# Asthma Management

Presented by Tricia Strickland, DNP, RN August 17, 2023

# Learning Objective

- Identify four key elements to achieve optimal asthma control.
- Identify ways to control asthma triggers in the school setting.
- Describe updated asthma guidelines for SMART therapy.





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### **Asthma Basics**

- What is Asthma?
  - Asthma is a chronic lung condition with reversible airway constriction.
  - Three main components of Asthma
     > Bronchoconstriction
    - ➢ Inflammation
    - ➢ Increased mucus production



### **Healthy Airway**





### What is asthma?





Inflammation

Airways narrow

Irritated, red and swollen



### What is asthma?

**Increased Mucus** 

Secretion of mucus blocks the airway



### Asthma Basics Learning Module

(American Lung Association)

 <u>https://www.lung.org/lung-heal</u> <u>diseases/lung-disease-</u> <u>lookup/asthma/learn-about-</u> <u>asthma/asthma-basics</u>.

#### Asthma Basics Learn more about asthma by participating in our free online learning module

🗧 🖸 🟠 🖞 https://www.lung.org/lung-health-diseases/lung-disease-lookup/asthma/learn-about-asthma/asthma-basics

Educators



#### This program teaches participants to:

- Recognize and manage triggers,
- Understand the value of an asthma action plan, and
- Recognize and respond to a breathing emergency.

One of the highlights of the program is the <u>What Is Asthma? Animation</u> that shows the three primary changes in the airways during an asthma episode.

Asthma Basics also includes comprehensive resources, including asthma medication devices and demonstration videos and downloads.

Role of the School Nurse in Asthma Managemen t

The school nurse is responsible for training school personnel regarding:

the administration of needed medications
 response to a student's asthma symptoms
 minimizing asthma triggers<sup>1</sup>

## Asthma Management





Assessing Asthma Control

#### Asthma Control Tests (Validated Tools)

- TRACK<sup>™</sup> (Test for Respiratory and Asthma Control in Kids) age < 5 years</li>
  - caregiver completed questionnaire of respiratory control in preschool-aged children

>only asthma control test for children < 4 years of age

 C-ACT (Childhood Asthma Control Test) ages 4-11 years

➢ both self-reporting and parent report

ACT (Asthma Control Test<sup>™</sup>) ≥ 12 years
 > self-reporting







Patient's Name: \_\_\_\_\_

19

or less

If your child's score is 19 or less, it

may be a sign that your child's

asthma is not controlled as well as

it could be. Bring this test to your doctor to talk about your results.

#### Childhood Asthma Control Test for children 4 to 11 years.

#### How to take the Childhood Asthma Control Test

- Step 1 Let your child respond to the first four questions (1 to 4). If your child needs help reading or understanding the question, you may help, but let your child select the response. Complete the remaining three questions (5 to 7) on your own and without letting your child's response influence your answers. There are no right or wrong answers.
- Step 2 Write the number of each answer in the score box provided.
- Step 3 Add up each score box for the total.
- Step 4 Take the test to the doctor to talk about your child's total score.

#### Have your child complete these questions.

1. How is your asthma today?





Today's Date:\_\_\_\_\_

Patient's Name:

#### FOR PATIENTS:

Take the Asthma Control Test<sup>™</sup> (ACT) for people 12 yrs and older. Know your score. Share your results with your doctor.

Step 1 Write the number of each answer in the score box provided.

- Step 2 Add up each score box for your total.
- Step 3 Take the test to the doctor to talk about your score.



If your score is 19 or less, your asthma may not be controlled as well as it could be. Talk to your doctor.

#### FOR PHYSICIANS:

#### The ACT is:

- Clinically validated by spirometry and specialist assessment<sup>1</sup>
- Supported by the American Lung Association
- A self-administered, brief, 5-question assessment that can help you assess your patients' asthma during the past 4 weeks

Reference: 1. Nathan RA et al. J Allergy Clin Immunol. 2004;113:59-65.



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# Monitoring Symptoms

Early Warning Signs and Symptoms

• May progress to an asthma attack

Signs and Symptoms of Asthma Attack

 Not all students experience the same symptoms during an asthma attack

## Early Warning Signs and Symptoms of Asthma

- cough
- itchy throat or chin (tickle in throat)
- stomachache (younger children)
- grumpiness or irritability
- fatigue
- headache

- behavioral changes
- decrease appetite
- persistent cough
- agitation
- drop in peak flow meter
- less active than normal at recess or during PE

## Possible Signs and Symptoms of Asthma Attack

- becoming anxious or scared
- shortness of breath
- rapid labored breathing
- incessant coughing
- nasal flaring
- pulling-in of neck or chest with breathing (retractions)
- sweaty, clammy skin

- requiring rescue medications every four hours or more frequently
- tightness in chest (chest pain)
- wheezing while breathing in or out
- vomiting from hard coughing
- shoulders hunched over

**Respiratory illnesses** 

Allergens

Weather

Irritants

Emotions

Exercise



Respiratory Illnesses
Colds
Viral infections
Ear infections
Sinus infections
Bronchitis
Pneumonia

### Allergens

Pollen (trees, grasses, weeds)
 Animal dander (dogs, cats, birds, gerbils, mice, rats)
 Dust and dust mites
 Molds
 Cockroaches





### Irritants

- Diesel exhaust
- Smoke (cigarette, wood)
- ≻Air pollution
- ≻Dust
- ➢ Air fresheners
- ➢ Perfumes
- Disinfectants
- ➤Cleaners
- Laboratory and vocational education chemicals
- ➤Art supplies
- ➢ Pesticides
- Chemical with volatile organic compounds (permanent & dry erase markers, paints, glues, cleaners)



### Emotions

- ➤Laughter
- ➢Crying
- ≻Excitement
- ≻Anxiety
- ➤Tension
- ➤Stress



### Exercise

- Exercise-Induced Bronchospasm (EIB)
  - While some students perceive symptoms of asthma only when exercising, EIB in the absence of other triggers is rare.
  - The student may have chronic airway inflammation and EIB is evidence of poor control.

# Asthma Severity Rating

Intermittent

Mild Persistent

**Moderate Persistent** 

Severe Persistent



## **Asthma Medications**

**Long-term Control Medications** 

**Quick Relief Medications** 

Work slowly over time to prevent episodes from occurring.

- Inhaled corticosteroids (ICS)
- Long-acting beta-agonist
- Combination of inhaled corticosteroids and long-acting beta-agonists

### Used daily even when feeling well

Work quickly to relieve symptoms usually within 30 minutes.

- Short acting beta agonist (SABA)
- Help keep an asthma episode from getting worse.

#### If need it more than 2x per week, notify Primary Care Provider

## Taking Medications

- Metered Dose Inhalers (MDI)
- Always require a spacer



For more videos, handouts, tutorials and resources, visit Lung.org.

Scan the QR Code to access How-To Videos



## NHLBI Guideline 2020 Updates

- National Heart Lung Blood Institute (NHLBI)
- 13 years since the last revision
- Stepwise Approach
  - clinician escalates treatment as needed by moving to a higher step
  - deescalates treatment by moving to a lower step once asthma is well controlled for at least 3 consecutive months.

2020 FOCUSED UPDATES TO THE Asthma Management Guidelines





A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group



U.S. Department of Health and Human Services National Institutes of Health National Heart, Lung, and Blood Institute

### Ages 5 Through 11

#### EPR3 and 2020 Update Comparison





### **Stepwise Approach for Management of Asthma**



Note Steps 2-4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment in  $\geq$ 5 years of age. If Step 4 or higher is needed, consider asthma specialist



# SMART Therapy

Single maintenance and reliever therapy.

- Ages 5-11 Years & Ages 12+ Years
  - Steps 3 and 4
  - For individuals with moderate to severe persistent asthma already taking low- or medium- dose ICS
  - Preferred treatment is a single inhaler with ICS-fomoterol
  - SMART used for controller therapy AND quick-relief therapy.

#### **Current SMART Therapy Options**

Symbicort MDI (budesonide/formoterol)

6-11 yr.: 80/4.5 2 puffs 2x/day ≥12 yr.: 80-160/4.5 2 puffs 2x/day

Spacer recommended

Max doses/day: 8 for children; 12 for adults Dulari MDI (mometasone/ formoterol)

5-11 yr.: 50/5 2 puffs 2x/day >12 yr.: 100-200/5 2 puffs 2x/day

Spacer recommended

Max doses/day: 8 for kids; 12 for adults



#### Ages 12 years and older

#### EPR3 and 2020 Update Comparison





### **Stepwise Approach for Management of Asthma**

#### 12 Years and Older: EPR3 and 2020 Updates Comparison

				Stop 1	Step 5	High-dose ICS +
			Step 3	Slep 4	High-dose ICS +	LABA + oral
		Step 2	Otep 5	Medium-dose CS	LABA	corticosteroids
	Step 1		Low-dose ICS +	+ LABA	and consider:	and consider:
		Low-dose ICS	LABA or	Alternative:	Omalizumab for	Omalizumab for
σ	PRN SABA	Alternative:	medium-dose ICS	Medium-dose ICS	patients who have	patients who have
rre		Cromolyn, LTRA,	Alternative:	+ either LTRA,	allergies	allergies
<u> </u>		Nedocromil, or	Low-dose ICS +	Theophylline, or		
Pre		Theophylline	either LTRA,	Zileuton		
33			Theophylline			Daily high-dose
L L				Daily + PRN	Dally modium/bigh_dooo	ICS-LABA + oral
ш		Daily low-dose	Daily + PRN	combination	ICS-LARA + LAMA	systemic
	FRIN SADA	ICS + PRN SABA		medium-dose	+ PRN SABA	dorticosteroids +
tes		or	ICS-formateral	ICS-formoterol	and consider:	FRN SABA
dat		PRN concomitant		Y	asthma biologics	and consider.
ď		ICS + SABA		$\land$	(eg, anti-IgE,	eq anti-laF
0			$\mathbf{A}$		anti-IL6, anti-IL5R,	anti-IL6, anti-IL5R.
202			$\mathbf{X}$		anti-IL4/IL13	anti-IL4/IL13
• •	Intermittent Asthma	Mild Intermittent Asthma	Moderate Pers	sistant Asthma	Severe Persi	stant Asthma
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						Lung Associatio

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### EPR3 vs. 2020 Update: Quick Relief Medications

#### 5-11 AND 12 years and older

### **EPR3** Recommends

PRN SABA for quick-relief only, regardless of asthma severity.

Up to 2 tx of 2-6 puffs by MDI or neb tx, 20 minutes apart. Short course of systemic corticosteroids may be needed. (p. 382)

4-8 puffs every 20 for 4 hours (adults). For 3 doses, then every 1-4 hours (children). (p. 386)

### 2020 Update Recommends

In Steps 1, 2, 5, and 6, use PRN SABA.

In Steps 3 and 4, the preferred option is SMART Therapy.



### Asthma Action Plan

#### **ASTHMA ACTION PLAN**





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



Get help from a doctor.

GO		Use these daily controller medicines:			
You have all of these: • Breathing is good • No cough or wheeze • Sleep through the night • Can work & play	Peak flow: from to	MEDICINE	HOW MUCH	HOW OFTEN/WHEN	
		For asthma with exercise,			
CAUTION		Continue with green zone medicine and add:			
You have <i>any</i> of these: • First signs of a cold • Exposure to known trigger • Cough Mild wheeze • Tight chest	Peak flow: from to	MEDICINE	ном мисн	HOW OFTEN/ WHEN	
Coughing at night		CALL YOUR ASTHMA CARE PROVIDER.			
DANGER		Take these medicines	and call your doct	or now.	
Your asthma is getting worse fast: • Medicine is not helping • Breathing is hard & fast • Nose opens wide • Trouble speaking		MEDICINE	HOW MUCH	HOW OFTEN/WHEN	
· Ribs show (in children)					

GET HELP FROM A DOCTOR NOW! Your doctor will want to see you right away. It's important! If you cannot contact your doctor, go directly to the emergency room. DO NOT WAIT. Make an appointment with your asthma care provider within two days of an ER visit or hospitalization.

sthma Action Plan - School Medi	MRN: 6127046		
Severity: mild persistent	Description: 9 year old temale		
Triggers: dust mites; exercise; smoke, od	ors, and sprays; pollen		
Green Zone: Doing Well			
You have all of these: • Breathing is good • No cough or wheeze • Can work/play • Sleeps all night	Inhaled Medication albuterol (PROVENTIL) (5 MG/ML) 0.5% Nebu Soln	How much to take 2 Puffs	When to take it Twice daily
	Pre-Exercise Medication albuterol (PROVENTIL) (5 MG/ML) 0.5% Nebu Soln	How much to take 2 Puffs	When to take it Prior to exercise
Yellow Zone: Asthma is Getting Wors	e		
<ul> <li>Cough</li> <li>Wheeze</li> <li>Tight chest</li> <li>Coughing at night</li> <li>THEN follow the instructions in the</li> </ul>	Inhaled Medication albuterol (PROVENTIL) (5 MG/ML) 0.5% Nebu Soln	How much to take 2 Puffs	When to take it Every 2 hours PRI
RED ZONE and call the doctor right away!			
Pred Zone: Medical Alert!			
<ul> <li>Medicine is not helping</li> <li>Breathing is hard and fast</li> <li>Nose opens wide</li> <li>Can't walk or talk well</li> <li>Ribs show</li> </ul>	Inhaled Medication albuterol (PROVENTIL) (5 MG/ML) 0.5% Nebu Soln	How much to take 4-8 Puffs	When to take it Every 15 minutes until you get help
Call 911 immediately if the following danger signs are present: Trouble walking/talking due to shortness of breath   Lips or fignernails are blue   Still in the Red Zone after 15 minutes Signed by: Kristin MD Signed on: 7/25/2023			
At: 8:05 AM			
PCP and Center	Center		
None Specified	None		



#### Asthma ten Asthma Asthma Action Plan - School Medication Form

MRN: 6127046 Description: 9 year old female

ASTHMA,ASTHMA 7/10/14 has asthma and may need to take medication at school. TEN The treatment plan for managing asthma at school is as follows:

Asthma Severity: mild persistent

Asthma Triggers: dust mites, exercise, smoke, odors, and sprays, pollen

Patient's Pre-Exercise Medication	Pre-Exercise Medication Dose	Pre-Exercise Medication Frequency
albuterol (PROVENTIL) (5	2 Puffs	Prior to exercise
MG/ML) 0.5% Nebu Soln		
Patient's Inhaled Medication	Inhaled Medication Dose	Inhaled medication Frequency
albuterol (PROVENTIL) (5	2 Puffs	Every 2 hours PRN
MG/ML) 0.5% Nebu Soln		

Student recognizes symptoms of asthma and will seek assistance if needed. Student may carry and self-administer the medication ordered above. Student is to inform school nurse if using albuterol inhaler more than 4 times/day. Student has been instructed in use of device needed to administer medication. Student has demonstrated the skill level necessary to use the medication appropriately. Other Instructions: This is where I put additional instructions.

Health Care Provider's Signature	Date:
Health Care Provider's Printed Name	Phone:

THIS AUTHORIZATION IS GOOD FOR THE CURRENT SCHOOL YEAR ONLY. (Summer School if applicable) Parent/Guardian's Permission

I request that the school nurse, principal, or designated staff member be permitted to discuss my child's medical issues with health care providers and to administer to my child, <u>Asthma ten Asthma</u>, or allow my child to carry and self-administer as indicated above, the medication prescribed by <u>(Kristin , , MD)</u>. The medication is to be furnished by me in the original container labeled by the pharmacy or health care provider's name is on the label. I understand that my signature indicates my understanding that the school accepts no liability for untoward reactions when the medication is administered, or my child self-administers, in accordance with the health care provider's directions. If notified by school personnel that medication remains at the end of the school year, I will collect the medication from the school or understand that it will be destroyed. I am the parent or the legal guardian of the child named.

Parent/Guardian Signature		Date:	
Phone Contacts	Home:	Cell:	
	Work:	Other:	

THANK YOU FOR YOUR ASSISTANCE. PLEASE RETURN COMPLETED FORM TO SCHOOL NURSE.
School Nurse Signature
Date:

Resources for Asthma Management in the Educational Setting

- Bree Collaboration Pediatric Asthma Guidelines
   <u>Bree-Pediatric-Asthma-Report-Final.pdf</u> (qualityhealth.org)
- American Lung Association/Asthma Basics
   Asthma Basics | American Lung Association
- Asthma Management in Educational Setting
   <u>Taking Asthma Care to School (www.k12.wa.us)</u>

## References

- 1. American Lung Association (n.d.). *Asthma*. lung.org. Retrieved July 20, 2023, from <u>https://www.lung.org/lung-health-diseases/lung-disease-lookup/asthma</u>.
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- 3. National Heart, Lung, and Blood Institute (February 4, 2021). Asthma Management Guidelines: Focused Updates 2020. nlbi.nih.gov. Retrieved July 20, 2023. <u>https://www.nhlbi.nih.gov/health-topics/asthma-management-guidelines-2020-updates</u>.
- National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007.; 2007. <u>https://www.nhlbi.nih.gov/sites/default/files/media/docs/EPR-3\_Asthma\_Full\_Report\_2007.pdf</u>