

## Asthma

Last Reviewed Feb. 2005

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Maine asthma rates among adults are the highest in the country (9.9% BRFSS in 2003). The 2002 Maine Child Health Survey found that 8.4% of kindergarten students had asthma. The 2003/2004 school nurses data found that, of those schools participating in the data collection, 8.9% of students had asthma. Asthma is the leading cause of disability and the most common chronic disorder in children, having a significant impact on Maine's health care system including the cost of health care. Childhood asthma leads to a decrease in participation in school activities and is one of the leading causes of school absence due to illness. It is estimated that there are 65,000 school absences a year in Maine due to asthma. The rate of asthma has doubled in the last 20 years with the burden falling disproportionately on low income and minority communities.

### Definition

Asthma is a chronic, inflammatory lung condition characterized by airway inflammation, Broncho constriction, and increased mucus production resulting in recurring episodes of breathing problems including coughing, wheezing, chest tightness, and shortness of breath. Most episodes of asthma result from bronchial hyper-responsiveness to triggers, such as allergens, respiratory infections, environmental tobacco smoke, mold/dust, and exercise.

### Treatment

There are four components of care for students with asthma:

1. **An objective assessment by the primary care provider**, usually including spirometry, is important to proper diagnosis. A diagnosis includes the degree of severity, from mild intermittent to severe persistent asthma. To monitor the disease, a peak flow meter is used and measurements recorded over time. It is important that an asthma care plan (preferably the Maine School Asthma Plan) be prepared by the provider.

### Severity Level Days with

Symptoms

Night Symptoms % of Best Peak

Flow

Mild Persistent 3 – 6/week 3 – 4/month  $\geq 80\%$

Mod. Persistent Daily  $\geq 5$ /month 60 – 80%

Severe Persistent Continual Frequent  $\leq 60\%$

Students with asthma should be seen routinely by their provider to monitor and manage asthma over time.

## **2. Pharmacological therapy:**

a. Quick-relief medication - Common quick-relief medicine includes short-acting beta2-agonists and anticholinergics, bronchodilators that relax smooth muscles and widen the bronchial tubes. These include: Albuterol (Proventil, Ventolin), Pirbuterol (Maxair) and Levalbuterol (Xopenex).

b. Controller medication for individuals with persistent asthma – Long-term controller medications are used to prevent and control inflammation. Long-term controller medications include inhaled corticosteroids such as budesonide (Pulmicort) and fluticasone (Flovent), long-acting beta2-agonists such as salmeterol (Serevent) and formoterol (Foradil), leukotriene receptor antagonists such as montelukast (Singular), and anti-inflammatory medications such as cromolyn (Intal) and nedocromil (Tilade).

c. School Policy/Procedure – State statute requires that schools allow students to carry and use asthma inhalers with the following caveats:

1. Written approval from the student's healthcare provider 'indicating that the student has the knowledge and skills to safely possess and use an asthma inhaler',
2. Written permission from the parents of minor students,
3. Evaluation by the school nurse to ensure proper and effective use of an asthma inhaler.

The Maine School Asthma Plan provides written documentation of these requirements.

d. It is recommended that students keep a second inhaler at the school nurse's office for emergency use, or the school nurse has standing orders for quick-relief medication.

e. The student should notify the school nurse or designated staff if the quick-relief inhaler is used so the staff may notify the parent/guardian. If it is used 2 or more times per week, the student's primary care provider should be notified, as stated in the student's Maine School Asthma Plan.

f. Procedure for inhaler use:

Medication delivered by an inhaler varies depending on the type of inhaler. Carefully read the specific instructions. Below are general instructions.

1. Be sure there is adequate dosage in the canister.
2. Be sure the canister is firmly inserted into the container.
3. Have the student stand.

4. Shake inhaler well and remove the cap.
5. Use of a spacer or holding chamber is strongly encouraged.
6. Have the student exhale completely.
7. With a spacer, the student should close lips around the mouthpiece.
8. Have the student firmly press down once on the canister and take a slow, deep breath through the mouth.
9. Without a spacer, have mouth open wide, hold the inhaler 2 fingers away from mouth. Do not put into the mouth. Start to inhale through the mouth and firmly press down once on the canister. Continue to inhale slowly through the mouth.
10. Have student hold breath for 5 – 10 seconds as able.
11. If additional doses are to be given, wait at least 1 minute between each puff.
12. Replace cap on medication.
13. Use the bronchodilator inhaler (ex. Albuterol) before using inhalers containing controller medication.
14. Have student rinse mouth after steroid inhaler.
15. Clean spacer mouthpiece with warm water and dishwashing detergent, rinse and shake off moisture (can be cleaned weekly).
16. Allow to air dry completely before storing in a sealed plastic bag.
17. Monitor the student for changes in respiration, heart rate and side effects.

g. Peak Flow Meters:

Students should be encouraged to use peak flow meters regularly and record findings. If possible, the same meter should be used consistently. If their peak flow is less than 80% of their personal best, treatment is required as per the student's Asthma Plan. (See Maine School Asthma Plan for 'zones'.)

3. **Environmental controls** - Common triggers for asthma include:

- Allergens – animal dander, dust mites, pollen, mold, cockroaches.
- Environmental tobacco smoke,
- Strong odors or chemicals,
- Weather changes,
- Respiratory infections, sinusitis, reflux,
- Pretreatment before exercise can prevent asthma symptoms.

a. Control animal allergens – Policies/procedures addressing animals in the classroom should be developed by the school district. The best way to keep the school free of animal allergens is to keep feathered and furred animals out of school.

b. Control cockroaches and pests – Water and food sources must be controlled. Schools should have an Integrated Pest Management (IPM) policy. School nurses are encouraged to be members of the school's environmental/safety team.

c. Mold and moisture control – adequate ventilation, humidity control, and monitoring building for problems. The Maine Indoor Air Quality Council's Task Force Report provides recommendations for schools.

d. Reduce exposure to dust mites – have only washable stuffed toys and wash them frequently, cover pillows in dust-proof covers, clean and vacuum using high efficiency filters; avoid upholstered furniture and carpeting in the classroom. School nurses are encouraged to be members of the school’s Air Quality Team.

**4 Partnerships with school/family/community:**

Addressing asthma in schools is the responsibility of the Coordinated School Health Program. Nearly every component of a CSHP has a role in helping students with asthma.

a. Health Services – Every student with asthma should have a Maine School Asthma Plan prepared by the student’s physician and on file with school health services. If needed, an IHP, including an emergency plan should also be prepared. The school nurse provides oversight of the health plan helping students to meet their goal of being free of asthma symptoms, assists with medication as needed, provides referral to appropriate health services and establishes an emergency care plan. The school nurse also provides basic asthma education to students with asthma. Information on asthma management and emergency response should be provided to school staff as part of their staff development activities.

b. Health Education – Integrate asthma awareness and lung health education lessons into the health curriculum.

c. Physical environment – Provide a safe and healthy school environment to reduce triggers.

d. Physical Education/Activities – Encourage full participation for students with asthma and modified activities as appropriate. Medications should be available to the student, and physical educators and coaches must be aware of emergency plans for students.

e. Family/Community –Encourage a partnership between the school and family to address the needs of the student. The school must involve the family through education and support to reduce students’ absenteeism due to asthma.

**4. Outcomes of good asthma management to improve the quality of life include:**

- a. Increased participation in school activities without symptoms.
- b. Sleeps through the night.
- c. Misses fewer days from school.
- d. Enhances learning.

**Related State Statutes:**

MRSA Title 20-A § 254 (5)

C. A public school or a private school approved pursuant to section 2902 must have a written local policy authorizing students to possess and self-administer emergency medication from an asthma inhaler or an epinephrine pen. The written local policy must include the following requirements.

(1) A student who self-administers an asthma inhaler or an epinephrine pen must have the prior written approval of the student's primary health care provider and, if the student is a minor, the prior written approval of the student's parent or guardian.

(2) The student's parent or guardian must submit written verification to the school from the student's primary health care provider confirming that the student has the knowledge and the skills to safely possess and use an asthma inhaler or an epinephrine pen in school.

(3) The school nurse shall evaluate the student's technique to ensure proper and effective use of an asthma inhaler or an epinephrine pen in school.

## **RESOURCES**

Allergy and Asthma Network/Mothers of Asthmatics, Inc.  
2751 Prosperity Avenue, Suite 150  
Fairfax, VA 22031  
1-800-878-4404  
[www.aanma.org](http://www.aanma.org)

American Academy of Allergy, Asthma, and Immunology  
611 East Wells Street  
Milwaukee, WI 53202  
800-822-ASMA  
[www.aaaai.org](http://www.aaaai.org)

American Lung Association of Maine  
122 State Street  
Augusta, ME 04330  
622-6394  
1-800-499-5864  
<http://mainelung.org/>  
Guide to Parents on School Environmental Assessment.  
Copies of the Maine School Asthma Plan  
The Asthma Allergy Foundation of America  
New England Chapter  
220 Boylston Street

Chestnut Hill, MA 02467  
617-965-7771  
[aafane@aol.com](mailto:aafane@aol.com)  
[www.aafa.org](http://www.aafa.org)

Asthma and Schools  
National Health Education Association Health Network  
Asthma Explained

<http://diseases-explained.com/Asthma/index.html>

Breathe Free  
Web MD

[http://my.webmd.com/special\\_event\\_article/article/3906.101?rdserver=breathe4.webmd.com](http://my.webmd.com/special_event_article/article/3906.101?rdserver=breathe4.webmd.com)

Department of Environmental Protection  
A Brief Guide to Mold, Moisture in Your Home  
<http://www.epa.gov/iaq/molds/moldguide.html>

Guidelines for Diagnosis and Management of Asthma  
National Heart, Lung, and Blood Institute  
<http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>

How Asthma Friendly is Your School? Check list.  
[www.nhlbi.nih.gov/health/public/lung/asthma/sch\\_chk.htm](http://www.nhlbi.nih.gov/health/public/lung/asthma/sch_chk.htm)

IAQ Tools for Schools Kit  
Environmental Protection Agency  
<http://www.epa.gov/iaq/schools/incentiv.html>

Integrated Pest Management Council -  
[http://www.maine.gov/agriculture/oanrr/ipm%20council/maine\\_IPM%20Council.htm](http://www.maine.gov/agriculture/oanrr/ipm%20council/maine_IPM%20Council.htm)

\*Maine Asthma Program  
[www.maine.gov/cdc/asthma](http://www.maine.gov/cdc/asthma)

MaineHealth AH! Asthma Health  
465 Congress Street, Suite 600  
Portland, ME 04101  
775-7001  
[www.mainehealth.org](http://www.mainehealth.org)

National Heart, Lung, Blood Institute

Asthma Management

<http://diseases-explained.com/Asthma/index.html>

Practical Guidelines for the Diagnosis and Management of Asthma

<http://www.nhlbi.nih.gov/health/prof/lung/index.htm>

Strategies for Addressing Asthma within a Coordinated School Health Program

Department of Health and Human Services

Centers for Disease Control and Prevention

[www.cdc.gov/healthyyouth/healthtopics/asthma](http://www.cdc.gov/healthyyouth/healthtopics/asthma)

**NEW!** <http://www.healthinschools.org> new guidelines September 2007.

Nancy Dube

School Nurse Consultant

Department of Education

[624-6694/Nancy.Dube@maine.gov](mailto:624-6694/Nancy.Dube@maine.gov)