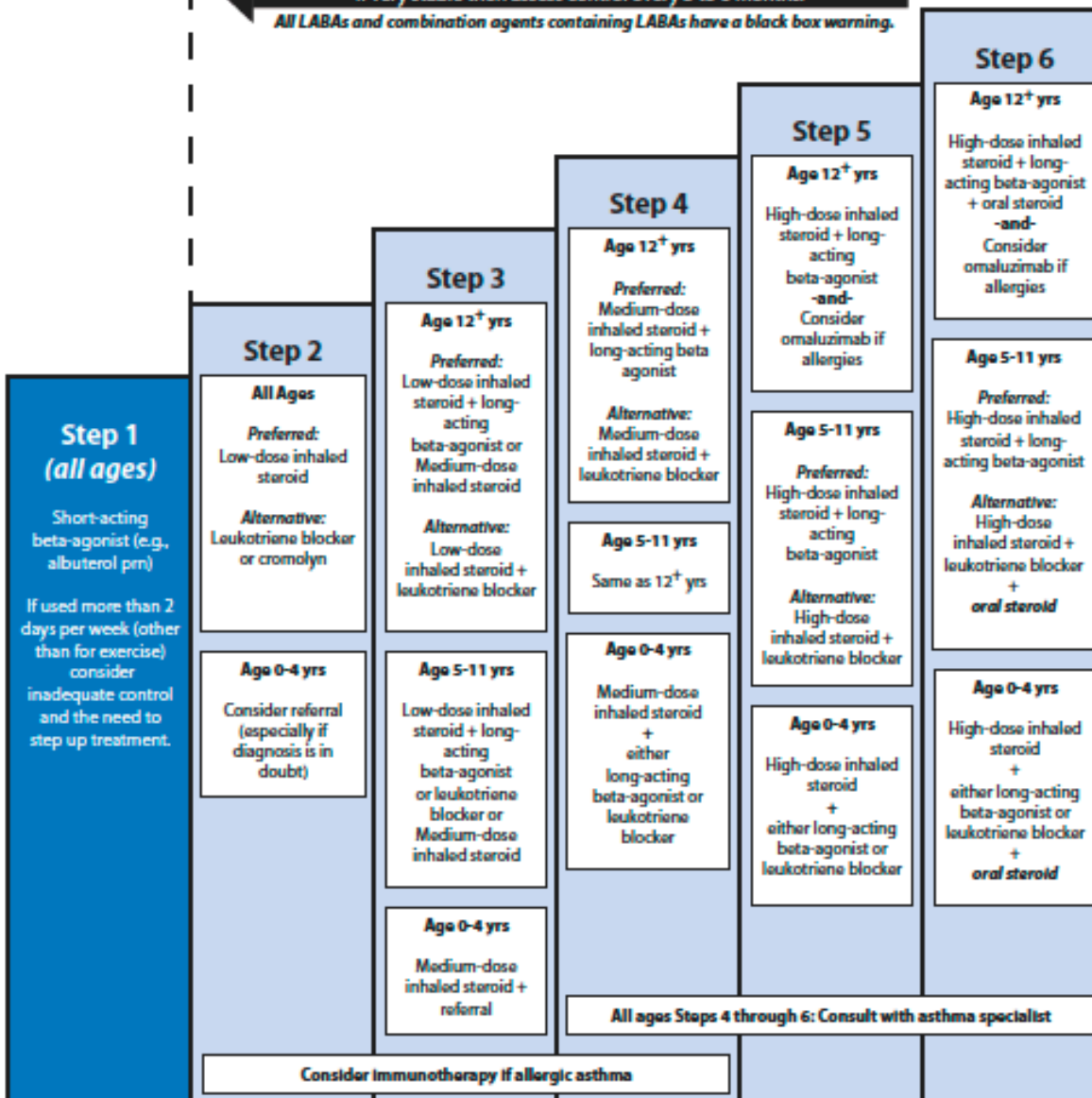
## Intermittent Asthma

## Persistent Asthma: Daily Medication

**Step up** as indicated although address possible poor adherence to medication. Re-assess in 2 to 6 weeks.

**Step down** if well controlled and re-assess in 3 months.  
If very stable then assess control every 3 to 6 months.

*All LABAs and combination agents containing LABAs have a black box warning.*



Summary based on the National Heart, Lung, and Blood Institute's Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007, NIH Publication 07-4051. This tool, adapted from the Colorado Clinical Guidelines Collaborative guidelines summary ([www.coloradoclinicalguidelines.org](http://www.coloradoclinicalguidelines.org)) is designed to assist the clinician in the diagnosis and management of asthma and is not intended to replace the clinician's judgement or establish a protocol for all patients with a particular condition. Additional asthma resources may be found at [www.doh.wa.gov/asthma](http://www.doh.wa.gov/asthma) or call 206-226-3851. This publication was supported by Cooperative Agreement #U54AC002500-01 from the Centers for Disease Control and Prevention.

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August 2009

## Assessing Asthma Severity

Table represents asthma severity classifications and treatment steps for each age group. See "Asthma Stepwise Approach" chart for treatment recommendations.

|                | Intermittent   | Mild Persistent   | Moderate Persistent  | Severe Persistent  |
|----------------|--|---|--|--|
| Impairment     | <p><b>Symptoms:</b></p> <ul style="list-style-type: none"> <li>All ages: ≤2 days/week</li> </ul> <p><b>Nighttime awakenings:</b></p> <ul style="list-style-type: none"> <li>0-4: None</li> <li>5 &amp; older: ≤2 times/month</li> </ul> <p><b>Short-acting B2-agonist use:</b></p> <ul style="list-style-type: none"> <li>All ages: ≤2 days/week</li> </ul> <p><b>Interference with normal activity:</b></p> <ul style="list-style-type: none"> <li>All ages: None</li> </ul> <p><b>Lung function:</b></p> <ul style="list-style-type: none"> <li>All ages: Normal FEV<sub>1</sub>, between exacerbations; FEV<sub>1</sub> &gt;80% predicted.</li> <li>5-11: FEV<sub>1</sub>/FVC &gt;85%</li> <li>≥12: FEV<sub>1</sub>/FVC normal</li> </ul> | <p><b>Symptoms:</b></p> <ul style="list-style-type: none"> <li>All ages: &gt;2 days/week but not daily</li> </ul> <p><b>Nighttime awakenings:</b></p> <ul style="list-style-type: none"> <li>0-4: 1-2 times/month</li> <li>5 &amp; older: 3-4 times/month</li> </ul> <p><b>Short-acting B2-agonist use:</b></p> <ul style="list-style-type: none"> <li>0-11: &gt;2 days/week but not daily</li> <li>≥12: &gt;2 days/week but not &gt;once/day</li> </ul> <p><b>Interference with normal activity:</b></p> <ul style="list-style-type: none"> <li>All ages: Minor limitation</li> </ul> <p><b>Lung function:</b></p> <ul style="list-style-type: none"> <li>5-11: FEV<sub>1</sub> &gt;80% predicted; FEV<sub>1</sub>/FVC &gt;80%</li> <li>≥12: FEV<sub>1</sub> ≥80% predicted; FEV<sub>1</sub>/FVC normal</li> </ul> | <p><b>Symptoms:</b></p> <ul style="list-style-type: none"> <li>All ages: Daily</li> </ul> <p><b>Nighttime awakenings:</b></p> <ul style="list-style-type: none"> <li>0-4: 3-4 times/month</li> <li>5 &amp; older: &gt;1x/week but not nightly</li> </ul> <p><b>Short-acting B2-agonist use:</b></p> <ul style="list-style-type: none"> <li>All ages: Daily</li> </ul> <p><b>Interference with normal activity:</b></p> <ul style="list-style-type: none"> <li>All ages: Some limitation</li> </ul> <p><b>Lung function:</b></p> <ul style="list-style-type: none"> <li>5-11: FEV<sub>1</sub> 60-80% predicted; FEV<sub>1</sub>/FVC 75-80%</li> <li>≥12: FEV<sub>1</sub> &gt;60% but &lt;80% predicted; FEV<sub>1</sub>/FVC reduced 5%</li> </ul> | <p><b>Symptoms:</b></p> <ul style="list-style-type: none"> <li>All ages: Throughout the day</li> </ul> <p><b>Nighttime awakenings:</b></p> <ul style="list-style-type: none"> <li>0-4: &gt;1 time/week</li> <li>5 &amp; older: Often 7 times/week</li> </ul> <p><b>Short-acting B2-agonist use:</b></p> <ul style="list-style-type: none"> <li>All ages: Several times/day</li> </ul> <p><b>Interference with normal activity:</b></p> <ul style="list-style-type: none"> <li>All ages: Extremely limited</li> </ul> <p><b>Lung function:</b></p> <ul style="list-style-type: none"> <li>5-11: FEV<sub>1</sub> &lt;60% predicted; FEV<sub>1</sub>/FVC &lt;75%</li> <li>≥12: FEV<sub>1</sub> &lt;60% predicted; FEV<sub>1</sub>/FVC reduced &gt;5%</li> </ul> |
| Risk           | <ul style="list-style-type: none"> <li>All ages: 0-1 exacerbations requiring oral systemic corticosteroids/year</li> </ul>   | <p>(Exacerbations requiring oral systemic corticosteroids (OSCS); 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.)</p> <ul style="list-style-type: none"> <li>0-4: ≥2 exacerbations in 6 months requiring OSCS or ≥4 wheezing episodes/year lasting &gt;1 day AND risk factors for persistent asthma</li> <li>All ages: ≥2/year</li> </ul>  |  |  |
| Treatment Step | <ul style="list-style-type: none"> <li>All ages: STEP 1</li> </ul>   | <ul style="list-style-type: none"> <li>All ages: STEP 2</li> </ul>  | <ul style="list-style-type: none"> <li>0-4: STEP 3; consider short course of oral systemic corticosteroids (OSCS)</li> <li>5-11: STEP 3, medium-dose ICS option; consider short course of OSCS</li> <li>≥12: STEP 3; consider short course of OSCS</li> </ul>  | <ul style="list-style-type: none"> <li>0-4: STEP 3; consider short course of oral systemic corticosteroids (OSCS)</li> <li>5-11: STEP 3 (medium-dose ICS option) OR 4; consider short course of OSCS</li> <li>≥12: STEP 4 OR 5; consider short course of OSCS</li> </ul>   |

Reference: National Heart, Lung, and Blood Institute. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007. Bethesda, MD: National Institutes of Health; August 2007. NIH Publication 07-4051. This summary of NAEPP's guidelines is designed to assist the clinician in the diagnosis and management of asthma and is not intended to replace the clinician's judgement or establish a protocol for all patients with a particular condition. This summary and additional clinical tools for treating patients with asthma may be found at [www.doh.wa.gov/asthma/default.htm](http://www.doh.wa.gov/asthma/default.htm) or call 360-296-3851.

DOH 345-263 August 2009

## Assessing Asthma Control

Table represents asthma control classifications for each age group. See "Asthma Stepwise Approach" chart for treatment recommendations.

|            | Well Controlled  | Not Well Controlled   | Very Poorly Controlled   |
|------------|--|---|--|
| Impairment | <b>Symptoms:</b> <ul style="list-style-type: none"> <li>• 0-4: ≤2 days/week</li> <li>• 5-11: ≤2 days/week but not more than once on each day</li> <li>• ≥12: ≤2 days/week</li> </ul> <b>Nighttime awakenings:</b> <ul style="list-style-type: none"> <li>• 0-11: ≤1 time/month</li> <li>• ≥12: ≤2 times/month</li> </ul> <b>Short-acting B2-agonist use:</b> <ul style="list-style-type: none"> <li>• All ages: ≤2 days/week</li> </ul> <b>Interference with normal activity:</b> <ul style="list-style-type: none"> <li>• All ages: None</li> </ul> <b>Lung function:</b> <ul style="list-style-type: none"> <li>• 5-11: FEV<sub>1</sub> = &gt;80% predicted/personal best; FEV<sub>1</sub>/FVC = &gt;80%</li> <li>• ≥12: FEV<sub>1</sub>/peak flow = &gt;80% predicted/personal best; ACT = ≥20</li> </ul> | <b>Symptoms:</b> <ul style="list-style-type: none"> <li>• 0-4: &gt;2 days/week</li> <li>• 5-11: &gt;2 days/week or multiple times on ≤2 days/week</li> <li>• ≥12: &gt;2 days/week</li> </ul> <b>Nighttime awakenings:</b> <ul style="list-style-type: none"> <li>• 0-4: &gt;1 time/month</li> <li>• 5-11: ≥2 times/month</li> <li>• ≥12: 1-3 times/week</li> </ul> <b>Short-acting B2-agonist use:</b> <ul style="list-style-type: none"> <li>• All ages: &gt;2 days/week</li> </ul> <b>Interference with normal activity:</b> <ul style="list-style-type: none"> <li>• All ages: Some limitation</li> </ul> <b>Lung function:</b> <ul style="list-style-type: none"> <li>• 5-11: FEV<sub>1</sub> = 60-80% predicted/personal best; FEV<sub>1</sub>/FVC = 75-80%</li> <li>• ≥12: FEV<sub>1</sub>/peak flow = 60-80% predicted/personal best; ACT = 16-19</li> </ul> | <b>Symptoms:</b> <ul style="list-style-type: none"> <li>• All ages: Throughout the day</li> </ul> <b>Nighttime awakenings:</b> <ul style="list-style-type: none"> <li>• 0-4: &gt;1 time/week</li> <li>• 5-11: ≥2 times/week</li> <li>• ≥12: ≥4 times/week</li> </ul> <b>Short-acting B2-agonist use:</b> <ul style="list-style-type: none"> <li>• All ages: Several times per day</li> </ul> <b>Interference with normal activity:</b> <ul style="list-style-type: none"> <li>• All ages: Extremely limited</li> </ul> <b>Lung function:</b> <ul style="list-style-type: none"> <li>• 5-11: FEV<sub>1</sub> = &lt;60% predicted/personal best; FEV<sub>1</sub>/FVC = &lt;75%</li> <li>• ≥12: FEV<sub>1</sub>/peak flow = &lt;60% predicted/personal best; ACT = ≤15</li> </ul> |
| Risk       | <b>Exacerbations requiring oral steroids:</b> <ul style="list-style-type: none"> <li>• All ages: 0-1 per year</li> </ul>   | <b>Exacerbations requiring oral steroids:</b> <ul style="list-style-type: none"> <li>• 0-4: 2-3 per year</li> <li>• ≥5: ≥2 per year; consider severity and interval since last exacerbation</li> </ul>  | <b>Exacerbations requiring oral steroids:</b> <ul style="list-style-type: none"> <li>• 0-4: &gt;3 per year</li> <li>• ≥5: ≥2 per year; consider severity and interval since last exacerbation</li> </ul>   |
|            | <b>Treatment-related Adverse Effects:</b><br>Medication side effects can vary from none to very troublesome and worrisome. Level of intensity should be considered in the overall assessment of risk.<br><b>Reduction in Lung Growth (ages 5-11)/Progressive Loss of Lung Function (age 12+):</b><br>Evaluation requires long-term follow-up.  |   |  |

Reference: National Heart, Lung, and Blood Institute, Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007. Bethesda, MD: National Institutes of Health; August 2007. NIH Publication 07-4051. This summary of NAEPP's guidelines is designed to assist the clinician in the diagnosis and management of asthma and is not intended to replace the clinician's judgement or establish a protocol for all patients with a particular condition. This summary and additional clinical tools for treating patients with asthma may be found at [www.nhlbi.nih.gov/cfhr/asthma/default.htm](http://www.nhlbi.nih.gov/cfhr/asthma/default.htm) or call 301-236-3655.

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([http://www.doh.wa.gov/portals/1/Documents/Pubs/345-261\\_AsthmaManagement.pdf](http://www.doh.wa.gov/portals/1/Documents/Pubs/345-261_AsthmaManagement.pdf))

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## HealthTracks

### Exercise Induced Asthma Treatment Protocol

**E**xercise induced asthma (EIA) may be referred to by several different names such as exercise induced bronchospasm. While exercise induced asthma is frequently seen in athletes who have asthma, it can also be seen in athletes who only wheeze with exercise.

Athletes need to be aware of several factors that increase the risk of wheezing with exercise and competition. High altitude, low humidity, cold air, urban area pollution, fatigue, dehydration, poor physical conditioning, smoking cigarettes and marijuana or being exposed to smoke all increase the likelihood of exercise induced asthma. Exposure to these risk factors also increases the severity if EIA.

When an athlete is facing intense competitive events, especially in situations with high risk factors such as those listed above. A strong defense against EIA is the best offense. Long before an athlete "feels tight" or senses that they are wheezing, performance in athletic competition is significantly affected. EIA directly affects performance by compromising aerobic activity. It also leads to a rapid reduction in performance, due to decreases in speed, accuracy, and major increases in fatigue.

Treatment of EIA starts with the basics and can progress, if needed, through treatment protocols used at elite Olympic levels of competition.

#### The Basics!

**T**he basics are important no matter whether it is the first practice of the season or the championship game at the end of the season. The timing of EIA treatment steps are usually described in terms of "Prior to Event" (PTE) referring to the starting times of a practice or competition. Pre-season practices will

give an athlete time to "fine tune" the EIA treatment steps to fit their particular pattern.

One of the most important factors in preventing EIA is **water!** If an athlete becomes dehydrated during a practice or competition, the athlete's airway becomes drier, mucous

becomes thicker and the risk for bronchospasm comes much quicker and progresses in severity much quicker. During the competition season, an athlete should drink 80-96 ounces of water per day. Timing is also important. One hour PTE, the athlete should drink 16 oz. of water and then continue to drink 4-8 ounces of water every 15-20 minutes of the practice or event. After practicing or competing, drinking 24 ounces of water will help to reduce any post exercise wheezing.

For athletes with exercise induced asthma, basic training, conditioning, and acclimatization to heat are essential components of preventing problems with EIA. Likewise, eating a well balanced diet without relying heavily on dietary supplements is also an important factor in athletes with EIA.



## Medication Protocols in Exercise Induced Asthma

**A**n athlete with EIA can fine-tune their EIA prevention treatment protocol by using a simple device called a peak flow meter. These relatively inexpensive devices allow an athlete to determine what their personal best peak expiratory flow is and then determine if, when, and to what degree exercise, practice and competition affects breathing. Medications are then adjusted on the basis of this pattern long before an athlete feels tight or is wheezing and short of breath. Instructions on the use of the peak flow meter and on maintaining records of the data are usually included with the device.

### Albuterol

One of the first lines of defense in EIA is a metered dose inhaler (MDI) containing albuterol (brand names are Proventil and Ventolin). Metered dose inhalers provide a precalculated dose of the medicine before automatically shutting off. Shake the canister well and use two puffs of albuterol 30-45 minutes PTE. Using a spacer device with the inhaler may help distribute the medication more evenly in the lungs.

If an athlete is using albuterol during an event, the inhaler is of very limited use in preventing EIA from affecting performance. Deterioration in athletic performance begins long before an athlete feels like they need to use an inhaler. Also, the medication may not start working until after the event is over or the competition has widened the scoring margin significantly.

### Anti-inflammatory Medications

If albuterol has not improved the athlete's EIA status, anti-inflammatory

medications are then added to the protocol. Sodium cromolyn (brand name Intal) is an inhaled medication that is used 60-120 minutes PTE. It is a non-steroid, anti-inflammatory medication with essentially no side effects and is allowed at all levels of competition. It is exclusively a preventive medication. Steroid inhalers (brand names such as Vanceril, Flovent and many others) are more of use as maintenance medications. If an athlete is routinely using this type of medication it may be helpful to take one of the routine daily doses 60-120 PTE. Oral medications referred to as leukotriene antagonists or inhibitors (brand names Singulair and Accolate) are also of more use as maintenance medications.



### Refractory Period

At elite levels of competition athletes may want to use a technique that may decrease the risk of EIA occurring during competition. Approximately 15-20 minutes PTE the athlete runs short wind sprints that would usually cause decreases in peak flow, as measured by the peak flow meter, if the athlete was not using medication to prevent EIA. These brief bursts of exercise should not be enough to cause muscle fatigue. With this technique the chemical mediators in the athlete's lung that normally cause bronchospasm are depleted for approximately 90 minutes. Inducing this "refractory period" appears to be most useful in short, explosive, competitive events like sprints and swimming events.

## LIVING WITH ASTHMA

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Link to Document: [www.seattlechildrens.org/pdf/PE127\\_LWA\\_web\\_layout.pdf](http://www.seattlechildrens.org/pdf/PE127_LWA_web_layout.pdf)

## MEDICAID AND COMMUNITY-BASED ASTHMA INTERVENTIONS: RECENT CHANGES

### Medicaid & Community-Based Asthma Interventions: Recent Changes & Future Steps



Effective January 1, 2014, the Centers for Medicaid and Medicare Services (CMS) is changing Medicaid regulations regarding which types of providers can be reimbursed for providing preventive services to Medicaid and CHIP beneficiaries. The following Q&A explains how this important Medicaid change will impact coverage of community-based interventions for low-income children with asthma.

**Why are community-based interventions important for children with asthma?** Treating, managing and reducing the burden of childhood asthma requires coordinated interventions that integrate community-based approaches into patient care and take the management of asthma beyond the doctor's office. While patients receive initial instruction in clinical settings, evidence-based guidelines call for repeated education in homes and community settings to reinforce treatment recommendations. These community-focused interventions help children and their caregivers proactively mitigate asthma triggers and manage asthma symptoms throughout their daily routine. Importantly, community-based asthma interventions show a significant return on investment: the Community Preventive Services Task Force (the Community Guide) documents numerous studies that demonstrate savings ranging from \$5.30-\$14 for every dollar invested in home-based asthma interventions focused on children and adolescents.<sup>1</sup>

**How do current Medicaid regulations limit access to community-based services?** Until this regulation goes into effect, current Medicaid regulations under 42 C.F.R. § 440.130 limit the scope of allowable coverage of preventive services to those that are actually provided by a physician or other licensed practitioner. As a result, most state Medicaid programs have limited coverage of preventive services to those furnished by licensed providers in a clinical setting. These regulations have significantly limited access to evidence-based services and interventions in homes and other community environments for Medicaid beneficiaries.

**What does the new rule say?** In a final rule released July 15, 2013, CMS is updating Medicaid regulations to allow state Medicaid programs to reimburse for preventive services provided by those professionals that may fall outside of a state's clinical licensure system, so long as the services have been initially recommended by a physician or other licensed practitioner.<sup>2</sup>

**What impact will this change have on coverage for services provided to children with asthma in community settings?** Beginning January 1, 2014, Medicaid (either directly or through its managed care contractors) will be able to cover and pay for community-based asthma interventions when carried out by asthma educators, healthy homes specialists, or other community health workers. Although not considered licensed healthcare professionals, these personnel may still have to meet a state's training and/or certification standards.

This rule change adds greater flexibility to federal Medicaid law which already gives states discretion over the settings in which care is furnished. Under current law, Medicaid programs can authorize payment to providers who offer recommended asthma interventions outside of a "traditional" clinical setting such as in the home, school or other community location. Taken together, the regulatory change announced in the final rule on provider qualifications and the flexibility that current Medicaid law already gives to states to define practice settings would allow state Medicaid programs to reimburse for numerous asthma interventions using non-traditional providers in non-clinical settings.

#### **What steps can advocates take to support community-based asthma interventions within state Medicaid programs?**

- ✓ Contact the Medicaid agency in your state to encourage broad coverage and reimbursement for community-based asthma services provided by non-clinical providers, such as asthma educators, healthy homes specialists, or other types of community health workers
- ✓ Promote this new reimbursement flexibility to clinical and community asthma providers
- ✓ Inform clinicians serving Medicaid-enrolled children of the evidence-based asthma interventions available in their communities

<sup>1</sup> Nurmagambetov, et al, "The Economic Value of Home-Based, Multi-Trigger, Multi-Component Interventions with an Environmental Focus for Reducing Asthma Morbidity – A Community Guide Systematic Review," *American Journal of Preventive Medicine*, 2011; 41(2S1): S33-S42.

<sup>2</sup> Medicaid and Children's Health Insurance Programs: Essential Health Benefits in Alternative Benefit Plans, Eligibility Notices, Fair Hearing and Appeal Processes, and Premiums and Cost Sharing; Exchanges: Eligibility and Enrollment; Final Rule. Centers for Medicare & Medicaid Services. 78 Fed. Reg. 42160 (July 15, 2013) (to be codified at 42 C.F.R. § 440.130).