



## *Asthma & Anaphylaxis: A Primer for Schools*

### **INTRODUCTION**

*Attack on Asthma Nebraska is committed to increasing public awareness of asthma and allergies in meeting its mission to ensure that all Nebraska schools have the education, training and medications to respond to anyone experiencing a life-threatening asthma or anaphylaxis emergency at school. Through its partnership with the Nebraska Department of Education, Attack on Asthma Nebraska provides this introduction to asthma and anaphylaxis. Studies have shown the incidence of life-threatening emergencies decreases with better knowledge of what causes the disease or condition and what can be done to manage or control the symptoms. It is our hope that the information contained in this brochure will prepare everyone in the school setting to help keep our children safe.*

ELEANOR KITTELSON, EXECUTIVE DIRECTOR

### **ASTHMA**

**Definition:** Asthma is a lung disease caused by increased reaction of airways to stimuli, and can be life threatening. Asthma is a chronic disease, with symptoms that may come and go and is often related to allergies. Symptoms occur when the airways become inflamed, mucous production obstructs the airways and the muscles around the airways become constricted. The most dangerous symptoms may include: marked chest tightness, wheezing, persistent coughing, shortness of breath, difficulty speaking, changes in mental status, chest retractions and cyanosis (blue color).

- Asthma is the most common chronic childhood disease.
- Nearly one in 13 school-aged children have asthma.
- Asthma is one of the leading causes of school absenteeism and hospitalizations for children.
- Asthma affects academic performance. Missed sleep due to nighttime asthma can cause poor memory recall, lack of concentration and mood swings.

Although asthma cannot be cured, it can be controlled. Schools can help students manage their asthma by being “asthma-friendly”; that is, by being more supportive of students and staff with asthma, adopting asthma-friendly policies and procedures, coordinating services to serve students with asthma, and providing asthma education for students and staff.

**Noisy asthma:** Most people know about noisy asthma; it receives all of the attention. Symptoms include coughing that persists all season, frequent waking during the night, breathlessness after walking a short distance or climbing a flight of stairs, and wheezing.

**Quiet asthma:** Most people are not aware of the quiet but ever present inflammation of asthma. Even though symptoms may not be apparent, the airways of people with asthma remain inflamed and irritable, flaring occasionally with an infection or irritant. The inflammation is so subtle that it can worsen over a period of hours or days, without being noticed until it is widespread and severe.

Some asthmatics have become so accustomed to living with inflammation, that they aren’t aware their breathing could improve. Asthma moves from quiet to noisy when exposed to triggers that irritate the airways and produce symptoms.

**Exercise-Induced Asthma:** For some people, physical activity is the only trigger necessary to cause an asthma episode. Exercise-induced bronchospasm occurs when the airways become narrow and constricted within a few minutes after beginning exercise. The episode usually reaches its peak of severity about 5 to 10 minutes after starting exercise, and may continue for another 20 to 30 minutes.

The goal of treatment for exercise-induced asthma is to allow participation in physical activities without experiencing symptoms. A treatment plan will include: proper use of medication and an activity assessment. Encourage the student to assess his/her ability to participate in an activity without symptoms. Accommodate the student’s needs by allowing time to take medication, warm up, cool down and rest as needed.

“**Triggers**” are the stimuli that can make a person’s asthma worse, potentially leading to an asthma episode, and include:

- Tobacco smoke.
- Mold and mildew – indoor and outdoors.
- Pollutants resulting from poor ventilation.
- Pets with fur or feathers – birds, hamsters, rabbits, guinea pigs, dogs, cats.
- Cockroach or mouse droppings.
- Strong odors such as perfumes, air fresheners, cleaning chemicals, hair spray, aerosol sprays, candles, clay, paints, solvents, chemicals and fumes from soldering or welding.
- Cold, damp weather.
- Exercise.
- Extreme emotional expression – stress, anxiety, anger, or crying.
- Mechanical responses such as prolonged sneezing, hypertension, yelling or laughing.
- Common cold, influenza, or other respiratory illnesses.
- Certain foods such as peanuts, milk, soy, shellfish, and eggs.

### *How to reduce and/or eliminate triggers:*

- Establish a smoke-free policy that prohibits tobacco use on all school property.
- Provide adequate ventilation, low humidity, and good air circulation.
- Clean the classroom regularly, avoiding sprays and harsh cleaning solutions.
- Remove or cover volatile materials in arts and science areas.
- Avoid using products that have strong fumes/odors or dust residue (certain pens, glues, paints, candles, air fresheners/perfumes, and chalk).
- Check regularly for pests.
- Keep classrooms free from pets and plants.

### *Asthma Attack Warning Signs*

- Wheezing, difficulty breathing or shortness of breath causing speech to be in one to two word sentences or inability to speak.
- Coughing.
- Breathing by stooping over or leaning, inability to move around normally.
- Chest retractions (chest sucked in).
- Changes in face color/dark circles under the eyes, lips and nail beds blue or grayish in color.
- Change in mental status.
- Nausea.

## **ASTHMA MANAGEMENT**

- ✓ Experts recommend that each asthmatic student have a written “asthma action plan” on file at school. This plan is a collaboration of parents, student, school nurse and physician. Specific information related to triggers, medication and activity are included. School personnel must be informed and supportive of the action plan.
- ✓ Prescribed asthma medication must be available at school.
- ✓ Metered Dose Inhalers (MDI) work to decrease symptoms of asthma. MDI’s are prescribed by physicians as either a maintenance (long-term) inhaler or a rescue (quick-relief) inhaler. Rescue inhalers are used to treat “acute” asthma attacks that may happen suddenly and with great severity. Students carrying rescue inhalers may use them as prescribed; however, overuse of a rescue inhaler indicates the need for an evaluation by a physician (the asthma is not under control or other problems may exist).
- ✓ School personnel must be able to recognize symptoms of an acute asthma episode and make appropriate referrals to designated healthcare providers immediately. Always refer to the “asthma action plan” for direction.

## **ANAPHYLAXIS**

Definition: Anaphylaxis is a sudden, severe, potentially fatal, systemic allergic reaction that can involve various areas of the body (such as the skin, respiratory tract, gastrointestinal tract, and cardiovascular system). Symptoms occur within minutes to two hours after contact with the allergy-causing substance, but in rare instances may occur up to four hours later. Anaphylactic reactions can be mild to life threatening. The annual incidence of anaphylactic reactions is about 30 per 100,000 persons, and individuals with asthma, eczema, or hay fever are at greater relative risk of experiencing anaphylaxis. This life threatening allergic condition can occur with exposure to foods, stinging insects (bees, wasps), medications, and latex rubber and also in association with exercise.

- Insect sting and food reactions are more likely to occur away from the victim’s home despite the person’s best efforts to avoid exposure.
- The most important aspect of the management of life threatening allergies is avoidance of the offending allergen.
- Designated school personnel must be trained to identify life threatening allergic reactions and follow the protocol in prompt administration of EpiPen.

A common misconception is that anaphylaxis will not occur unless a previous and milder allergic reaction has already taken place. Milder reactions do not necessarily precede a fatal or near fatal reaction, and some reactions will progress so rapidly that there will not be enough time to obtain medical attention.

### *Food Allergies*

It is estimated that up to 2 million, or 8%, of U.S. children are affected by a food allergy. Some allergies are so severe that even cleaning a tabletop contaminated by the allergen, or touching the allergen without ingestion could trigger a severe allergic reaction. The foods that commonly produce allergy problems may include: peanuts and other tree nuts (cashews, almonds, Brazil nuts), shellfish, eggs, wheat, milk and soy, legumes, whitefish, and celery.

### *Insect/Bee/Wasp Stings*

The incidence of insect sting anaphylaxis in the U.S. is 0.5-3%. Any reaction to a previous sting that resulted in a local skin reaction (hive or wheal), or worse is reason to consider a student at risk for anaphylaxis in the future. If the student and family are unsure as to allergy status, a referral to an allergist for evaluation should be made.

Avoidance of insect stings is difficult to achieve but certain precautions can help to reduce the risk of stings to allergic students:

- Removal of all insect nests on or near school property.
- Proper storage of garbage in covered containers.
- Restriction of eating areas to inside; avoidance of open soft drink cans outside.

## Latex

Latex allergies are a relatively new and increasingly frequent problem. Children who are exposed to latex products early and repeatedly, usually children with severe chronic health disorders (spina bifida), can have a risk of latex allergy that approaches 50%. Students with latex allergies should avoid certain foods as well such as bananas, avocados, kiwi fruit, and European chestnuts.

There is no known cure for latex allergy. The best way to prevent reactions is to avoid latex products as much as possible: minimize exposure to latex by providing all non-latex gloves (vinyl) and latex free Band-Aids for use at school.

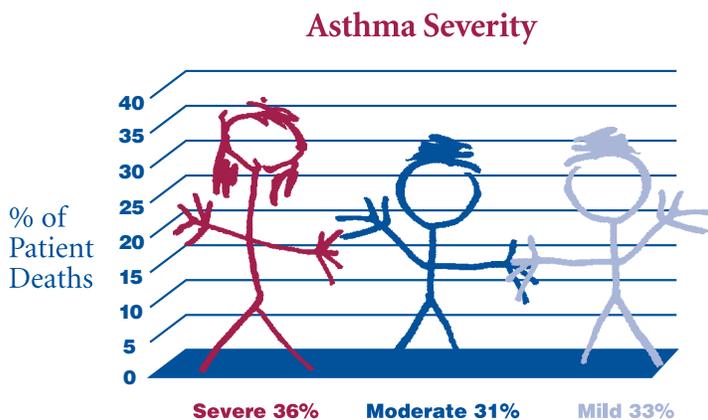
## Medications

Aspirin and non-steroidal anti-inflammatory agents can cause anaphylactic reactions as can penicillin and other prescribed medications.

## Food-dependent Exercise Induced Anaphylaxis

Food-dependent exercise-induced anaphylaxis is very rare and occurs only when an individual eats a specific food and exercises within three to four hours after eating. Individuals experiencing this type of reaction typically have asthma and other allergic conditions. Although any food may contribute to this form of anaphylaxis, foods that have been reported include wheat, shellfish, fruit, milk, celery, and fish.

Food-dependent exercise-induced anaphylaxis appears to be twice as common in females than in males and is common in individuals who are in their late teens to thirties.



Source: Robertson Colin, et al. *Pediatric Pulmonology*. 1992. 13:95-100.

*All asthma is serious. Even in children whose asthma is diagnosed as mild, symptoms can suddenly become severe. That's why every child needs a written asthma management plan with instructions to prevent and treat asthma emergencies.*

## MANAGING & CONTROLLING ASTHMA OR ALLERGIES: *How to Avoid a Breathing Emergency*

### PARENT RESPONSIBILITIES:

- Notify school of student's allergies/asthma.
- Provide written medical documentation, instructions, and medications as directed by a physician. Participate in the development of the asthma/allergy action plan.
- Provide the school with instructions for contacting parents or other responsible adult in case of emergency.

### STUDENT RESPONSIBILITIES:

- Avoid known triggers for allergies/asthma.
- Recognize the need for carrying asthma medication (inhaler) and allergy medication (Benedryl, EpiPen, etc.) while at school. Understand and demonstrate proper use of medications.
- Report symptoms to teacher/nurse.
- Actively participate in the development of an asthma/allergy action plan.

### SCHOOL RESPONSIBILITIES:

- Participate in the development of an asthma/allergy action plan to accommodate student's health needs while at school.
- Implement environmental guidelines that promote safe and healthy indoor air quality.
- Ensure that there is a staff member (response team) available who is trained to administer emergency medications and provide for emergency care.
- Provide basic, general education to the staff regarding asthma and anaphylaxis.

### PHYSICIAN RESPONSIBILITIES:

- Provide a diagnosis and prescribe proper medication for school use.
- Actively participate in the development of an asthma/allergy action plan.
- Monitor student's health status regularly and communicate need for accommodation of the action plan.

## WHAT TO DO IN A BREATHING EMERGENCY

Signs of a life-threatening asthma attack or anaphylaxis may be any one or a combination of the following: difficulty breathing/ breathlessness, inability to speak normally, difficulty swallowing, wheezing, coughing, hives, skin rash, flushed face, cyanosis (blue or gray skin, lips or nail beds), feeling of apprehension, swelling or itching of any body part, nausea/vomiting.

Do not hesitate and do not leave the student alone. Seek assistance immediately.

- Refer to the student's asthma/allergy action plan for proper treatment.
- Implement the *Emergency Response to Life-Threatening Asthma or Systemic Allergic Reactions Protocol* by contacting your school's emergency response team and calling 911.



## R E S O U R C E S

- American Lung Association® of Nebraska, [www.lungnebraska.org](http://www.lungnebraska.org) 800-586-4872
- Allergy & Asthma Network Mothers of Asthmatics, [www.breatherville.org](http://www.breatherville.org) 800-878-4403
- The Food Allergy & Anaphylaxis Network, [www.foodallergy.org](http://www.foodallergy.org) 800-929-4040
- National Education Association Health Information Network, [www.asthmaandschools.org](http://www.asthmaandschools.org)
- US Environmental Protection Agency, [www.epa.gov/iaq](http://www.epa.gov/iaq) 800-438-4318
- Centers for Disease Control and Prevention, [www.cdc.gov/healthyyouth/asthma](http://www.cdc.gov/healthyyouth/asthma) 800-311-3435

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