



# Asthma Basics

**T**his section provides essential facts about asthma and how school staff can identify and respond to an asthma episode. The information in this section may be useful when preparing presentations or hand-outs on asthma.

**“Healthy children learn better.”**

# What is Asthma?



Asthma is a chronic disease that causes broncho-constriction (tightening of the muscles around the airways) and swelling of the airways. During normal breathing, air flows freely in and out of the lungs. But, during an “asthma episode,” linings of the airways (bronchioles) swell, muscles around the airways tighten and mucus clogs the tiny airways, making breathing difficult. The airways become overly responsive (twitchy) to environmental changes, sometimes resulting in wheezing, coughing, breathlessness, or tightness in the chest. During an asthma episode a child may feel he/she can’t inhale enough air, but actually, his/her lungs are having trouble exhaling.

Asthma symptoms can vary greatly from hour-to-hour and day-to-day. Symptoms are often worse at night and in the early morning hours. The severity of asthma varies from child to child, and the severity may worsen or improve depending on the child’s symptom control and amount of exposure to triggers or allergens. Some children have occasional symptoms (e.g., after strenuous exercise), while others have symptoms that interfere with their daily life, including concentration and participating in school.



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## Asthma in K-12 Schools



### ASTHMA CAN BE DEADLY.

An asthma episode can escalate and may result in death without prompt medical attention.

### ASTHMA IS THE SINGLE MOST COMMON CHRONIC DISEASE CAUSING ABSENCE FROM SCHOOL.

Over 14 million school days are missed due to asthma each year.

### ASTHMA CAN AFFECT A CHILD'S PERFORMANCE.

It can disrupt sleep, the ability to concentrate, memorize, and, when not managed properly can prevent a student from participating in "normal" school activities. Children who miss school due to uncontrolled asthma not only miss classroom instruction but they miss out on social interactions with other children which can lead to fears of social isolation, rejection and believing they are "different" from other children. A child who has asthma may feel drowsy or tired, anxious about taking medications, or even embarrassed when disruption to school activities occurs due to an asthma episode.

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## Recognizing the Signs of an Asthma Episode

Children themselves are often the best source for identifying an asthma episode. Children who have asthma often learn to identify their own unique early warning signs — the physical changes that occur as their airways begin to close. These early warning signs usually begin long before the more serious symptoms appear and taking action quickly is paramount to preventing an asthma crisis! An asthma episode is easier to subdue if a child and school staff are aware of significant changes and the child is able to take medication quickly.

During the initial phase of an asthma episode a child may exhibit one or more of these signs:

**Changes in breathing:** Coughing, wheezing (a high pitched sound heard on exhalation), shortness of breath, breathing through the mouth, and or rapid breathing.

**Verbal complaints:** Often a child who is familiar with his/her asthma symptoms will know that an episode is about to happen. The child may tell school staff that his/her chest is tight, or hurts, or that he/she cannot catch a breath. Complaints may include "dry mouth" or a more general "I don't feel well" or "I'm scared."

**Behavior changes and other signs:** Clipped speech — a child may speak in very short, choppy sentences and appear to be gulping at air as he/she speaks. Some children may become very quiet (trying to control their breathing or simply out of fear) and subdued, while others may become highly agitated and panicky.

There should not be any delay once a child has notified school staff of a possible problem or developing asthma episode.

## What Causes Asthma Episodes?

Children with asthma have airways that narrow more easily than children who do not have asthma. They may be allergic or sensitive to inhaled (or even some ingested) irritants. A variety of factors can set off an asthma episode including viral infections (cold and flu season is especially difficult), exposure to allergens or “triggers” and even exercise. Each child with asthma reacts to a different set of factors.

### Common allergens:

- Dust mites
- Dander from furry or feathery animals
- Mold (*e.g., from moisture from a leaky roof or plumbing, leaky/moist foundations/walls, wet sink/bathroom areas, and outdoor molds such as Alternaria which is common in MN in the fall*)
- Seasonal pollens (*e.g., tree pollen [spring], grasses [summer], ragweed [fall]*)
- Cockroach droppings
- Mice/rat dander, urine, and/or droppings
- Some foods\*
- Some medications (*e.g., aspirin*)

### Common irritants:

- Exercise (*Exercise Induced Asthma or EIA*)
- Cold air
- Chalk dust
- Tobacco smoke, secondhand smoke and smoke from burning wood and other substances
- Air pollution - both indoor and outdoor (*high ozone/high particulate matter*)
- Chemicals and strong smells (*cleaning supplies, perfumes, whiteboard markers, paint, pesticides, glues*)
- Gastroesophageal reflux (*acid from the stomach that gets into the airways can be an irritant*)

**\*“About 6-8% of children with asthma have food allergies that can trigger asthma symptoms.”<sup>1</sup>**

**Common infections:**

- Viral upper respiratory infections
- Sinusitis

**Other triggers:**

- Strong emotions (laughter, crying, stress, anxiety, anger)
- Exercise

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## Exercise-Induced Asthma (EIA) and/or Exercise Induced Symptoms

Exercise is a very common trigger for asthma. However, since exercise and participating in sports is part of healthy living, it is one trigger that should be managed and not avoided. Some students may experience symptoms only when they exercise or participate in very strenuous activity (true EIA). Other students experience symptoms that are brought on by exercise, but they also may have an underlying persistent asthma that is exacerbated by the exercise. Students with underlying persistent asthma require controller medications whereas students with true EIA frequently do not. Any child who develops asthma-like symptoms should be referred to the Health Office for evaluation and possible referral to a health care provider. Fortunately, with better medications, monitoring, and proper management, a child can participate in physical activity and sports and achieve his/her highest performance levels.

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## Asthma Medications

Treatment for asthma is based on how severe a child's symptoms are at any given time. Typically, there are two types of medications used to treat asthma:

- Quick relief (reliever) or rescue, and
- Controller or preventive.

The most common asthma medications most school staff will come in contact with are the quick relief or rescue medications which are taken by inhalation.

*A note about inhaled corticosteroids: When you hear the word "steroid" you might think of the steroids used by athletes. But inhaled corticosteroids are not the same steroids used by athletes to build muscles and do not have the same side effects. They are the most consistently effective controller medications available.*

It is important to remember that all medications carry the potential for side effects. Some common complaints with rescue medications include **nervousness, jitteriness, nausea** and, in some cases, **drowsiness**. If side effects are excessive or the child is complaining of not feeling well, promptly contact the school nurse for evaluation and follow-up and do not leave the child unattended.

An asthma action plan (AAP) is an individualized tool that assists a caregiver in evaluating, monitoring and providing care to a child who has asthma. It is advisable for all children who have asthma to have a personalized AAP and/or emergency care plan available at all times.



*A Peak Flow Meter (PFM) is a simple hand-held measurement tool used to determine if a child's ability to exhale air (true asthma) is lessening. Every child's peak flow (PF) is different but a dropping level indicates reduced breathing abilities. The school nurse may have a PFM for students with asthma. See your school nurse for additional information.*

AAP's come in a number of different formats but the most common use the 3 color system: **green = go**, **yellow = caution**, and **red = danger**. Under each color, there are measurements and instructions specific to that level of condition. When you match the symptoms (and Peak Flow, if available) to the correct color section you'll find the steps to take.

#### **GREEN = GO**

Contains the controller medication the child takes everyday (if he/she does in fact require a daily medication.) It will also include instructions for medicating a child who has exercise induced asthma (EIA) prior to strenuous activity. The peak flow range for that child and normal acceptable ranges can be included.

#### **YELLOW = CAUTION**

Gives the caregiver specific instructions for medications when the child is starting to have asthma symptoms. Instructions for how much and how often the child should receive rescue medication should be found here. A peak flow range will show a drop in numbers; typically 20% or more. The yellow zone is perhaps the most important because it gives the caregiver the opportunity to take action before symptoms become life threatening.

#### **RED = DANGER**

Means the child's symptoms have progressed to the point where emergency care is needed. A description of escalating symptoms and a PF that has dropped to below 50% indicates a child's lungs are filling with mucus and that the bronchial muscles are so contracted that the lungs cannot pull in air. Caregivers should call 911 immediately!



## Emergency Measures for Handling an Asthma Episode or Emergency

IN THE ABSENCE OF AN AAP, THE FOLLOWING ARE GENERAL  
GUIDELINES FOR HANDLING AN ASTHMA EPISODE.

### Symptoms of breathing trouble:

- Unusually slow or fast breathing
- Breathes unusually deep or shallow
- Gasping for breath
- Wheezing, gurgling, high-pitched noises
- Skin unusually moist
- Skin flushed, pale, ashen/ bluish looking
- Person feels short of breath
- Person feels dizzy or light-headed
- Chest pain or tingling in hands or feet
- Person feels apprehensive or fearful
- Coughing
- Speaking in clipped or short bursts of speech
- Possibly restless or upset stomach

### Care of asthma and breathing trouble:

- Remain calm and reassure the child.
- Have the child sit up and breathe evenly, breathing in through nose, and breathing out with pursed lips.
- If an asthma episode is suspected, give a glass of room temperature water to sip.
- Elevate arms to shoulder level and provide support for the arms (*desk or back of chair.*)
- Notify your health office nurse or responsible medical party.
- Give medication if ordered and available (*some students carry their asthma inhaler with them.*)
- Contact parent/guardian.

### Call 911 if:

- Lips are blue or nail beds are blue -or-
- Child is having difficulty talking, walking or drinking -or-
- Quick relief or reliever medication (*inhaled reliever such as albuterol*) is ineffective, unavailable, or used too recently to repeat -or-
- You see neck, throat, or chest retractions (*Sucking in of the skin between ribs or at base of the neck*) -or-
- There is nasal (*nares*) flaring when inhaling -or-
- Child is in obvious distress -or-
- There is an altered level of consciousness/confusion -or-
- Child's condition is rapidly deteriorating.

Provide prompt care for students who are having breathing difficulty.

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## Relevant Legislation:



There are legal requirements and statutes that regulate schools working with not only children with asthma but with children with special needs in general. The following are simplified summaries of current statutes.

### FEDERAL LAWS (IDEA 1997) AND SECTION 504 OF THE REHABILITATION ACT OF 1973



These mandates require that schools promote the health, development and achievement of students with asthma, when the disease interferes with their learning. Schools are required to remove “disability barriers” that impede health, participation and achievement. The law requires schools and parents to work together as partners to develop and implement health plans to protect the welfare of the child.

### FAMILY EDUCATION RIGHTS AND PRIVACY ACT (FERPA)



Generally prohibits schools from disclosing personally identifiable information in a student’s education record, unless the school obtains the consent of the student’s parent or the eligible student (a student who is 18 years old or older or who attends an institution of postsecondary education). FERPA does allow schools to disclose this information, without obtaining consent, to school officials, including teachers, who have legitimate educational interests in the information, including the educational interests of the child. Schools that do this must include in their annual notification to parents and eligible students the criteria for determining who constitutes a school official and what constitutes a legitimate educational interest. Additionally, under FERPA, schools may not prevent the parents of students, or eligible students themselves, from inspecting and reviewing the student’s education records.

### MINNESOTA INHALER LAW OVERVIEW

Minnesota Statutes 2001, Section 121A.22



The Minnesota legislature enacted language during the 2001 session that allows public elementary and secondary school students to possess and use inhalers prescribed for asthma or reactive airway disease. The following provides an overview of the requirements that must be met before a student is given permission to carry asthma medication and self-medicate in school:

1. The parent has not requested that school personnel administer the student’s asthma medication; *and*
2. The school district receives annual written authorization from the student’s parent for the student to self-administer; *and*
3. The inhaler is properly labeled for that student; *and*
4. The school nurse or other appropriate party assesses the student’s knowledge and skills to safely possess and use his/her inhaler in a school setting and enters a plan to implement safe possession and use of the inhaler into the student’s school health record; *or* for schools without a school nurse or nursing services, the student’s parent or guardian submits written verification from the student’s physician documenting that the physician has assessed the student’s knowledge and skills to safely possess and use his/her inhaler in a school setting.

*Summary, August 2001 ALAMN*

## SCHOOL BUS IDLING LAW

Minnesota Statutes, Section 123B.885



### *Diesel School bus idling:*

“All operators of diesel school buses must minimize, to the extent practical, the idling of school bus engines and exposure of children to diesel exhaust fumes.”

*(This pertains to bus drivers lining up buses waiting for the children to exit the school and load the buses. Unless, due to inclement weather (i.e. too cold or too hot), the buses engine should be shut off until all children are loaded onto the bus).*

### *Parking:*

“On and after July 1, 2003, diesel school buses must be parked and loaded at sufficient distance from school air-intake systems to avoid diesel fumes from being drawn into the systems, unless, in the judgment of the school board, alternative locations block traffic, impair student safety, or are not cost effective.”

*(IAQ can suffer greatly when diesel fuel fumes are pulled into the building and circulated via the ventilation system. These fumes/odors are potent asthma triggers for some children).*

## PESTICIDE STATUTES

Minnesota Statutes, Section 121A.30



The Minnesota Legislature passed a new law called the Parents Right To Know Act of 2000. Public and non-public K-12 schools that plan to apply pesticides specified in the law are required to provide notices to parents and employees. This law also requires the Minnesota Department of Health (MDH) to develop and make available model notices for schools to use, if they choose to do so.

### Citations

<sup>1</sup> “Update on Food Allergies and Asthma” by Hugh A Sampson, M.D. Food Allergy News, Volume 6, No. 1, October–November 1996.

