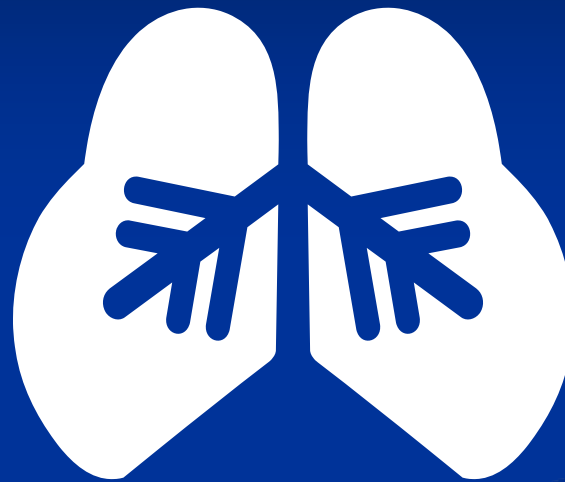
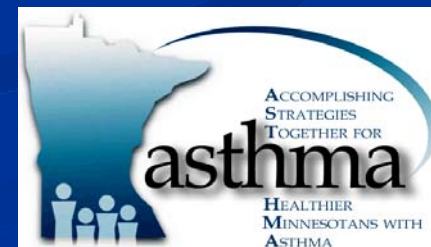


ASTHMA BASICS



Developed and Provided by:

Minnesota Department of Health Asthma Program



Minnesota Department of Health

www.health.state.mn.us/asthma



As you view this presentation..

- Consider how many people you know who have asthma.
- How will you use the information you see here today?
- How can you help prevent asthma symptoms from appearing?
- How can you help reduce asthma triggers in your home, at work or at school?

Asthma

- In 2008, it is estimated that 23.3 million Americans currently have asthma
- Is one of the most common chronic disorders in childhood, affecting an approx. 7.1 million children under 18 years (9.6%)
- 1 In 2007, 3,447 deaths were attributed to asthma, 152 deaths were children under the age of 15 2
- Is the **third** leading cause of hospitalization among children under the age of 15 6
- Is one of the leading causes of school absenteeism 3 In 2008 asthma accounted for approx. 14.4 million lost school days 4
- The annual health care costs of asthma is approx. \$20.7 billion dollars 5

From ALA website 11/2010 www.Lungusa.org

1 CDC: National Center for Health Statistics, National Health Interview Survey Raw Data, 2009

2 CDC: National Center for Health Statistics. Final Vital Statistics Report. Deaths: Final Data for 2007. April 17, 2009. Vol 58 No 19.

3 CDC: National Center for Chronic Disease Prevention and Health Promotion. Healthy Youth! [Health Topics: Asthma](#). August 14, 2009

4 CDC: National Center for Health Statistics, National Health Interview Survey Raw Data, 2008.

5 NHLBI Chartbook, U.S. Department of Health and Human Services, National Institute of Health, 2009

6 CDC: National Center for Health Statistics, National Hospital Discharge Survey, 2006.

Goal of asthma management

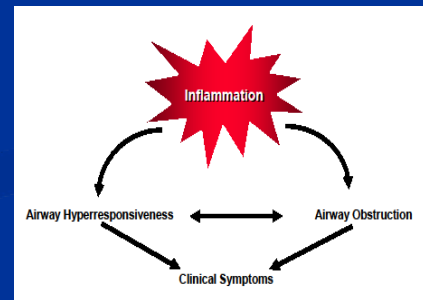
People with asthma should live happy, healthy, physically active lives, without asthma symptoms slowing them down.



What Is asthma?

A chronic disorder of the airways involving:

- Airflow obstruction
 - Tightening of the muscles surrounding the airways (Bronchoconstriction/spasm)
 - Over production of sticky mucus in the airways
- Bronchial hyperresponsiveness
- An underlying inflammation (swelling) of the airways



What causes asthma?

- Exposure to certain allergens trigger asthma symptoms to begin
- Exposure to certain irritants can also set an asthma episode in motion
- About 70% of asthmatics also have allergies ¹
- Food allergies have been recently found to be a major risk factor for severe asthma and life-threatening asthma episodes ²
- The prevalence of food allergy in the USA is estimated to be between 3.5 to 4.0% ³

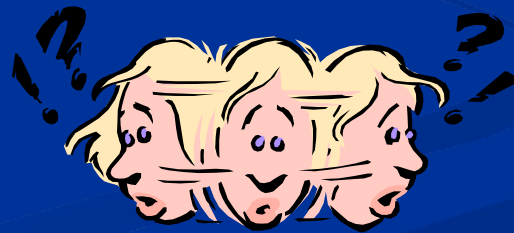
1. World Health Organization. Global surveillance, prevention and control of chronic respiratory diseases: a comprehensive approach, 2007 via www.AAAAI.org

2. Liu A, Jaramillo R, Stat M, Sicherer S, Wood R, Bock S, A, Burks A, W, Massing M, Cohn R, Zeldin D, J. National Prevalence & Risk Factors for Food Allergy & Relationship to Asthma: Results from the National Health and Nutrition Examination Survey 2005-2006; *Allergy Clin Immunol*. Vol. 126, Issue 4, Oct 2010

3. Sampson HA. Update on food allergy. *J Allergy Clin Immunol*. 2004 May;113(5):805-19. quiz 820. Review. PubMed PMID: 15131561

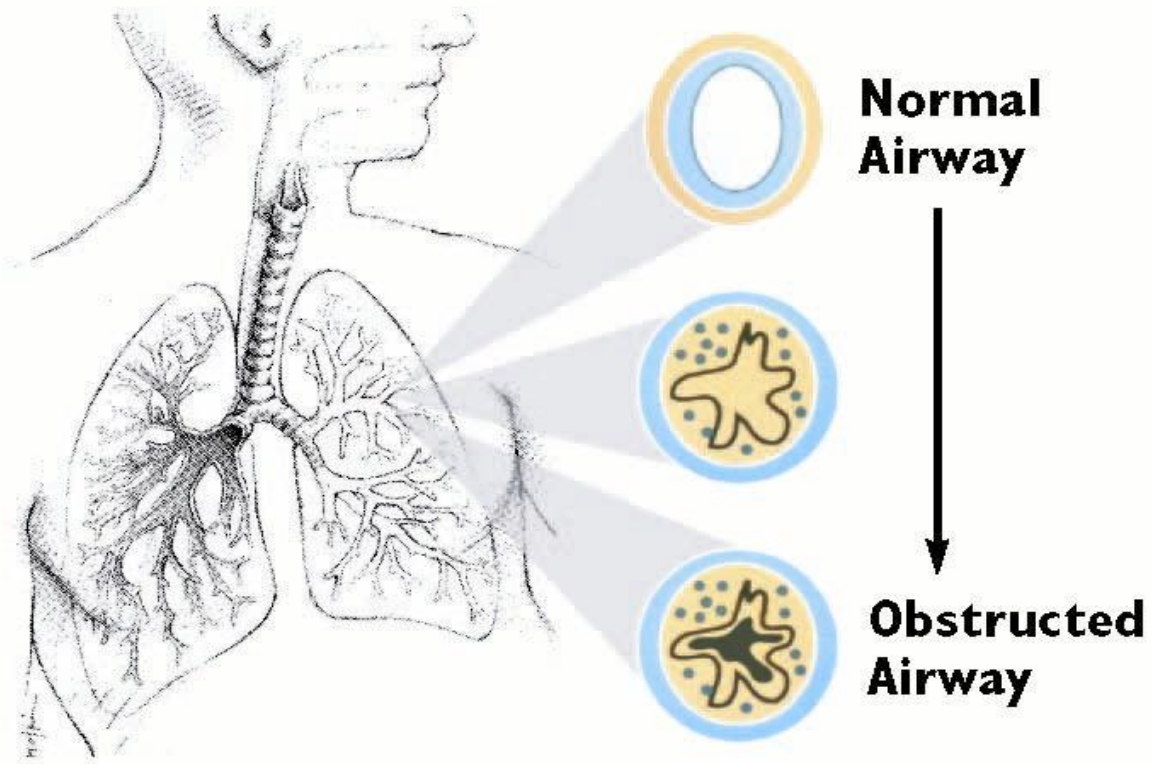
What causes asthma?

- Asthma may be caused by genetic, immune and/or environmental factors, and is often associated with eczema (scaly skin patches) and allergies
- Researchers do not understand all of the causes of asthma or its increasing prevalence
- It boils down to “We just don’t really know for sure”
YET!



Airway Obstruction

Asthma Episodes



Common symptoms of asthma

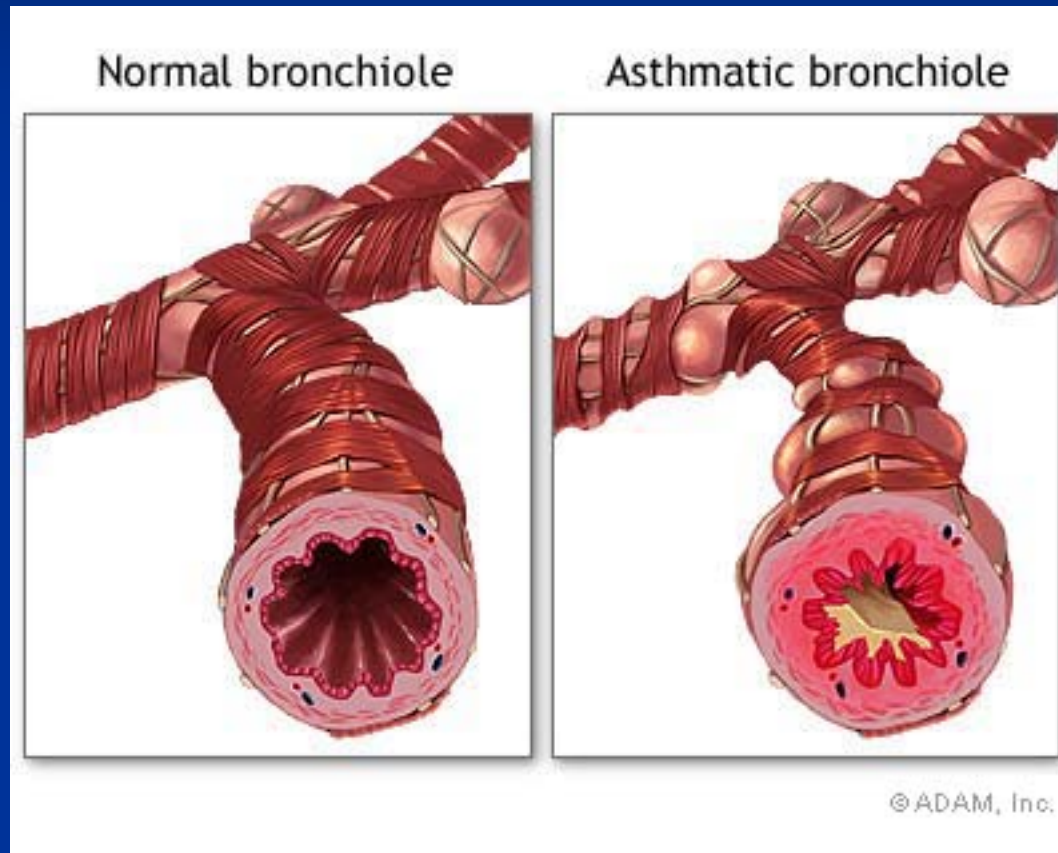
- Frequent cough, especially at night
- Shortness of breath or rapid breathing
- Chest Tightness
- Chest pain
- Wheezing
- Fatigue



Every person is unique!

- Wheezing and coughing are the most common symptoms *-but-*
- No two people will have the exact same symptoms or the same trigger
- Every person who has a diagnosis of asthma should have access to a rescue inhaler!
- Every person who has asthma should have an asthma action plan (AAP) immediately available

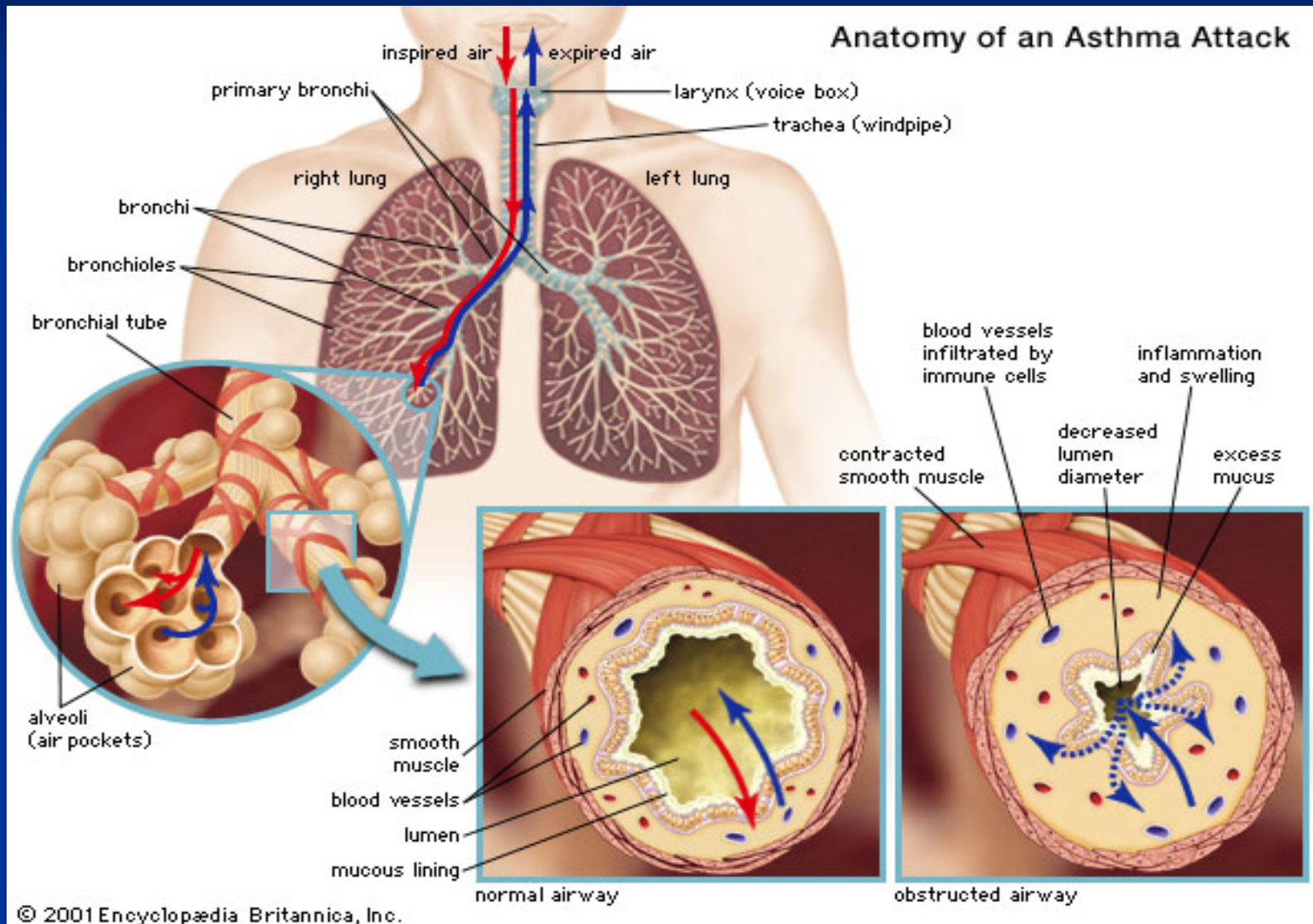
Handling Asthma Episodes



What's an "Episode"?

- An asthma episode (also called 'attack') occurs when a person is exposed to a trigger or irritant and breathing becomes difficult
- This can occur suddenly without a lot of warning, or brew for days before the symptoms emerge
- Episodes are preventable by avoiding exposure to triggers and taking daily controller medications (if prescribed)

Normal and asthmatic bronchiole



What to do when someone is having an 'episode'?

1. Remain calm and reassure the person
2. Call someone nearby for assistance if needed
3. Check their asthma action plan if they have one
4. Give "rescue" inhaler medications if ordered and available
5. If identified, move the person away from the trigger
6. Have the person sit up and breathe slowly- in through the nose - out through pursed lips slowly
7. Do not leave the person alone until you know they are breathing okay

Call 911 if..



- Lips or nail beds are bluish
- The person has difficulty talking, walking or drinking
- Quick relief or “rescue” meds (albuterol) is ineffective or not available
- Neck, throat, or chest muscles are pulling in (retracting)
- Nasal flaring occurs when inhaling
- Obvious distress
- Altered level of consciousness/confusion
- Rapidly deteriorating condition

- **DO NOT HESITATE IF ANY OF THESE SYMPTOMS ARE PRESENT!**



**There should not be any delay once a person tells
you they are having trouble breathing**

OR

You notice something's wrong!

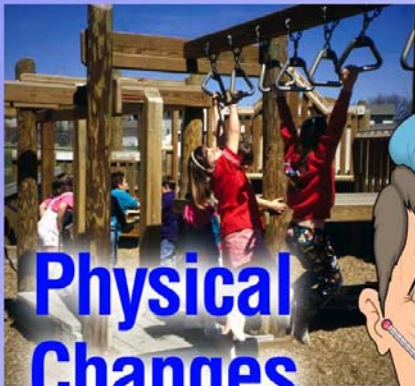
Triggers and Irritants



Allergens



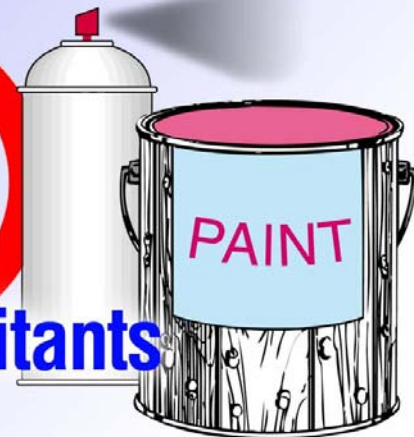
Emotional Responses



Physical Changes



Irritants



Common Allergens (Triggers)

- Seasonal pollens
- Animal dander /saliva/urine
- Dust mites
- Cockroaches/mice/rat droppings and urine
- Mold
- Some foods or food additives



Common Irritants (Triggers)

- Exercise/sports
 - Cold air
 - Chalk dust
 - Viral/upper respiratory infections
 - Air pollution
 - Tobacco smoke or secondhand smoke
 - Chemical irritants and strong smells
 - Diesel fumes
 - Cleaning supplies
- Other** – Strong emotions, weather changes, some medications



Dust Mites



Live in pillows and mattresses, carpet, fabric-covered furniture, curtains, stuffed toys -

- Avoid buying fabric covered furniture
- Remove carpeting from bedrooms
- Wash bedding in hot water (130°)
- Vacuum often when people with asthma/allergies are not in the area (HEPA filter vacuum cleaners)
- Wet dust book cases and furniture frequently
- Keep room humidity < 50% if possible

Mold



Moisture control is key -

- Repair leaks and dry wet/moist areas right away
- Wash mold off surfaces using plain soap and water
- Replace moldy porous items such as ceiling tiles & carpet
- Avoid installing carpet in areas exposed to regular moisture such as drinking fountains, sinks, bathrooms, kitchens

Pests



Droppings or body parts from cockroach, can trigger asthma symptoms-

Use integrated pest management (IPM) methods:

- Don't leave food, water or garbage exposed
- Vacuum or sweep areas prone to cockroach every 2-3 days
- Seal entry points for pests
- Use pesticides only as needed; try roach traps or gels

PETS



Furry and feathery pets can cause asthma symptoms
Fur is not the trigger; the animals dander, saliva and urine are the culprits -

- Keep pets outside or at least out of the bedroom
- Keeps pets off the furniture
- Bath pets weekly
- Vacuum frequently or damp mop hard floor surfaces at least weekly

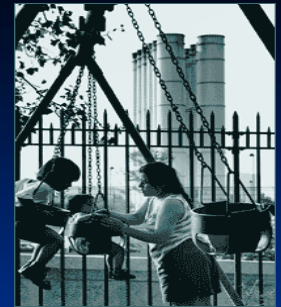
Tobacco and secondhand smoke

Is an irritant triggering asthma in children and adults

- State law prohibits tobacco use in K-12 public schools
- Maintain a clean indoor air environment – do not permit anyone to smoke inside the home or in the car
- Use a smoking jacket if you do smoke and leave it outside when finished
- Ask your health care provider for a referral to a quit smoking program, or call the US Network of Quitlines: 800-QUIT-NOW (800-784-8669)



Outdoor Air



High seasonal pollen counts aggravate allergies

Ozone and fine particles are biggest concern caused by industrial emissions and car exhaust

- Sign up for Air Quality Index e-mail notices
 - Pollution Control Agency sends e-mail alerts when they expect poor air quality (regional)
- Avoid being outside at high pollen count times, especially if allergic to particular seasonal pollens
- Keep windows closed during pollen season

Exercise Induced Asthma



What is exercise induced asthma (EIA)?

- Symptoms begin due to aerobic activity that increases the heart and respiratory rate
- A narrowing of the airways caused by acute tightening of the muscles around the airways (bronchospasm)
- Distinct from allergic asthma in that it does not produce long-term increase in airway activity
- Can be avoided by taking pre-exercise medications and by warming up/cooling down

EIA - What happens?

- Symptoms include coughing, wheezing, chest tightness, shortness of breath and fatigue
- Symptoms may begin during exercise and or up to 30 minutes after exercise
- EIA can spontaneously resolve 20 to 30 minutes after starting
- Symptoms can range from mild impairment to severe bronchospasm

Preventing exercise induced asthma (EIA)

- Have an Asthma Action Plan (AAP) that provides details on pre-exercise medication regimen
- Athletes should use their reliever medication (Albuterol) 10-15 minutes before activity
- Do warm-up/ cool-down exercises before and after activities
- Check outdoor ozone/air quality levels
<http://aqi.pca.state.mn.us/>
- Never encourage an athlete to “tough it out” when having asthma symptoms

Medications



Two categories of medications

Controller medications

- Taken every day to prevent swelling in the airways

Reliever / rescue medications

- Taken only when needed to relieve symptoms
- To prevent exercise induced asthma from developing (taken before strenuous exercise)

Controller medications

- Keeps swelling and mucus from developing in the airways
- Must be taken EVERY day even when not having symptoms
- Inhaled corticosteroids (ICS's) are the most common and effective way to control asthma
- Help prevent asthma exacerbations from developing!

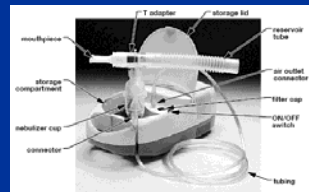


Rescue / reliever medications

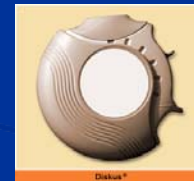
- Rescue inhalers are typically Albuterol and Xopenex (levalbuterol) products
- Are taken when asthma symptoms are appearing (asthma episode)
- Work by relaxing the muscles surrounding the airways
- Are taken 10-15 minutes before strenuous exercise/activity by people with EIA
- Do NOT reduce or prevent swelling from developing in the lungs
- May be carried in school by a student only if approved by the doctor, school nurse and parent

Delivery methods

- Both control and rescue medications come in MDI (metered dose inhalers) and nebulized forms



- Control medications are also available in dry powder discs, breath actuated inhalers and pill form





Picture courtesy of American Lung Association of the Inland Counties CA 2004

Spacers or holding chambers



Most MDI's (metered dose inhalers) should be used with a spacer or holding chamber

- This device attaches to the MDI and allows the user to breathe in more medication effectively
- The clinician must write an order for a chamber when prescribing your MDI medication
- Both controller and reliever medications are in MDI dispensers
- Dry powder inhalers do NOT require spacers

Typical Spacers/Holding Chambers



Tools to Help Manage Asthma

Asthma Action Plan

DATE: ___/___/___ PATIENT NAME: _____
 WEIGHT: _____ PARENT/GUARDIAN NAME: _____ PHONE: _____
 HEIGHT: _____ PRIMARY CARE PROVIDER/CLINIC NAME: _____ PHONE: _____
 DOB: ___/___/___ WHAT TRIGGERS MY ASTHMA: _____

Baseline Severity

Best Peak Flow

Always use a **holding chamber/spacer with/ without** a mask with your inhaler. (circle choice)

GREEN ZONE	DOING WELL	GO!													
<p>You have ALL of these:</p> <ul style="list-style-type: none"> Breathing is good No cough or wheeze Can work/play easily Sleeping all night <p>Peak Flow is between: _____ and _____ <small>80-90% of personal best</small></p>	<p>Step 1: Take these controller medicines <u>every day</u>:</p> <table border="1"> <tr> <th>MEDICINE</th> <th>HOW MUCH</th> <th>WHEN</th> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table> <p>Step 2: If exercise triggers your asthma, take the following medicine 15 minutes before exercise or sports.</p> <table border="1"> <tr> <th>MEDICINE</th> <th>HOW MUCH</th> </tr> <tr> <td>_____</td> <td>_____</td> </tr> </table>	MEDICINE	HOW MUCH	WHEN	_____	_____	_____	_____	_____	_____	MEDICINE	HOW MUCH	_____	_____	
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_____	_____														
YELLOW ZONE	GETTING WORSE	CAUTION													
<p>You have ANY of these:</p> <ul style="list-style-type: none"> It's hard to breathe Coughing Wheezing Tightness in chest Cannot work/play easily Wake at night coughing <p>Peak Flow is between: _____ and _____ <small>50-75% of personal best</small></p>	<p>Step 1: Keep taking GREEN ZONE medicines and ADD quick-relief medicine: _____ puffs or 1 inhaler treatment of _____ <small>Repeat after 20 minutes if needed (for a maximum of 2 treatments).</small></p> <p>Step 2: Within 1 hour, if your symptoms aren't better or you don't return to the GREEN ZONE, take your oral steroid medicine _____ and call your health care provider today.</p> <p>Step 3: If you are in the YELLOW ZONE more than 6 hours, or your symptoms are getting worse, follow RED ZONE instructions.</p>														
RED ZONE	EMERGENCY	GET HELP NOW!													
<p>You have ANY of these:</p> <ul style="list-style-type: none"> It's very hard to breathe Nostrils open wide Ribs are showing Medicine is not helping Trouble walking or talking Lips or fingernails are gray or bluish <p>Peak Flow is between: _____ and _____ <small>Below 50% of personal best</small></p>	<p>Step 1: Take your quick-relief medicine NOW:</p> <table border="1"> <tr> <th>MEDICINE</th> <th>HOW MUCH</th> </tr> <tr> <td>_____</td> <td>_____</td> </tr> </table> <p>or 1 inhaler treatment of _____</p> <p>AND</p> <p>Step 2: Call your health care provider NOW AND Go to the emergency room OR CALL 911 immediately.</p>	MEDICINE	HOW MUCH	_____	_____										
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_____	_____														

 This Asthma Action Plan provides authorization for the administration of medicine described in the AAP.

 This child has the knowledge and skills to self-administer quick-relief medicine at school or daycare with approval of the school nurse.

DATE: ___/___/___ MD/PA SIGNATURE: _____

This consent may supplement the school or daycare's consent to give medicine and allow my child's medicine to be given at school/daycare. My child (circle one) **may / may not** carry, self-administer and use quick-relief medicine at school with approval from the school nurse (if applicable).

DATE: ___/___/___ PARENT/GUARDIAN SIGNATURE: _____

FOLLOW-UP APPOINTMENT IN _____ AT _____ PHONE: _____



Peak Flow Meters (PFM)



Peak flow meters

- Measures how well the student's lungs are doing at that moment
- Associated with the Green-Yellow-Red system of managing asthma symptoms
- Congruent with asthma action plans
- Helps students and families self-manage asthma by providing an objective measure to compare to symptoms


Symptoms and PFM diary

Peak Flow & Asthma Symptom Diary

Name: _____ Date: _____ Your personal best: _____ Predicted norm: _____

Personal peak flow range	Sun am pm	Mon am pm	Tues am pm	Wed am pm	Thur am pm	Fri am pm	Sat am pm
Green zone (80-100% of personal best)							
Yellow zone (60-80% of personal best)							
Red zone (below 60% of personal best)							
Medication: Inhaled Steroid							
Inhaled Short-Acting Beta Agonist							
Inhaled Long-Acting Beta Agonist							
Theophylline							
Cromolyn or Nedocromil							
Oral Steroid							
Indicate: Mild - 1 Moderate - 2 Severe - 3	Coughing						
	Wheezing						
Triggers							

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Triggers							


3M Pharmaceuticals

Asthma Action Plan (AAP)

Asthma Action Plan

DATE: ___/___/___ PATIENT NAME _____
 WEIGHT: _____ PARENT/GUARDIAN NAME _____ PHONE _____
 HEIGHT: _____ PRIMARY CARE PROVIDER/CLINIC NAME _____ PHONE _____
 DOB: ___/___/___ WHAT TRIGGERS MY ASTHMA _____

Baseline Severity

Best Peak Flow

Always use a **holding chamber/spacer with/without** a mask with your inhaler. (circle choices)

GREEN ZONE	DOING WELL	GO!													
<p>You have ALL of these:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Breathing is good <input type="checkbox"/> No cough or wheeze <input type="checkbox"/> Can work/play easily <input type="checkbox"/> Sleeping all night <p>Peak Flow is between: <input type="text"/> and <input type="text"/></p> <p><small>80-100% of personal best</small></p>	<p>Step 1: Take these controller medicines every day:</p> <table border="0"> <tr> <td>MEDICINE</td> <td>HOW MUCH</td> <td>WHEN</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table> <p>Step 2: If exercise triggers your asthma, take the following medicine 15 minutes before exercise or sports.</p> <table border="0"> <tr> <td>MEDICINE</td> <td>HOW MUCH</td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> </table>	MEDICINE	HOW MUCH	WHEN	_____	_____	_____	_____	_____	_____	MEDICINE	HOW MUCH	_____	_____	
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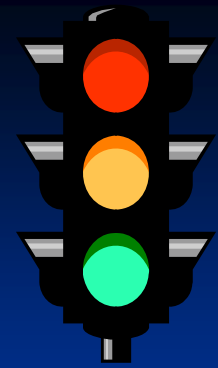
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DATE: ___/___/___ PARENT/ GUARDIAN SIGNATURE _____

FOLLOW-UP APPOINTMENT IN _____ AT _____ PHONE _____

Asthma Action Plan Zones



- **Green Zone**: All Clear/Breathing Good/Go
 - No asthma symptoms and/or
 - Peak flow 80-100%
- **Yellow Zone**: Caution/Slow Down
 - Some asthma symptoms and/or
 - Peak flow 50-80%
- **Red Zone**: Medical Alert/Stop
 - Severe asthma symptoms and/or
 - Peak flow < 50%

Resources

- Minnesota Department of Health Asthma Website
www.health.state.mn.us/asthma
- Centers for Disease Control (CDC)
<http://www.cdc.gov/asthma/>
- National Heart Lung & Blood Institute (NHLBI), EPR-3
Asthma Guidelines
<http://www.nhlbi.nih.gov/guidelines/asthma/>
- Environmental Protection Agency
<http://www.epa.gov/asthma/programs.html>
- Asthma Community Network
<http://www.asthmacommunitynetwork.org/>