

Educational Strategies For The Asthmatic Patient Population

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Learning Objectives

- Describe barriers to understanding the disease process of asthma
- Define learning strategies to address learning deficiencies
- Review outcome measures germane to asthma outcomes


Prevalence of Asthma In the United States

- Nearly 26 million people in the U.S. have asthma.
- This equals about 1 in 13 people.
- Nearly 21 million U.S. adults ages 18 and older have asthma.
- Each year, asthma accounts for more than 10 million outpatient visits and 500,000 hospitalizations. The average length of stay (LOS) for asthma hospitalizations is 3 days.
- Nearly half (44%) of all asthma hospitalizations are for children. Asthma is the third-ranking cause of hospitalization children.
- On average, 10 people in the U.S. die from asthma each day. In 2021, 3,517 people died from asthma.

- Asthma by age group

Age Groups (Years)		
0–4	394,206	2.0 (0.43)
5–11	1,641,279	5.9 (0.58)
5–14	2,699,214	6.6 (0.55)
5-17 (School Age)	3,832,453	7.2 (0.49)
12-14 (Young Teens)	1,057,935	8.1 (1.10)
12-17	2,191,174	8.6 (0.77)
15-17 (Teenagers)	1,133,239	9.1 (1.11)
15–19	1,833,105	9.3 (0.93)
11-21 (Adolescents)	4,136,845	9.0 (0.63)
20–24	2,253,542	10.3 (1.05)
22-39 (Young Adults)	6,621,732	8.5 (0.40)
25–34	3,600,545	8.1 (0.51)
35–64	10,245,123	8.3 (0.28)
65+	4,215,039	7.8 (0.34)
Sex ³		



Sex ³		
Males	9,604,861	6.1 (0.23)
Boys (Age <18 years)	2,107,190	5.7 (0.49)
Men (Age 18+ years)	7,497,671	6.2 (0.26)
Females	15,652,277	9.5 (0.28)
Girls (Age <18 years)	2,119,469	6.0 (0.59)
Women (Age 18+ years)	13,532,808	10.4 (0.31)
Poverty Level ⁴		
Below 100% of the poverty threshold	4,035,715	11.0 (0.75)
100% to less than 250% of the poverty threshold	7,828,911	8.7 (0.40)
250% to less than 450% of the poverty threshold	6,004,868	6.9 (0.35)
450% of poverty threshold or higher	7,387,644	6.7 (0.28)

Demographic characteristics of Asthma



Barriers to Asthma Education

- Diversity of age groups
- Wide spectrum of educational levels
- Access to educational resources
- Lack of daily symptoms
- Confusion regarding medications and devices
- Fear of steroids: 😞



Learning Strategies to Enhance Asthma Education

- The four essential components of asthma management are:
 - patient education,
 - minimizing exposure to asthma triggers,
 - monitoring for changes in symptoms or lung function,
 - pharmacologic therapy



Asthma Self-Management

- Understanding asthma and breathing.
- Knowing your asthma symptoms and keeping track of them.
- Improving communication skills with healthcare providers.
- Learning about asthma medicines and taking them correctly.
- Making changes in your life to prevent asthma problems.



The Primary Goal for Asthma Patients

- Preventing long-term (chronic) symptoms that interfere with daily living, such as coughing or shortness of breath during the night or after exercise. Maintaining lung function near the personal best



Rule of Two for Asthma?

-
- The “Rule of Two” is a guideline for managing asthma symptoms. If a person needs to use their quick-relief inhaler more than twice per week, or if they wake up at night due to asthma symptoms more than twice per month, they should make an appointment with a healthcare professional.

Asthma in Schools

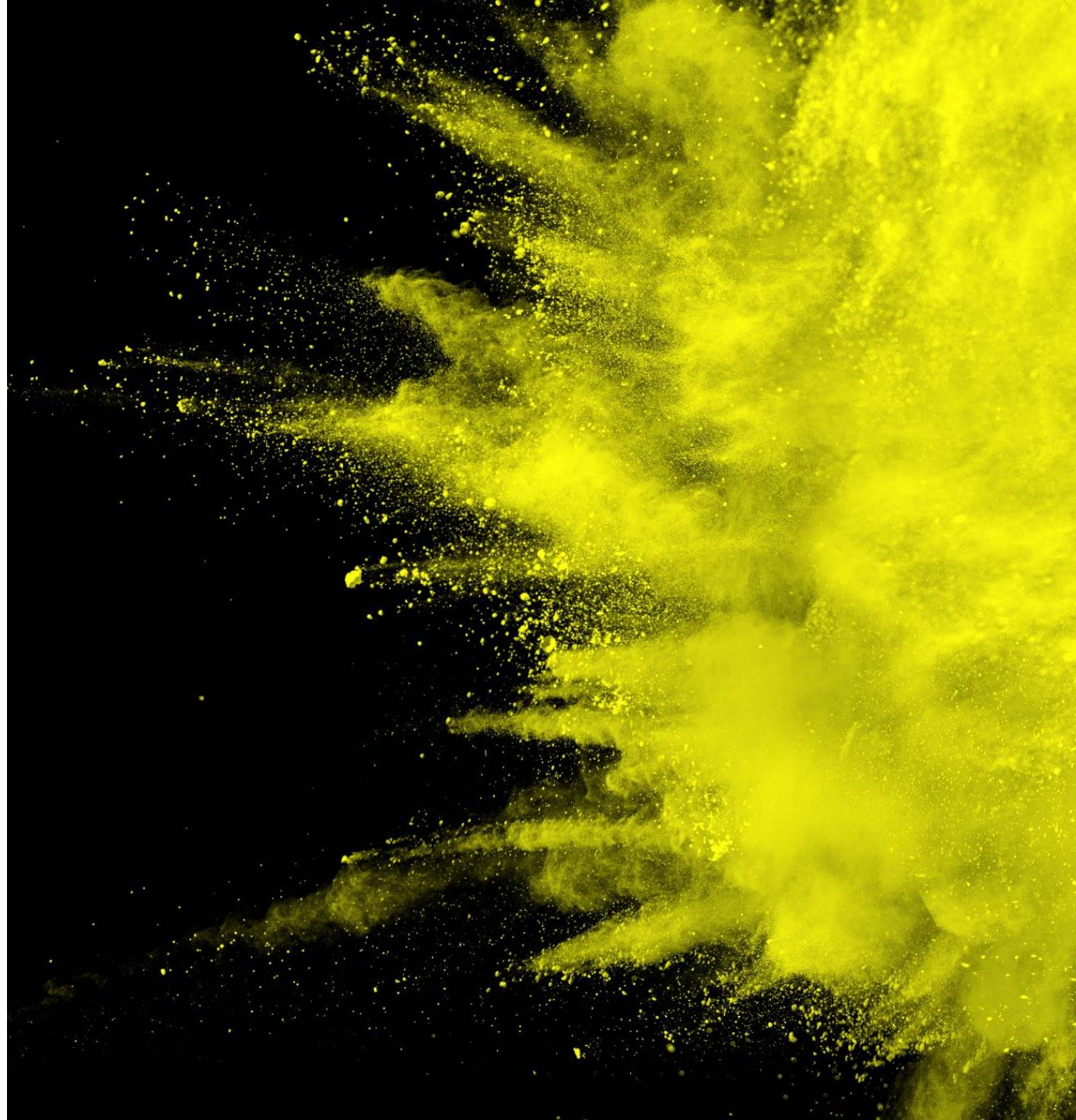
- Students with uncontrolled asthma often miss more school and have poorer academic performance than healthy students.
- With the help of strong school asthma management programs, students with asthma can have equally good school attendance. When asthma is well controlled, students are ready to learn.
- Effectively managing a child's asthma is best accomplished through a comprehensive plan that addresses both the medical management of the disease and the avoidance of environmental triggers.
- Because children spend most of their time in schools, day care facilities or at home, it is important to reduce their exposure to environmental asthma triggers as much as possible in each of these environments.

Asthma Management: A Priority for Schools

- Each day, one in five Americans occupies a school building.
- The majority of these occupants are children.
- Environmental asthma triggers commonly found in school buildings include:
 - Cockroaches and other pests
 - Mold resulting from excess moisture in the building
 - Dander from animals in the classroom
 - Dander brought in on clothing from animals at home.

Secondhand smoke and dust mites are other known environmental asthma triggers found in schools. Children with asthma may be affected by other pollutants from sources found inside schools, such as:

- Unvented stoves or heaters
- Common products including:
 - Chemicals
 - Cleaning agents
 - Perfumes
 - Pesticides
 - Sprays.
- In addition, outdoor environmental asthma triggers, like ozone and particle pollution, or bus exhaust, can affect children with asthma while at school.



Asthma Triggers Found in Schools	Asthma Management Tips for Schools
<p>Environmental Tobacco Smoke Environmental tobacco smoke is a mixture of smoke from the burning end of a cigarette, pipe, or cigar and the smoke exhaled by the smoker.</p>	<p>Eliminate Exposure to Environmental Tobacco Smoke Enforce no-smoking policies in schools.</p>
<p>Pests Cockroach body parts, secretions, and droppings, as well as the urine, droppings, and saliva of other pests (such as rodents) are often found in areas where food and water are present.</p>	<p>Control Pest Problems Use Integrated Pest Management (IPM) to prevent cockroach and other pest problems (e.g., store food in tightly sealed containers and place dumpsters away from the building).</p>
<p>Mold Mold can grow indoors when mold spores land on wet or damp surfaces. In schools, mold is most commonly found in bathrooms, kitchens, basements, around roof seams and plumbing, and in portable classrooms and trailers. Mold can grow anywhere that moisture is present.</p>	<p>Clean Up Mold and Moisture Fix leaks and moisture problems and thoroughly dry wet areas within 24-48 hours to prevent mold growth. Clean hard, moldy surfaces with water and detergent, then dry thoroughly.</p>
<p>Dust Mites Dust mites are too small to be seen but can be found in almost every home, school, and building. Dust mites can be found in school carpeting, upholstered furniture, stuffed animals or toys, and pillows.</p>	<p>Reduce Dust Mite Exposure Make sure schools are dusted and vacuumed thoroughly and regularly and keep classrooms free of clutter. If stuffed toys are present, ensure they are washable and wash them regularly in hot water.</p>
<p>Animal Dander Pets' skin flakes, urine, and saliva are often found in classrooms and science labs. Any warm-blooded animal, including cats and dogs, may trigger asthma.</p>	<p>Control Animal Allergens Remove classroom animals from the school, if possible. If not, locate animals away from sensitive students and ventilation systems.</p>

School Strategies

- **Asthma education for all.**
 - Ideally all school staff should know the basics about asthma. They should also be taught how to respond to an asthma emergency. Basic information about asthma should be taught in health classes. Your child's Asthma Action Plan should be discussed with their teachers, the school nurse, and other key staff members.
- **School health services.**
 - You, your child, and your child's healthcare provider should work together to create an Asthma Action Plan. It should cover issues such as asthma triggers and medicines, peak-flow, and watching symptoms. It should also include emergency procedures, when to call parents, when to call a provider, and when to call 911. Give a written copy of this plan to the school and the school nurse. Make sure your child's teachers and other relevant staff members have the plan and understand it. Be sure staff members know how to give pain relief medicines. Be sure they all know where your child's medicine is stored.
- **Healthy air quality.**
 - Tobacco use should be banned on school property. Good pest control methods can help control cockroaches and other allergy-causing pests. During any school construction or remodeling, steps should be taken to reduce dust and debris in the air. If you live in an area where the air quality varies, don't let your child play outside on bad air days.
- **Trigger avoidance.** The school and key staff members must work with you and your child. They can help you find and reduce asthma triggers in the school.

- **Safe physical activities.**

- All children need exercise. A child with asthma should be encouraged to do physical activities like everyone else. In some cases, the activity may need to be changed a bit so that it's safe and suitable. Your child should also be able to get any medicines they might need before or during exercise.

- **Cooperation.**

- The school should tell you about any steps being taken to help reduce exposure to triggers. And you need to update the school and the school nurse about any changes in your child's Asthma Action Plan. Give them an updated copy of the plan.

- **Community support.**

- The CDC has found that asthma-friendly schools work best when they have strong community support. All school staff need support from the school district and community.

Asthma **Action** Plan For Children

When Well	When Unwell	Severe	Danger Signs
<ul style="list-style-type: none"> No wheeze, cough or chest tightness Can play and exercise without wheeze, cough or chest tightness Need reliever puffer less than 3 times a week (not including before exercise) Not waking at night due to asthma symptoms 	<ul style="list-style-type: none"> Starting to get a tight cough, wheeze or chest tightness Increased asthma with a cold Waking at night with asthma symptoms 	<ul style="list-style-type: none"> Needing reliever more than every 3 hours for one or more of the following: <ul style="list-style-type: none"> Wheeze Chest tightness Sucking in around neck, ribs or tummy with breathing 	<ul style="list-style-type: none"> Needing reliever more than every ½ hour, OR Blue lips, OR Difficulty speaking or feeding due to breathlessness OR Frightened OR Exhausted
<p>What should I do?</p>	<p>What should I do?</p>	<p>What should I do?</p>	<p>What should I do?</p>
<p>Preventer/Combination Medication:</p> <p>.....</p> <p>.....puffs times a day everyday.</p> <p>..... mg</p> <p>tablet once a day.</p> <p>Reliever:</p> <p>.....</p> <p>Up to.....puffs, if needed</p>	<p>Give (reliever)</p> <p>Up to 3 - 4 hourly as needed:</p> <ul style="list-style-type: none"> 2 – 6 puffs via spacer (Less than 6 years old) 2 – 12 puffs via spacer (6 years or older) <p>If on daily preventer medication, continue same dose as usual or follow your doctors instructions</p>	<p>Keep giving.....puffs of (reliever) as needed.</p> <p>Start Oral steroid if prescribed:</p> <p>.....</p> <p>..... mg (.....ml)</p> <p>And see a doctor or come into hospital AS SOON AS POSSIBLE</p>	<p>CALL AN AMBULANCE on 000</p> <p>While waiting stay calm and give:</p> <p>..... (reliever)</p> <p>4 puffs every 4 minutes</p> <p>Use a spacer if available</p>

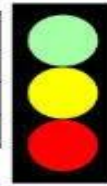
Name: Ph:

Signature: Date:

Patient name :.....

Massachusetts Asthma Action Plan

Name: _____		Date: _____
Birth Date: _____	Doctor/Nurse Name _____	Doctor/Nurse Phone # _____
Patient Goal: _____		Parent/Guardian Name & Phone _____
Important! Avoid things that make your asthma worse: _____		



The colors of a traffic light will help you use your asthma medicine.

Green means Go Zone!
Use controller medicine.

Yellow means Caution Zone!
Add quick-relief medicine.

Red means Danger Zone!
Get help from a doctor.

Personal Best Peak Flow: _____

GO – You're Doing Well! ➔ **Use these daily controller medicines:**

- You have **all** of these:
- Breathing is good
 - No cough or wheeze
 - Sleep through the night
 - Can go to school and play



Peak flow from _____ to _____

MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/ WHEN

CAUTION – Slow Down! ➔ **Continue with green zone medicine and add:**

- You have **any** of these:
- First signs of a cold
 - Cough
 - Mild wheeze
 - Tight Chest
 - Coughing, wheezing, or trouble breathing at night



Peak flow from _____ to _____

MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/ WHEN

CALL YOUR DOCTOR/ NURSE: _____

DANGER – Get Help! ➔ **Take these medicines and call your doctor now.**

- Your asthma is getting worse fast:
- Medicine is not helping
 - Breathing is hard and fast
 - Nose opens wide
 - Ribs show
 - Can't talk well



Peak flow from _____ to _____

MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/ WHEN

GET HELP FROM A DOCTOR NOW! Do not be afraid of causing a fuss. Your doctor will want to see you right away. It's important! If you cannot contact your doctor, go directly to the emergency room and bring this form with you. **DO NOT WAIT.**
Make an appointment with your doctor / nurse within two days of an ER visit or hospitalization.

Doctor /NP/PA Signature: _____ Date: _____
I give permission to the school nurse, my child's doctor/NP/PA or _____ to share information about my child's asthma.
Parent/Guardian Signature: _____ Date: _____

****SEE BACK OF SCHOOL COPY FOR STUDENT MEDICATION ADMINISTRATION AUTHORIZATION****
ADAPTED FROM NIH PUBLICATION (7/20/00)

Illinois Department of Public Health Asthma Action Plan

Patient Name _____ Weight _____ Date of Birth _____ Peak Flow _____

Primary Care Provider Name _____ Phone _____

Primary Care Clinic Name _____

Symptom Triggers _____

Asthma Severity

<p style="text-align: center;">Green Zone “Go! All Clear!”</p> <div style="display: flex; align-items: center;"> <ul style="list-style-type: none"> Breathing is easy Can play, work and sleep without asthma symptoms </div> <p style="text-align: center; margin-top: 20px;">Peak Flow Range (80% - 100% of personal best)</p>	<p>The GREEN ZONE means take the following medicine(s) every day.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%; text-align: left;">Controller Medicine(s)</th> <th style="width: 40%; text-align: left;">Dose</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </tbody> </table> <p>Spacer Used _____</p> <p>Take the following medicine if needed 10-20 minutes before sports, exercise or any other strenuous activity.</p> <p>_____</p>	Controller Medicine(s)	Dose	_____	_____	_____	_____	_____	_____
Controller Medicine(s)	Dose								
_____	_____								
_____	_____								
_____	_____								
<p style="text-align: center;">Yellow Zone “Caution...”</p> <div style="display: flex; align-items: center;"> <ul style="list-style-type: none"> Breathing is easy Cough or wheeze Chest is tight </div> <p style="text-align: center; margin-top: 20px;">Peak Flow Range (50% - 80% of personal best)</p>	<p>The YELLOW ZONE means keep taking your GREEN ZONE controller medicine(s) every day and add the following medicine(s) to help keep the asthma symptoms from getting worse.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%; text-align: left;">Reliever Medicine(s)</th> <th style="width: 40%; text-align: left;">Dose</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </tbody> </table> <p>If beginning cold symptoms, call your doctor before starting oral steroids.</p> <p>_____</p>	Reliever Medicine(s)	Dose	_____	_____	_____	_____		
Reliever Medicine(s)	Dose								
_____	_____								
_____	_____								
<p>Use Quick Reliever (two - four puffs) every 20 minutes for up to one hour or use nebulizer once. If your symptoms are not better or you do not return to the GREEN ZONE after one hour, follow RED ZONE instructions. If you are in the YELLOW ZONE for more than 12-24 hours, call your provider. If your breathing symptoms get worse, call your provider.</p>									
<p style="text-align: center;">Red Zone "STOP! Medical Alert!"</p> <div style="display: flex; align-items: center;"> <ul style="list-style-type: none"> Medicine is not helping Nose opens wide to breathe Breathing is hard and fast Trouble Walking Trouble Talking Ribs show </div> <p style="text-align: center; margin-top: 20px;">Peak Flow Range (Below 50% of personal best)</p>	<p>The RED ZONE means start taking your RED ZONE medicine(s) and call your doctor NOW! Take these medicines until you talk with your doctor. If your symptoms do not get better and you can't reach your doctor, go to a hospital emergency department or call 911 immediately.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%; text-align: left;">Reliever Medicine(s)</th> <th style="width: 40%; text-align: left;">Dose</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </tbody> </table>	Reliever Medicine(s)	Dose	_____	_____	_____	_____		
Reliever Medicine(s)	Dose								
_____	_____								
_____	_____								

For more information on asthma, please visit the National Heart, Lung and Blood Institute at www.nhlbi.nih.gov, the U.S. Centers for Disease Control and Prevention at www.cdc.gov or the U.S. Environmental Protection Agency at www.epa.gov.

If you would like more information on Illinois' asthma program, please contact the Illinois Department of Public Health at 217-782-3300.

4 principles that are applied to adult learning:

Malcolm Knowles

- Adults need to be involved in the planning and evaluation of their instruction.
- Experience (including mistakes) provides the basis for the learning activities.
- Adults are most interested in learning subjects that have immediate relevance and impact to their job or personal life.
- Adult learning is problem-centered rather than content-oriented.

A white computer keyboard is visible in the top-left corner, partially overlapping a white circular graphic. A black stethoscope is positioned diagonally across the white surface, with its chest piece on the left and its earpieces extending towards the bottom right.

Adult Educational Strategies

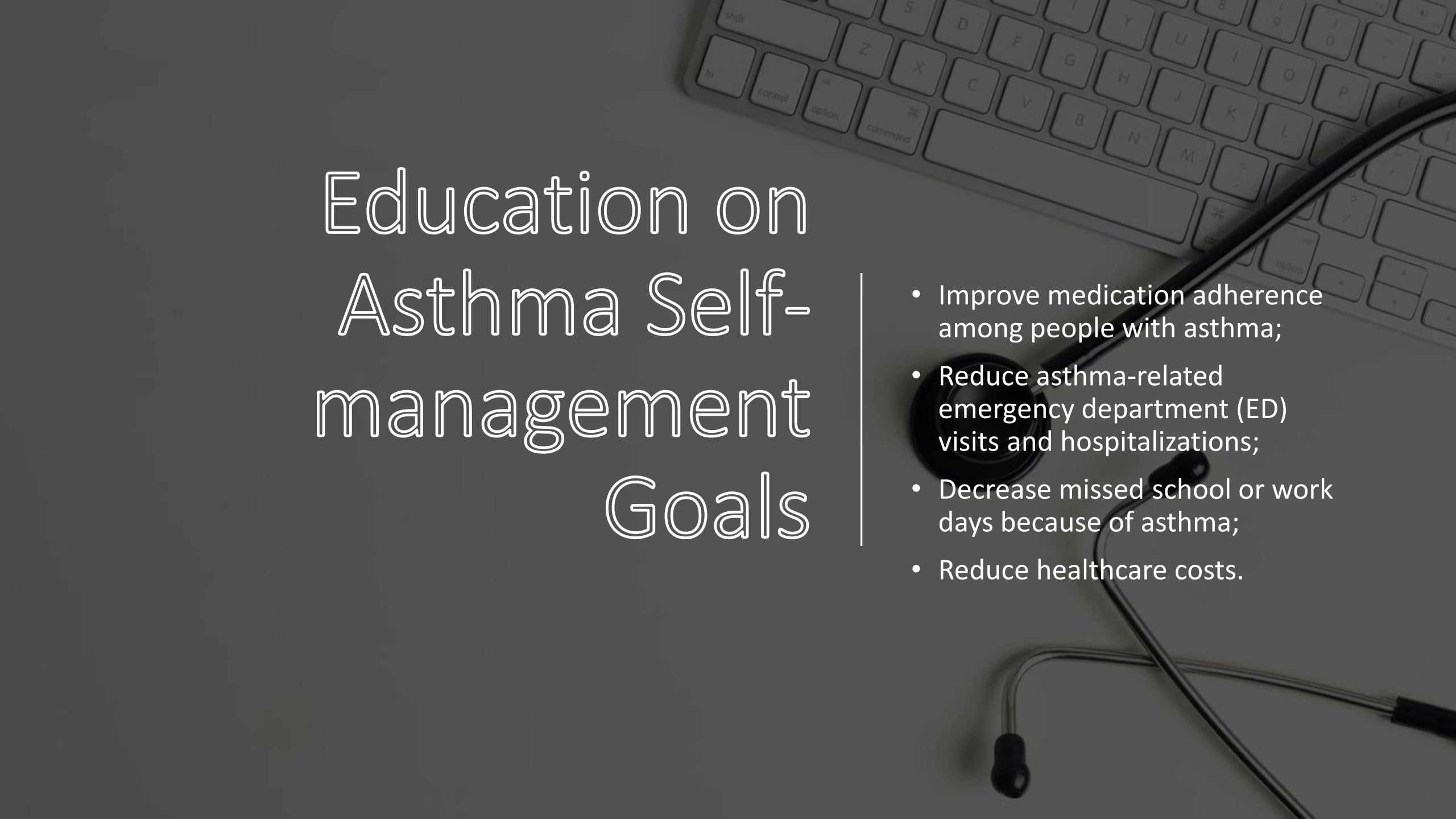
- Components of an adult asthma education programs may include:
 - **information about airway inflammation and bronchospasm using figures to illustrate the concept; the rationale and methods for avoiding irritants and relevant allergens**
 - **description of the rationale, correct use and side effects of preventive medications and bronchodilators**
 - **demonstration and practice of inhaler technique and monitoring using symptoms or PEF meters**



- Breathe Well, Live Well: an Asthma Management Program for Adults
- The Breathe Well, Live Well Guide can be used for self study, telephone counseling, or in-person educational sessions. Breathe Well, Live Well is an American Lung Association program for adults who want to learn how to take control of their asthma and feel better. This program walks you through understanding your asthma, including what can make your asthma symptoms worse. You can also learn how to build an asthma support team, as well as how and when to take your medications so that you can keep your asthma in check.
- Topics include:
 - Understanding your asthma.
 - Building your asthma support team.
 - Taking asthma medications.
 - Using tools for daily self-management.
 - Following good health habits.

EXHALE PROGRAM

- **EDUICATION**
on asthma self-management
- **X-tinguishing**
smoking and exposure to secondhand smoke
- **Home**
visits for trigger reduction and asthma self-management education
- **Achievement**
of guidelines-based medical management
- **Linkages**
and coordination of care across settings
- **Environmental**
policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources



Education on Asthma Self- management Goals

- Improve medication adherence among people with asthma;
- Reduce asthma-related emergency department (ED) visits and hospitalizations;
- Decrease missed school or work days because of asthma;
- Reduce healthcare costs.

Asthma Action Plan Adults (18 years old and up)




Name Birth Date Today's Date
 Doctor Phone
 Specialist Phone

GO! (GREEN Zone) Use these controller medicines every day

You have ALL of these:

- ✓ Breathing is easy
- ✓ No cough or wheeze
- ✓ Sleep well at night
- ✓ Able to exercise
- ✓ Peak flow is 80% of personal best (=)



Asthma, Allergy and GERD/Acid Reflux Medicines	How much to take & when to take it
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>


Personal best =

▶ If asthma with exercise:

WATCH OUT! (YELLOW Zone) Keep using Green Zone medicines and ADD this quick-relief medicine

You have ANY of these:

- ✓ First sign of a cold
- ✓ Cough or wheeze
- ✓ Tight chest
- ✓ Wake at night
- ✓ Peak flow is 60% to 80% of personal best (to)




Asthma Rescue Medicine	How much to take
First: <input type="text"/>	<input type="text"/>
Next:	▶ If <u>not</u> breathing better after 2 treatments, 20 minutes apart, GO TO RED ZONE. <input type="text"/> ▶ If breathing better, take treatments every 4 to 6 hours as needed for up to 2 days.
Call the doctor:	▶ If at any time, quick-relief medicine does not last for 4 hours, OR ▶ If quick-relief medicine is needed more than 2 times a week.

DANGER! (RED Zone) Use these emergency medicines AND get medical help NOW!

You have ANY of these:

- ✓ Medicine not helping
- ✓ Breathing hard, fast
- ✓ Nose opens wide
- ✓ Can't walk or talk well
- ✓ Ribs suck in
- ✓ Peak flow less than 60% of personal best (<)



Asthma Rescue Medicine	How much to take
First: <input type="text"/>	<input type="text"/>
Next:	▶ Wait 15 minutes to see if the treatment(s) have helped. ▶ If <u>not</u> breathing better, GO TO THE EMERGENCY DEPARTMENT OR CALL 9-1-1. ▶ If breathing better, keep taking treatments every 4 to 6 hours and CALL THE DOCTOR FOR AN APPOINTMENT TODAY! ▶ Make an appointment with your doctor within 2 days of an ER visit or hospitalization.

My asthma triggers (Items that can make my asthma worse). Avoid these triggers; pre-treat if needed.

<input type="checkbox"/> Cigarette smoke	<input type="checkbox"/> Wood smoke	<input type="checkbox"/> Reflux/GERD
<input type="checkbox"/> Colds/flu	<input type="checkbox"/> Dust, dust mites, carpeting	<input type="checkbox"/> Strong odors, perfumes, cleaners
<input type="checkbox"/> Exercise	<input type="checkbox"/> Changes in weather, temperature	Foods: <input type="text"/>
<input type="checkbox"/> Mold/mildew	<input type="checkbox"/> Cockroaches	<input type="text"/>
<input type="checkbox"/> Animal dander, rodents	<input type="checkbox"/> Flowers, grass, trees, weeds, pollen	Other: <input type="text"/>
<input type="checkbox"/> Ozone alert days	<input type="checkbox"/> Stress/emotions	<input type="text"/>

▶ Seasonal triggers for asthma: Fall Winter Spring Summer

This Action Plan was developed in partnership with the patient by:

Doctor/Provider (sign): Date

Do Asthma Educational
Strategies Work?





Evidence: Effect of asthma education on health outcomes in children: a systematic review BMJ 2022

- Compared with the control group, the asthma education group had 54% lower hospitalisation risk (95% CI 0.32 to 0.66), and 31% lower emergency department visit risk (95% CI 0.59 to 0.81).
- Sensitivity analysis showed that the asthma education group had a reduced clinic visit risk (risk ratio (RR)=0.80, 95% CI 0.67 to 0.97). Subgroup analysis showed that asthma education involving both children and parents/guardians was associated with fewer hospitalisations (RR=0.38, 95% CI 0.24 to 0.59) and emergency department visits (RR=0.69, 95% CI 0.57 to 0.83).
- Asthma education in hospitals or non-hospitals can reduce the risk of hospitalisation and emergency department visits.
- However, only education in the hospitals was associated with the reduction of clinical visits (RR=0.45, 95% CI 0.22 to 0.92).



Asthma education: an essential component in Asthma management

Louis-Philippe Boulet
European Respiratory Journal 2015

- offering educational services through an experienced educator who attended family medicine clinics resulted in a significant reduction in unscheduled physician visits and more appropriate medication use, as well as increased provision of an action plan.
- Furthermore, an emergency department-based “automatic” referral programmed to an asthma educator resulted in improved assessment of asthma control and a marked increase in such referral.

Conclusion

- Asthma education is effective in reducing exacerbation and hospitalizations
- Specific education strategies must be utilized to maximize learning
- There are significant barriers in asthma learning
- Every respiratory therapist should be an asthma educator



Questions/Final Thoughts

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