Asthma Care in School

Missouri Coordinated School Health Conference

April 14, 2025

Presenter Disclosures

- I disclose the absence of personal financial relationships with commercial interests relevant to this educational activity within the past 12 months.
- I will not discuss off label use of medications or devices.

Why worry about asthma?

Leading cause for
- Common chronic condition
- Missed school
- ED visits/hospital stays

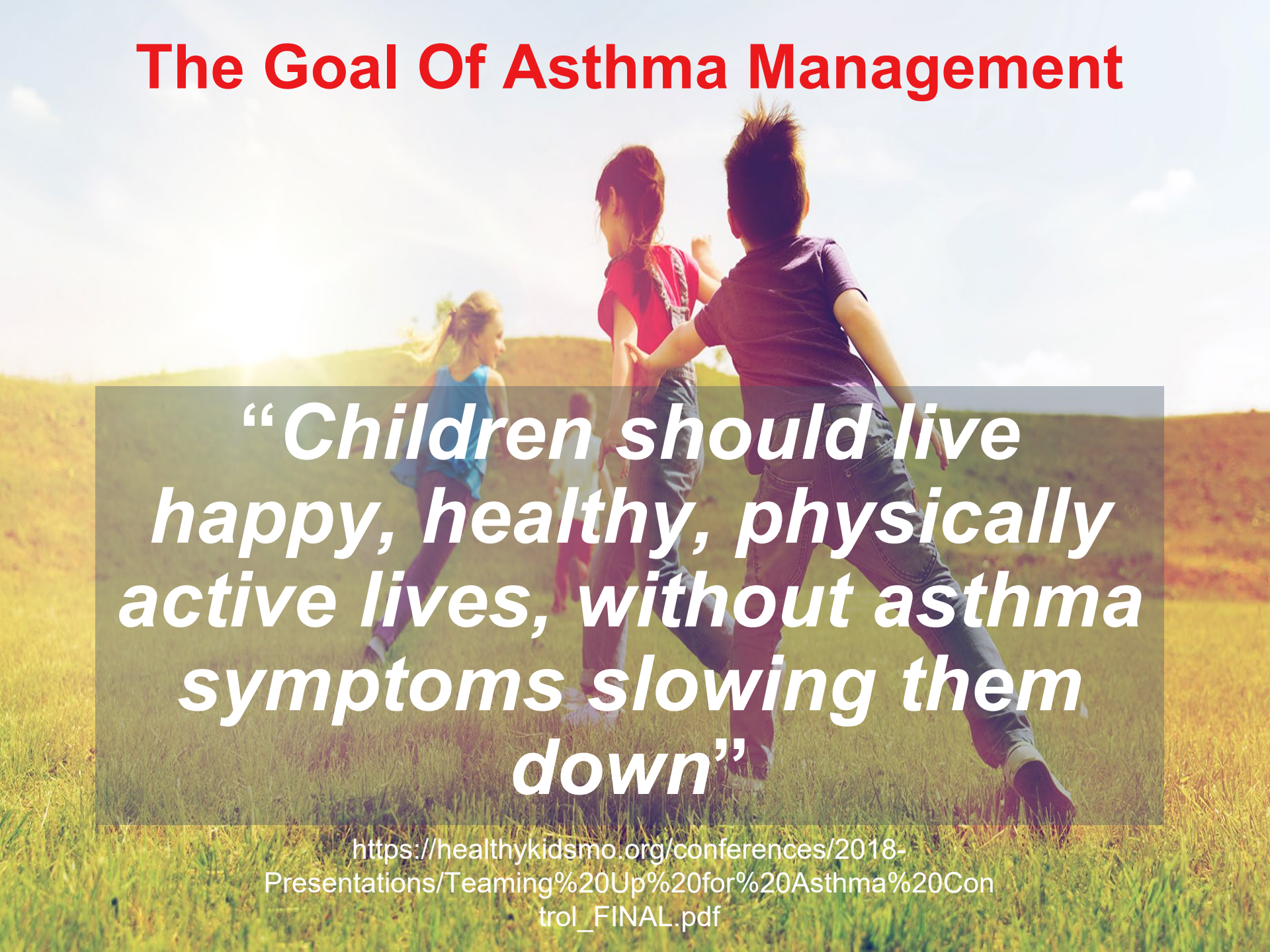
The Goal of Asthma Management

Children's Hospital Wisconsin; https://chw.org/medical-care/asthma/asthma-control-goals

When asthma is in good control, these goals can be reached:

- People with asthma will have symptoms
- No limits in activities of play
- No missed school or work
- Fewer attacks or flares
- No ER or hospital visits for asthma
- Decreased need for quick relief medicine

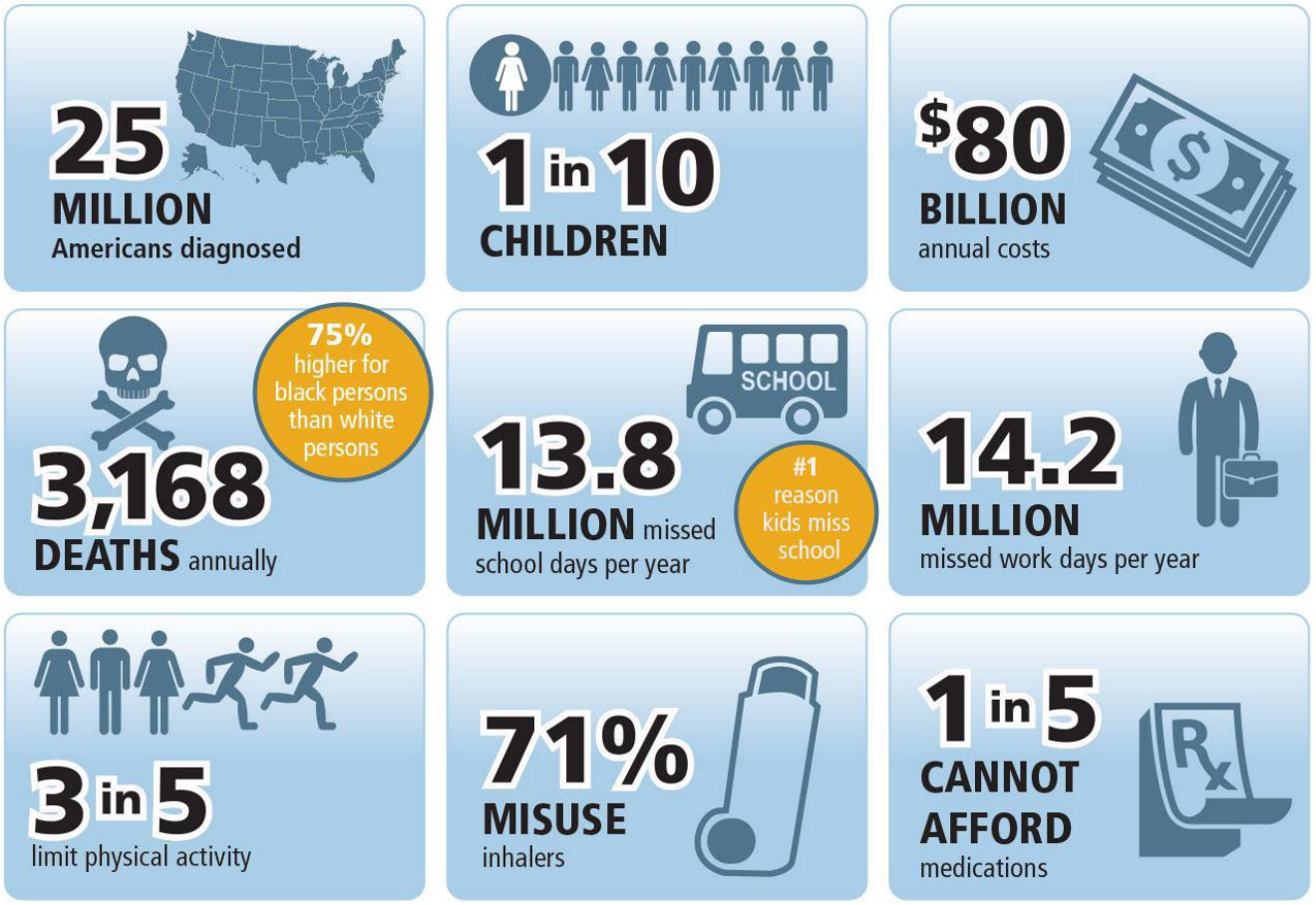
The Goal Of Asthma Management



"Children should live happy, healthy, physically active lives, without asthma symptoms slowing them down"

https://healthykidsmo.org/conferences/2018-Presentations/Teaming%20Up%20for%20Asthma%20Control_FINAL.pdf

Asthma



Asthma & Allergy Network

What I hear about asthma education for school nurses

- School nurses don't need more asthma education

- School nurses know all they need to know about asthma

As You Listen to the Presentation…

- Consider how many students you know who have asthma?
- How will you use the information you receive here today?
- How can you help students prevent their asthma symptoms from appearing?
- How can you help improve asthma management at your school?

School Nursing Definition

N.E.W.S Webinar, 2018-2019; School Nursing Standards, Part 1, Introduction to School Nursing: Scope and Standards of Practice; Linda Wolfe, EdD, RN, NCSN, FNASN

"What we do to facilitate optimal care . . . . Not just keeping them from having an asthma attack in school but how we can assist that child to not have an asthma crisis at all . . . . to learn self care . . . . .

"that is not doing things how they have always been done"

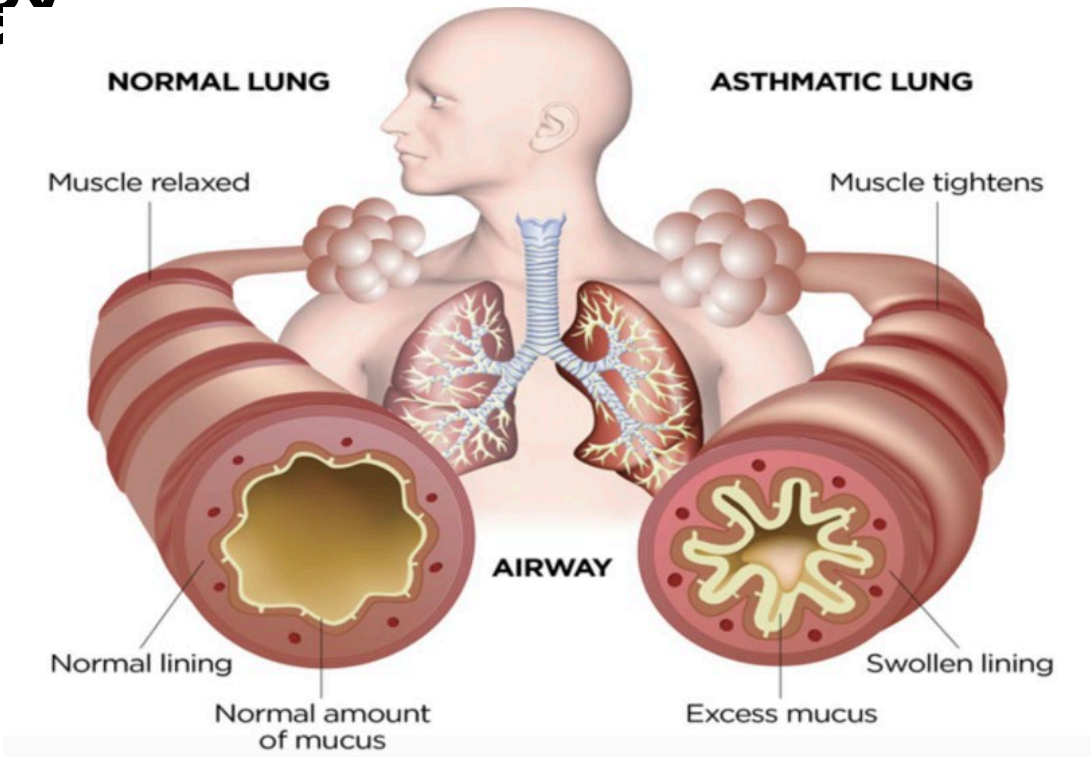
What is Asthma?

- Asthma is a problem with the tubes that carry air into the lungs making it hard to breathe.
- The airways get so narrow the air can't move freely.
- You may or may not hear wheezing.
- They will exhibit shortness of breath.

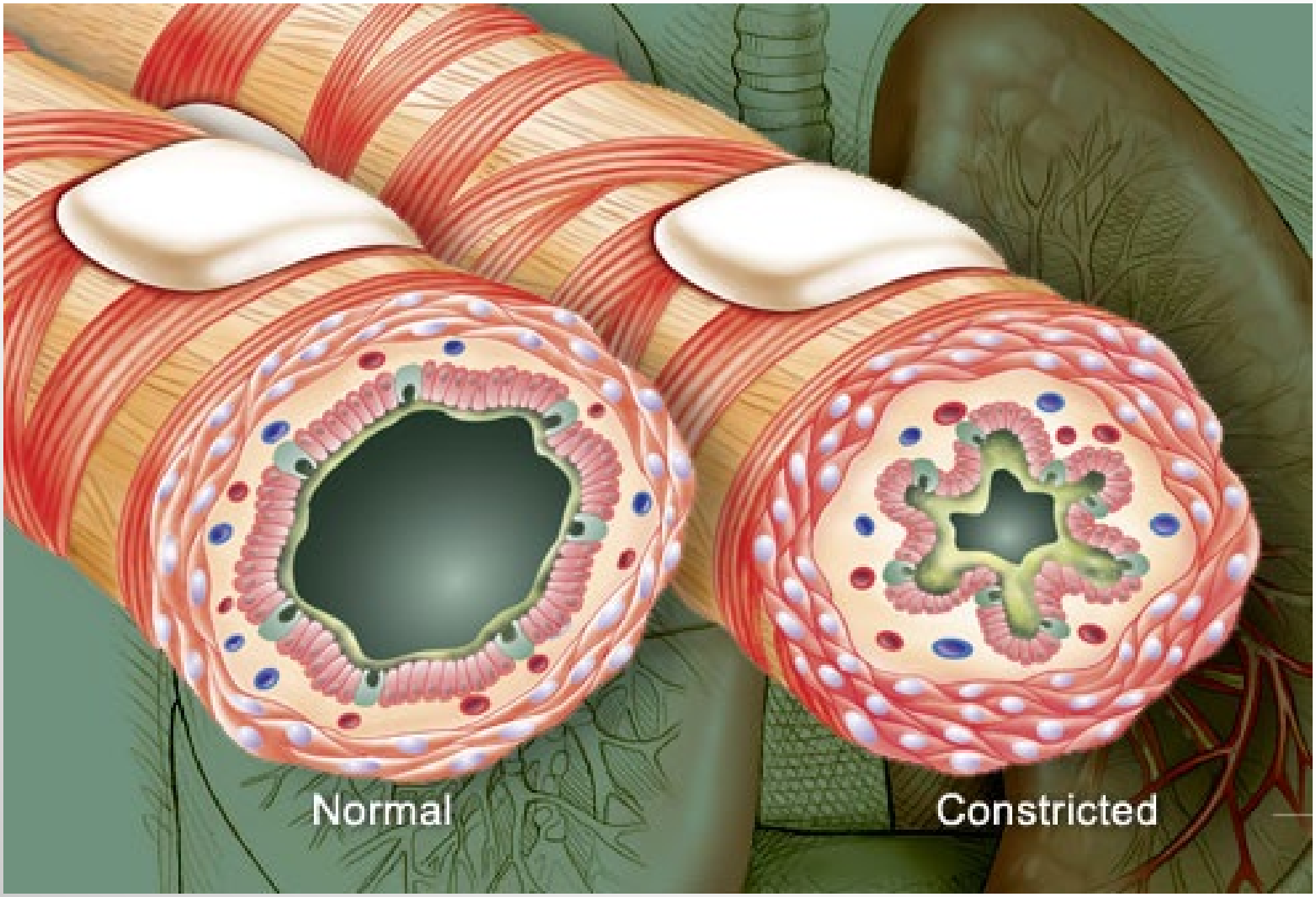
Photo – www.webmd.com/asthma/slideshow-asthma-overview

Asthma Pathophysiology Overview

- Constricted muscles
- Inflammation
- Narrowed airways
- Airway hyper-reactivity
- Remodeled airway



Certain Triggers Can Cause Inflammation in the Airways



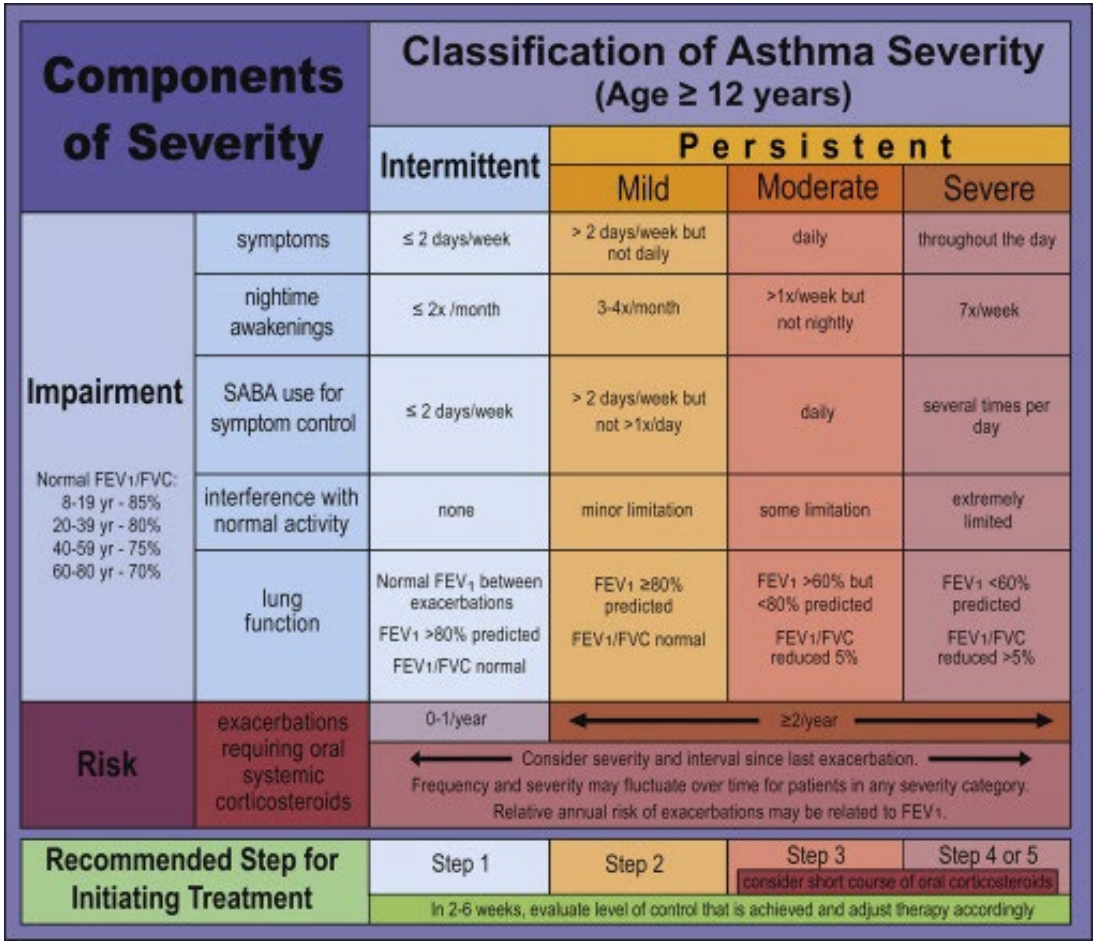
What is their knowledge and perception?

Triggering Factors

- Respiratory tract infection
- Allergens
  - Dust mite droppings, mold spores, pet skin flakes (dander), cockroach droppings, dried rodent urine, pollen
- Irritants
  - Particles, vapors, and gases
- Cold air exposure
- Emotions
- Exertional Activity

Classification of Asthma

- Intermittent
- Mild Persistent
- Moderate Persistent
- Severe Persistent



Components of Severity		Classification of Asthma Severity (Age ≥ 12 years)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment Normal FEV1/FVC: 8-19 yr - 85% 20-39 yr - 80% 40-59 yr - 75% 60-80 yr - 70%	symptoms	≤ 2 days/week	> 2 days/week but not daily	daily	throughout the day
	nighttime awakenings	≤ 2x /month	3-4x/month	>1x/week but not nightly	7x/week
	SABA use for symptom control	≤ 2 days/week	> 2 days/week but not >1x/day	daily	several times per day
	interference with normal activity	none	minor limitation	some limitation	extremely limited
	lung function	Normal FEV_1 between exacerbations FEV_1 >80% predicted FEV1/FVC normal	FEV_1 ≥80% predicted FEV1/FVC normal	FEV_1 >60% but <80% predicted FEV1/FVC reduced 5%	FEV_1 <60% predicted FEV1/FVC reduced >5%
Risk	exacerbations requiring oral systemic corticosteroids	0-1/year	≥2/year		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. Relative annual risk of exacerbations may be related to FEV_1.			
Recommended Step for Initiating Treatment		Step 1	Step 2	Step 3 consider short course of oral corticosteroids	Step 4 or 5
		In 2-6 weeks, evaluate level of control that is achieved and adjust therapy accordingly			

Validated Surveys - Control

- ATAQ = Asthma Therapy Assessment Questionnaire ©

- ACQ = Asthma Control Questionnaire ©

- ACT = Asthma Control Test ©

  (for more information “google” survey name)

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

Know the score.

This test will provide a score that may help your doctor determine if your child's asthma treatment plan is working or if it might be time for a change.

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.

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. No matter what the score, bring this test to your doctor to talk about your child's results.

Have your child complete these questions.

1. How is your asthma today?

0	1	2	3	SCORE
Very bad	Bad	Good	Very good	☐

2. How much of a problem is your asthma when you run, exercise or play sports?

0	1	2	3	
It's a big problem, I can't do what I want to do.	It's a problem and I don't like it.	It's a little problem but it's okay.	It's not a problem.	☐

3. Do you cough because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	☐

4. Do you wake up during the night because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	☐

Please complete the following questions on your own.

5. During the last 4 weeks, on average, how many days per month did your child have any daytime asthma symptoms?

5	4	3	2	1	0	
Not at all	1-3 days/mo	4-10 days/mo	11-18 days/mo	19-24 days/mo	Everyday	☐

6. During the last 4 weeks, on average, how many days per month did your child wheeze during the day because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days/mo	4-10 days/mo	11-18 days/mo	19-24 days/mo	Everyday	☐

7. During the last 4 weeks, on average, how many days per month did your child wake up during the night because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days/mo	4-10 days/mo	11-18 days/mo	19-24 days/mo	Everyday	☐

TOTAL ☐

Please turn this page over to see what your child's total score means.

Have your child complete these questions.

to talk about your child's results.

SCORE

1. How is your asthma today?

0 Very bad

1 Bad

2 Good

3 Very good

2. How much of a problem is your asthma when you run, exercise or play sports?

0 It's a big problem, I can't do what I want to do.

1 It's a problem and I don't like it.

2 It's a little problem but it's okay.

3 It's not a problem.

3. Do you cough because of your asthma?

0 Yes, all of the time.

1 Yes, most of the time.

2 Yes, some of the time.

3 No, none of the time.

4. Do you wake up during the night because of your asthma?

0 Yes, all of the time.

1 Yes, most of the time.

2 Yes, some of the time.

3 No, none of the time.

Please complete the following questions on your own.

5. During the last 4 weeks, on average, how many days per month did your child have any daytime asthma symptoms?

5 Not at all | 4 1-3 days/mo | 3 4-10 days/mo | 2 11-18 days/mo | 1 19-24 days/mo | 0 Everyday

6. During the last 4 weeks, on average, how many days per month did your child wheeze during the day because of asthma?

5 Not at all | 4 1-3 days/mo | 3 4-10 days/mo | 2 11-18 days/mo | 1 19-24 days/mo | 0 Everyday

7. During the last 4 weeks, on average, how many days per month did your child wake up during the night because of asthma?

5 Not at all | 4 1-3 days/mo | 3 4-10 days/mo | 2 11-18 days/mo | 1 19-24 days/mo | 0 Everyday

TOTAL

Please turn this page over to see what your child's total score means.

Missouri School Asthma Manual

SCHOOL ASTHMA HISTORY AND NEEDS ASSESSMENT

Student Name:_____ Teacher/Team:_____ School Year_____

1. How long has your child had asthma?_____
2. What signs and symptoms signal a flare up of your child's asthma?_____
_____
3. Describe any special care your child requires at school. _____
_____
4. Any dietary restrictions to follow at school?_____
_____
5. Describe the plan of care in the event of field trips, after-school activities and exercise. _____
_____
6. How many days of school did your child miss last school year?
☐ 0 days ☐ 1-2 days ☐ 3-5 days ☐ 6-9 days ☐ 10-14 days ☐ 15 or more days
7. During the past year has your child's asthma ever stopped him/her from taking part in sports, recess, physical education or other school activities?
☐ None ☐ Some of the time ☐ All of the time
8. In the past month, during the day, how often has your child had a hard time with coughing, wheezing or breathing?
☐ 2 times a week or less ☐ More than 2 times a week ☐ All the time - throughout the day - every day
9. In the past month, during the night, how often does your child wake up or have a hard time with coughing, wheezing or breathing?
☐ 2 nights a month or less ☐ More than 2 nights a month ☐ More than 2 nights a week ☐ More than 4 nights a week

Equipment and Supplies Provided by Parents

_____ Daily Asthma Medications
_____ Peak Flow Meter Supplies (with mouthpiece)
_____ Nebulizer Tubing/Mask
_____ Emergency Asthma Medications
_____ Spacer for Metered Dose Inhaler Use

Please list asthma and allergy medications that your child takes at home:_____
_____

I rate my child's need for additional knowledge about asthma as:
0-None 1-Very Low 2-Low 3-Moderate 4-High 5-Very High (please circle one)

I rate my child's need to improve skills for self-management of asthma (use of inhalers, peak flow meters, symptom reporting) as:
0-None 1-Very Low 2-Low 3-Moderate 4-High 5-Very High (please circle one)

I rate my child's health problems related to asthma currently as (Optional: See Asthma Control Test: D-6, D-7 of Missouri School Asthma Manual)
0-None 1-Very Low 2-Low 3-Moderate 4-High 5-Very High (please circle one)

I rate my level of concern about asthma posing a safety risk for my child at school:
0-None 1-Very Low 2-Low 3-Moderate 4-High 5-Very High (please circle one)

I rate MY need for additional asthma information as:
0-None 1-Very Low 2-Low 3-Moderate 4-High 5-Very High (please circle one)

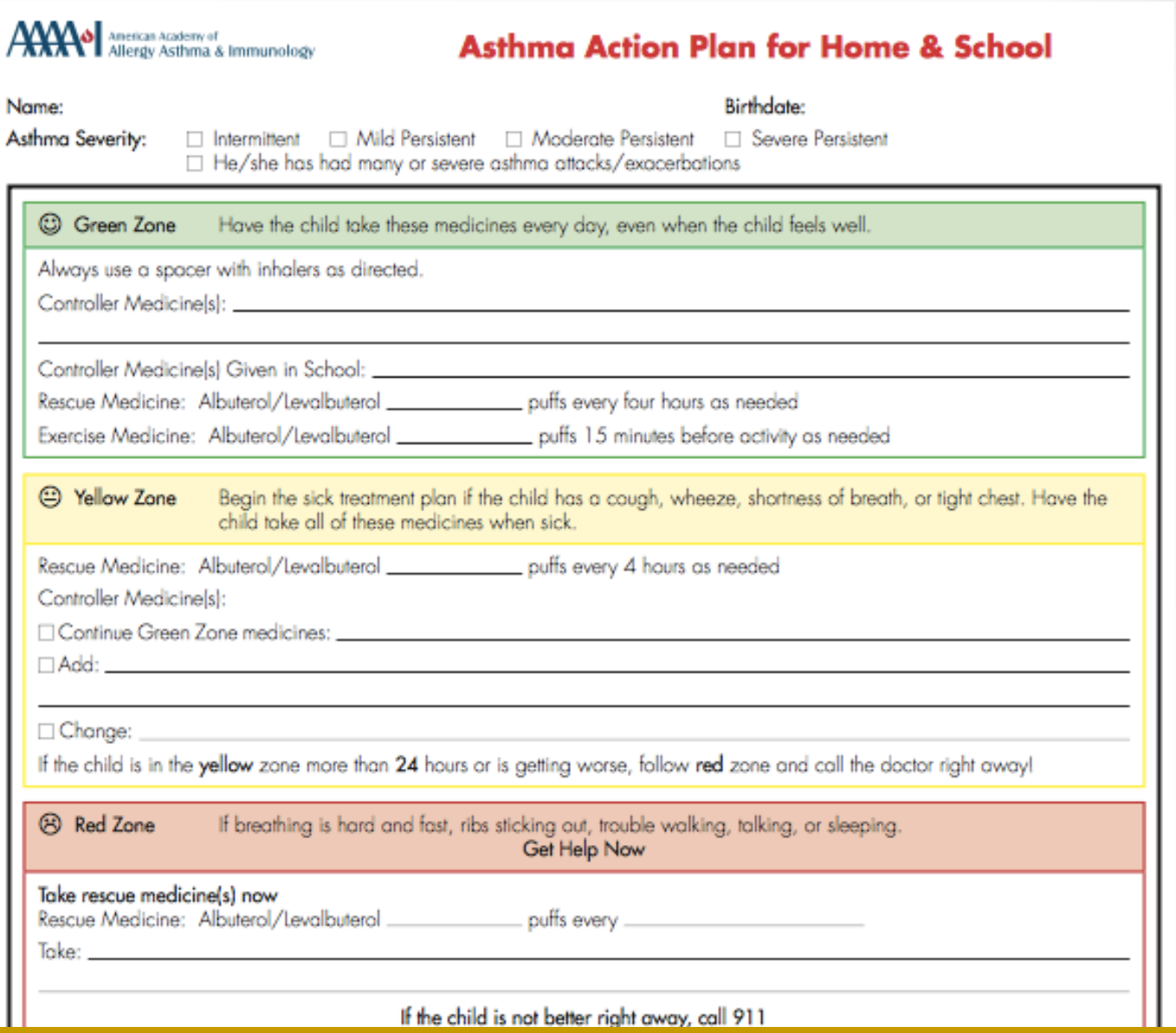
Asthma Needs Score:_____ (sum of item scores)

Child's personal best peak flow number is _____
Green Zone (80-100% Personal Best) _____ Yellow Zone (50-80% Personal Best)_____
Red Zone (Below 50% Personal Best) _____
Person Interviewed_____ Date_____
Signature of School Nurse _____ Date_____

MEDICATIONS

- Relievers
  - Work fast
  - Treat Symptoms
  - Always have available
  - Don't refer to as emergency medication
- Controllers
  - Work long term
  - Do not provide immediate relief**

Asthma Action Plan



American Academy of Allergy Asthma & Immunology

Asthma Action Plan for Home & School

Name: Birthdate:

Asthma Severity: ☐ Intermittent ☐ Mild Persistent ☐ Moderate Persistent ☐ Severe Persistent
☐ He/she has had many or severe asthma attacks/exacerbations

Green Zone Have the child take these medicines every day, even when the child feels well.

Always use a spacer with inhalers as directed.

Controller Medicine(s): _____

_____

Controller Medicine(s) Given in School: _____

Rescue Medicine: Albuterol/Levalbuterol _____ puffs every four hours as needed

Exercise Medicine: Albuterol/Levalbuterol _____ puffs 15 minutes before activity as needed

Yellow Zone Begin the sick treatment plan if the child has a cough, wheeze, shortness of breath, or tight chest. Have the child take all of these medicines when sick.

Rescue Medicine: Albuterol/Levalbuterol _____ puffs every 4 hours as needed

Controller Medicine(s):

☐ Continue Green Zone medicines: _____

☐ Add: _____

_____

☐ Change: _____

If the child is in the **yellow** zone more than **24** hours or is getting worse, follow **red** zone and call the doctor right away!

Red Zone If breathing is hard and fast, ribs sticking out, trouble walking, talking, or sleeping.
Get Help Now

Take rescue medicine(s) now

Rescue Medicine: Albuterol/Levalbuterol _____ puffs every _____

Take: _____

_____

If the child is not better right away, call 911

https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Libraries/16-asthma-action-plan-v10_hires.pdf

School Staff: Follow the Yellow and Red Zone plans for rescue medicines according to asthma symptoms.
Unless otherwise noted, the only controllers to be administered in school are those listed as "given in school" in the green zone.

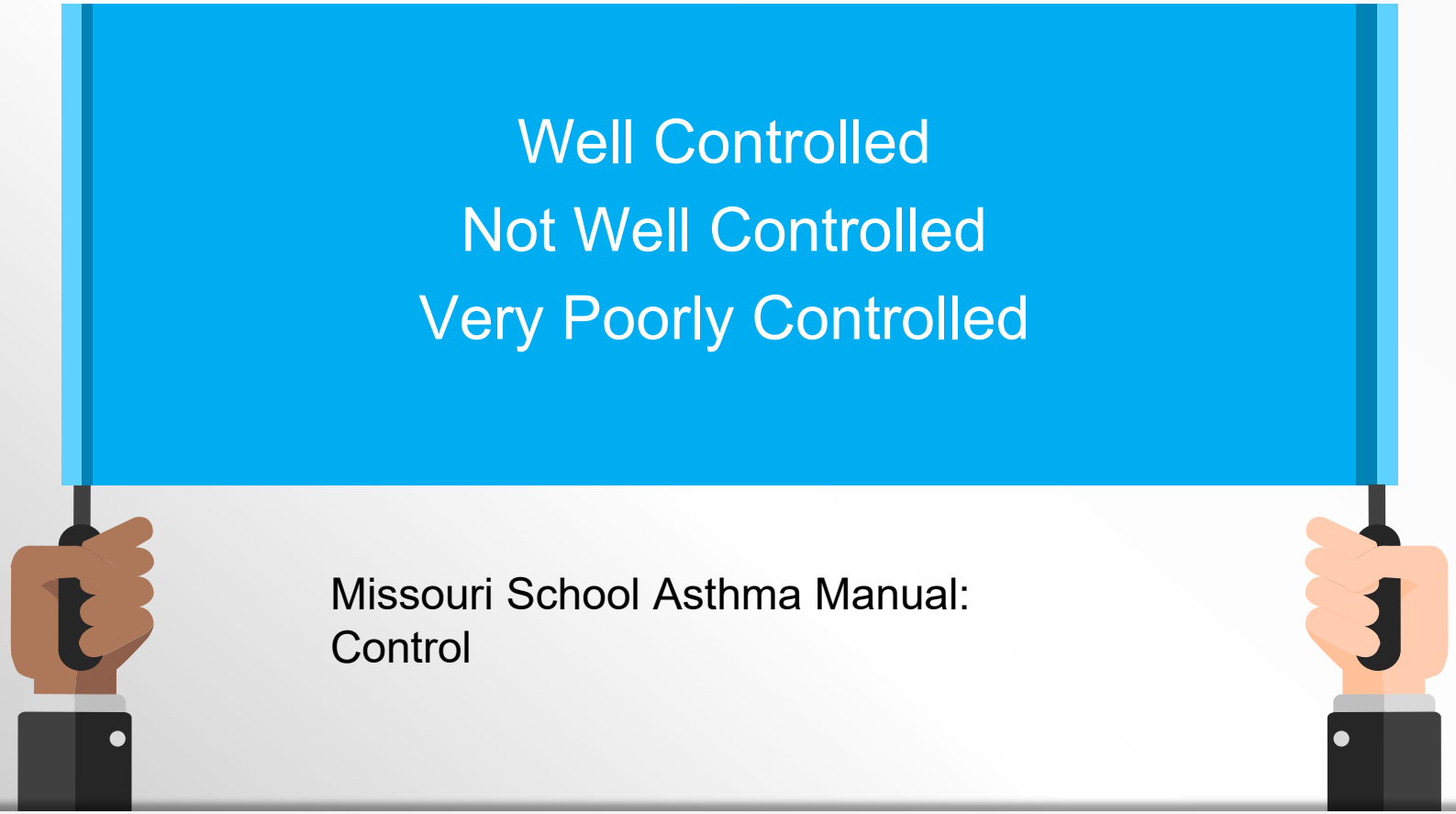
☐ Both the asthma provider and the parent feel that the child may carry and self-administer their inhalers

Is the Asthma Action Plan Working

See form on page 51; Managing Asthma, NHLBI

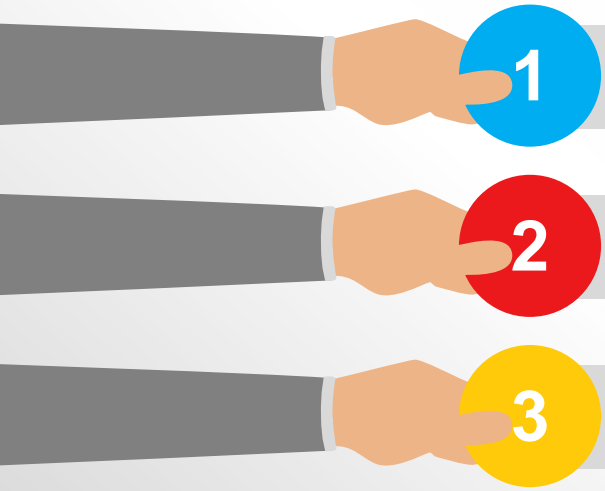
Asthma Control

Control Classifications



Missouri School Asthma Manual:
Control

Baylor Rule of Twos



1. Have asthma symptoms or take your quick relief inhaler more than 2 times a week
2. Awaken at night with symptoms more than 2 times a month
3. Refill your quick-relief inhaler more than 2 times a year

https://www.baylorhealth.com/SiteCollectionDocuments/Documents_Dallas/Art for Asthma/BMFLCC-109_RuleOfTwo-11x17PST-v4.pdf

Baylor Rules of Two

RULES OF TWO®

When is quick relief for asthma **NOT ENOUGH?**

DO YOU...

- Take your "quick-relief inhaler" **more than TWO TIMES A WEEK?**
- Awaken at night with asthma **more than TWO TIMES A MONTH?**
- Refill your "quick-relief inhaler" **more than TWO TIMES A YEAR?**
- Measure your peak flow at **less than two times 10 (20%) from baseline** with asthma symptoms?

If YOU can answer "YES" to any of these questions, YOUR ASTHMA IS NOT UNDER CONTROL.

Asthma Care Quick Reference

DIAGNOSING AND MANAGING ASTHMA

Guidelines from the National Asthma Education and Prevention Program

EXPERT PANEL REPORT 3

The goal of this asthma care quick reference guide is to help clinicians provide quality care to people who have asthma.

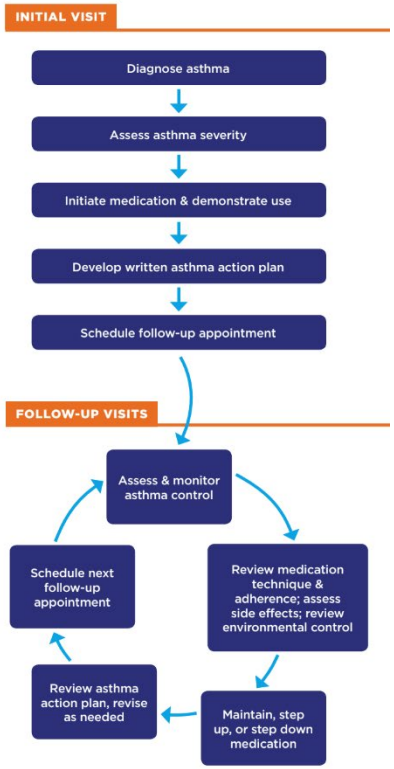
Quality asthma care involves not only initial diagnosis and treatment to achieve asthma control, but also long-term, regular follow-up care to maintain control.

Asthma control focuses on two domains: (1) **reducing impairment**—the frequency and intensity of symptoms and functional limitations currently or recently experienced by a patient; and (2) **reducing risk**—the likelihood of future asthma attacks, progressive decline in lung function (or, for children, reduced lung growth), or medication side effects.

Achieving and maintaining asthma control requires providing appropriate medication, addressing environmental factors that cause worsening symptoms, helping patients learn self-management skills, and monitoring over the long term to assess control and adjust therapy accordingly.

The diagram (right) illustrates the steps involved in providing quality asthma care.

This guide summarizes recommendations developed by the National Asthma Education and Prevention Program's expert panel after conducting a systematic review of the scientific literature on asthma care. See **www.nhlbi.nih.gov/guidelines/asthma** for the full report and references. Medications and dosages were updated in September 2011 for the purposes of this quick reference guide to reflect currently available asthma medications.



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

https://www.nhlbi.nih.gov/files/docs/guidelines/asthma_qrg.pdf

FOLLOW-UP VISITS: ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY

Level of control (Columns 2–4) is based on the most severe component of impairment (symptoms and functional limitations) or risk (exacerbations). Assess impairment by patient's or caregiver's recall of events listed in Column 1 during the previous 2–4 weeks and by spirometry and/or peak flow measures. Symptom assessment for longer periods should reflect a global assessment, such as inquiring whether the patient's asthma is better or worse since the last visit. Assess risk by recall of exacerbations during the previous year and since the last visit. Recommendations for adjusting therapy based on level of control are presented in the last row.

Components of Control		Well Controlled			Not Well Controlled			Very Poorly Controlled		
		Ages 0–4 years	Ages 5–11 years	Ages ≥12 years	Ages 0–4 years	Ages 5–11 years	Ages ≥12 years	Ages 0–4 years	Ages 5–11 years	Ages ≥12 years
Impairment	Symptoms	≤2 days/week	≤2 days/week but not more than once on each day	≤2 days/week	>2 days/week	>2 days/week or multiple times on ≤2 days/week	>2 days/week	Throughout the day		
	Nighttime awakenings	≤1x/month		≤2x/month	>1x/month	≥2x/month	1–3x/week	>1x/week	≥2x/week	≥4x/week
	Interference with normal activity	None			Some limitation			Extremely limited		
	SABA* use for symptom control (not to prevent EIB*)	≤2 days/week			>2 days/week			Several times per day		
	Lung function → FEV_1* (% *predicted*) or peak flow (% *personal best*)	Not applicable	>80%	>80%	Not applicable	60–80%	60–80%	Not applicable	<60%	<60%
	→ FEV_1/FVC*		>80%	Not applicable		75–80%	Not applicable		<75%	Not applicable
	Validated questionnaires† → ATAQ* → ACQ* → ACT*	Not applicable	Not applicable	0 ≤0.75‡ ≥20	Not applicable	Not applicable	1–2 ≥1.5 16–19	Not applicable	Not applicable	3–4 Not applicable ≤15
Risk	Asthma exacerbations requiring oral systemic corticosteroids§	0–1/year			2–3/year	≥2/year		>3/year	≥2/year	
		Consider severity and interval since last asthma exacerbation.								
	Reduction in lung growth/Progressive loss of lung function	Not applicable	Evaluation requires long-term follow-up care.		Not applicable	Evaluation requires long-term follow-up care.		Not applicable	Evaluation requires long-term follow-up care.	
	Treatment-related adverse effects	*Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.*								
Recommended Action for Treatment *(See "Stepwise Approach for Managing Asthma Long Term," page 7)* *The stepwise approach is meant to help, not replace, the clinical decisionmaking needed to meet individual patient needs.*		*Maintain current step.* *Regular follow-up every 1–6 months.* *Consider step down if well controlled for at least 3 months.*			Step up 1 step	Step up at least 1 step	Step up 1 step	*Consider short course of oral systemic corticosteroids.* *Step up 1–2 steps.* *Reevaluate in 2 weeks to achieve control.*		
					Reevaluate in 2–6 weeks to achieve control. *For children 0–4 years, if no clear benefit observed in 4–6 weeks, consider adjusting therapy or alternative diagnoses.*					
					Before step up in treatment: *Review adherence to medication, inhaler technique, and environmental control. If alternative treatment was used, discontinue and use preferred treatment for that step. For side effects, consider alternative treatment options.*					

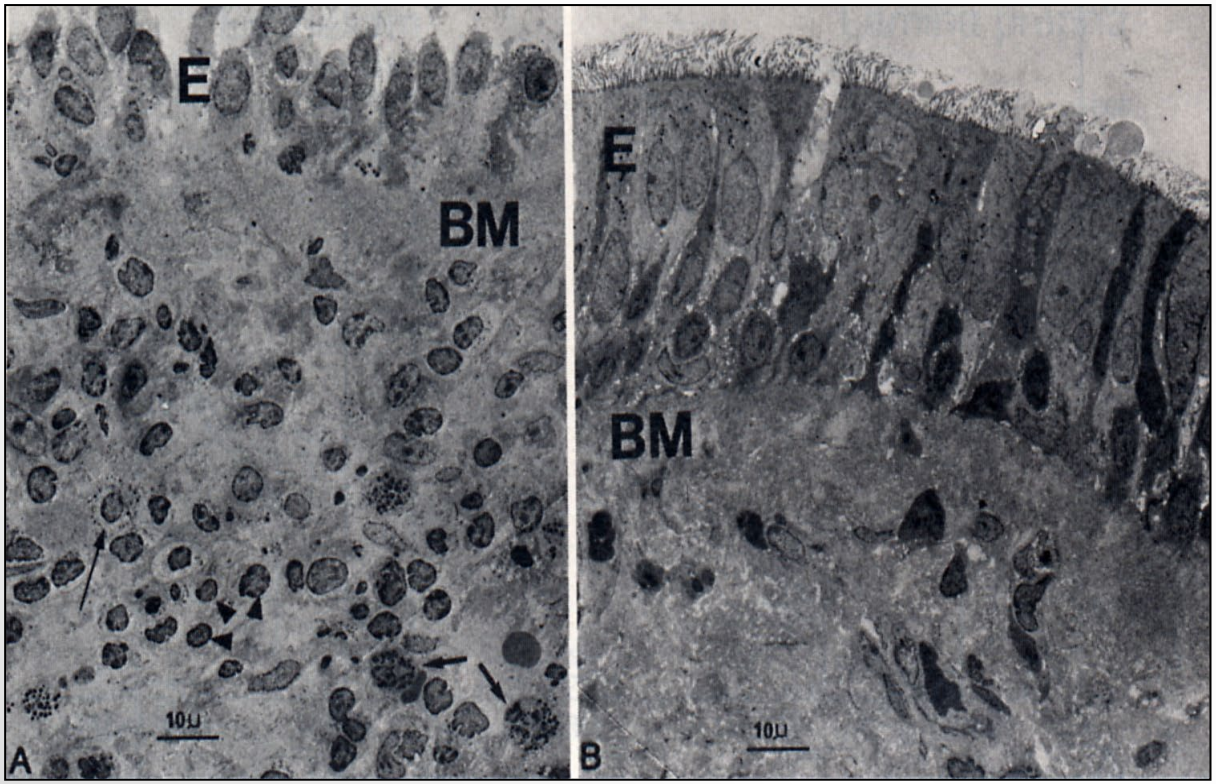
* **Abbreviations:** ACQ, Asthma Control Questionnaire®; ACT, Asthma Control Test™; ATAQ, Asthma Therapy Assessment Questionnaire®; EIB, exercise-induced bronchospasm; FVC, forced vital capacity; FEV_1, forced expiratory volume in 1 second;

Treatment

Effects of Inhaled Corticosteroids on Inflammation

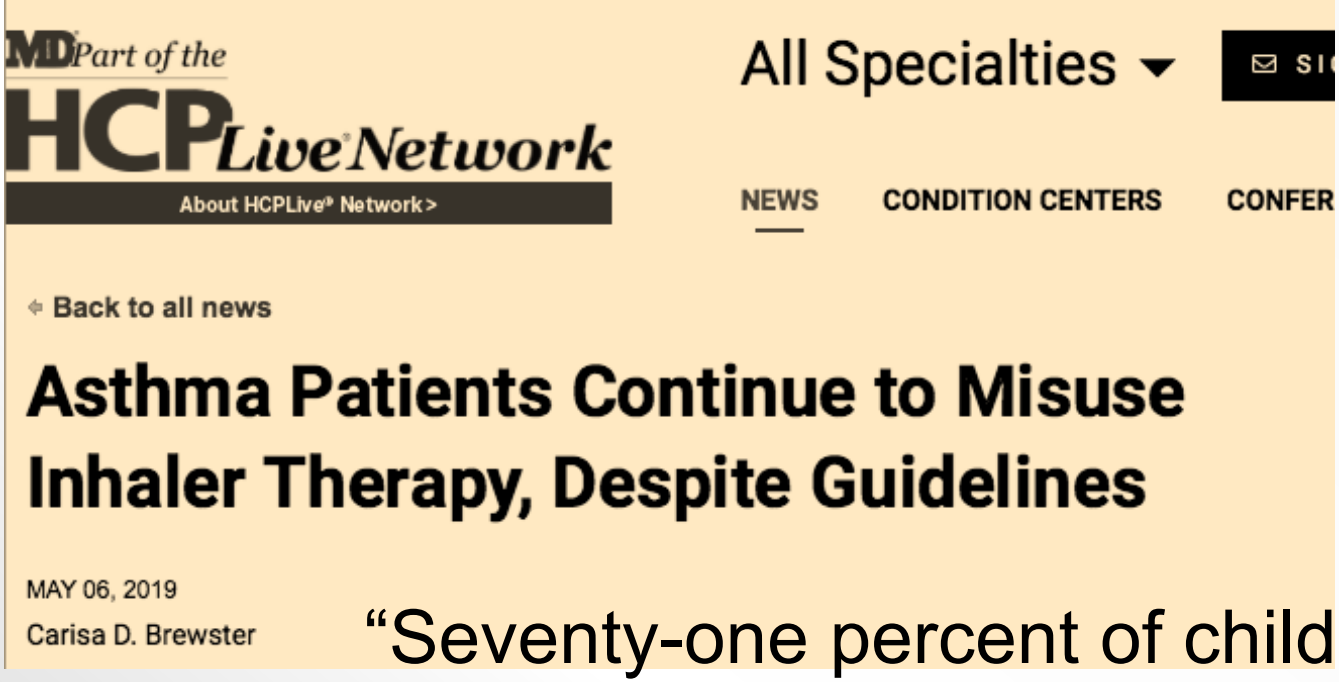
E = Epithelium

BM = Basement Membrane



Pre– and post–3-month treatment with budesonide (BUD) 600 mcg b.i.d. n =14

Laitinen et al. *J Allergy Clin Immunol.* 1992;90:32-42.



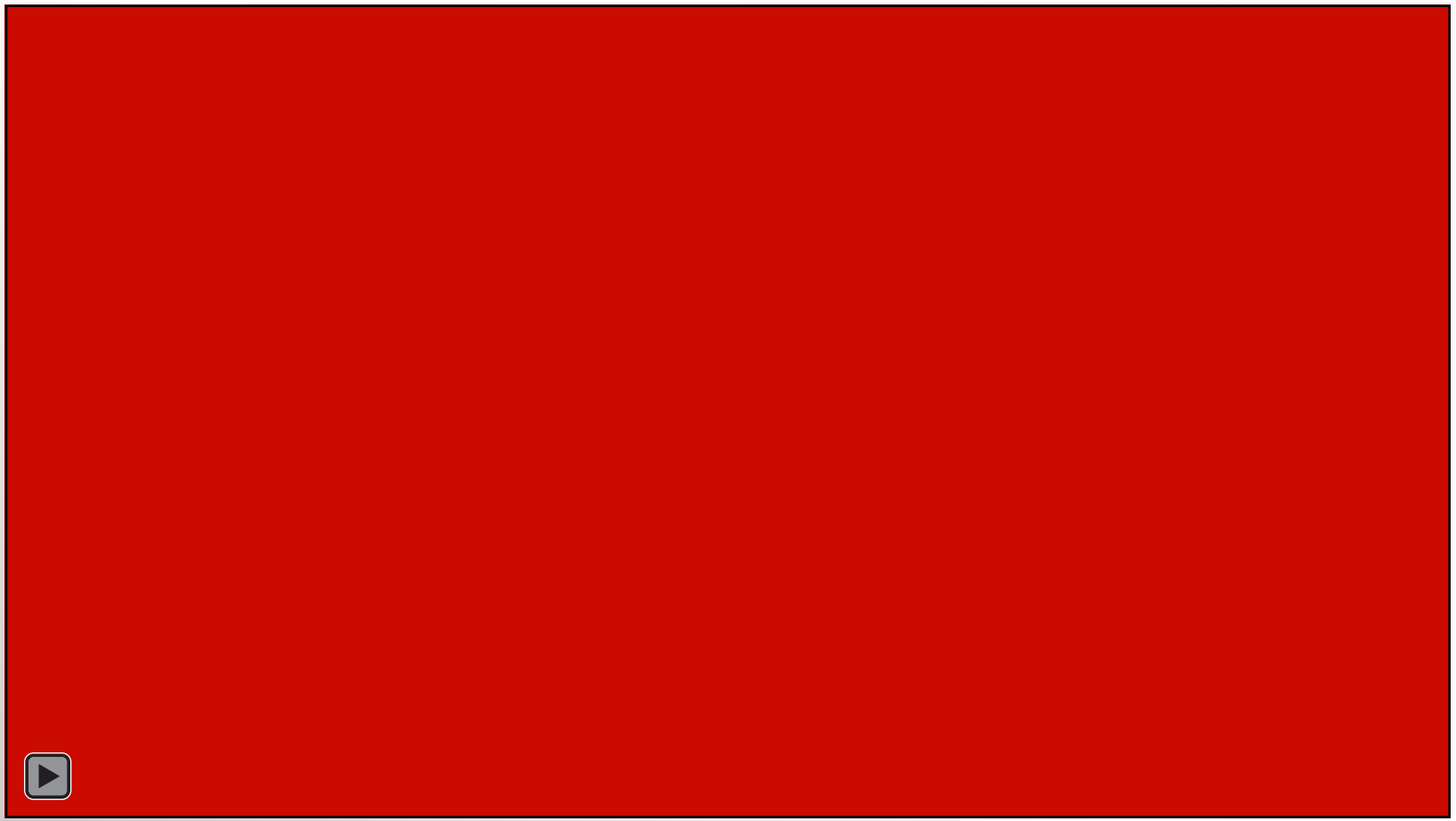
"Seventy-one percent of children and 92% of parents reported confidence in proper inhaler use (for children, this included self-report of independent use). With the exception of just 1 child, all used their inhalers incorrectly."

https://www.mdmag.com/medical-news/asthma-patients-misuse-inhaler-therapy-guidelines

do it right.

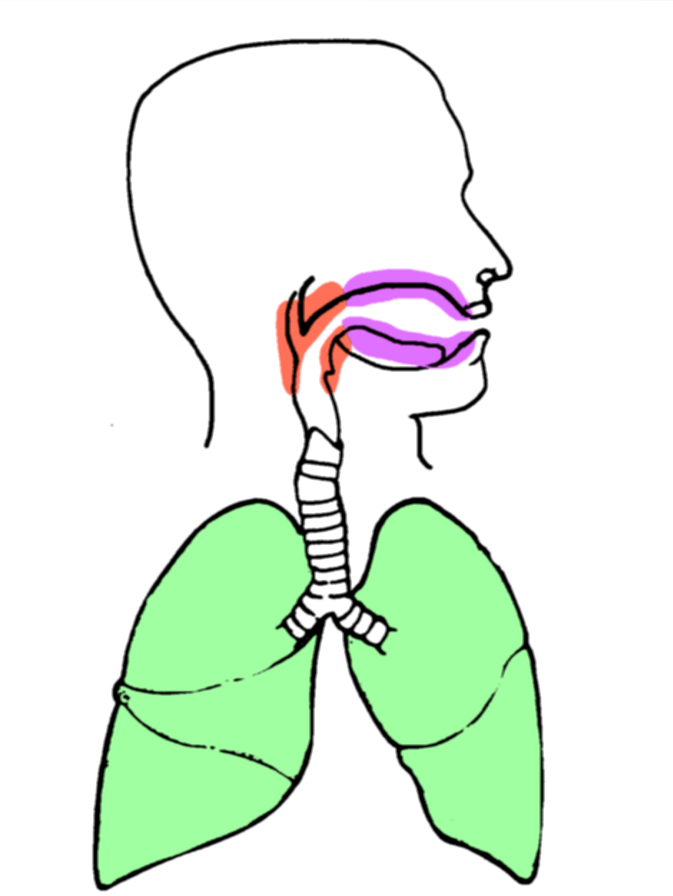
Inhaler Technique

Inhaler Fail

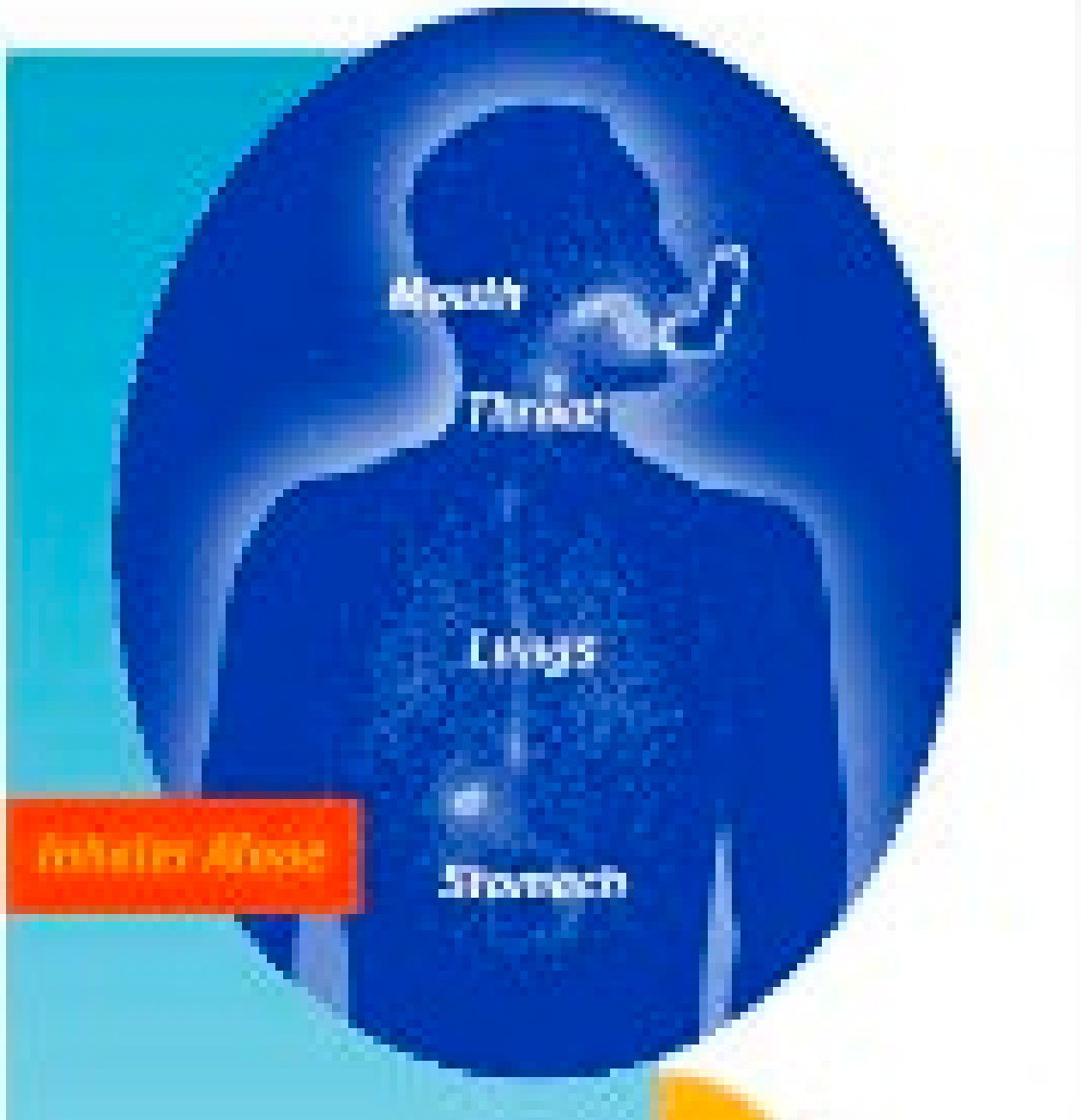


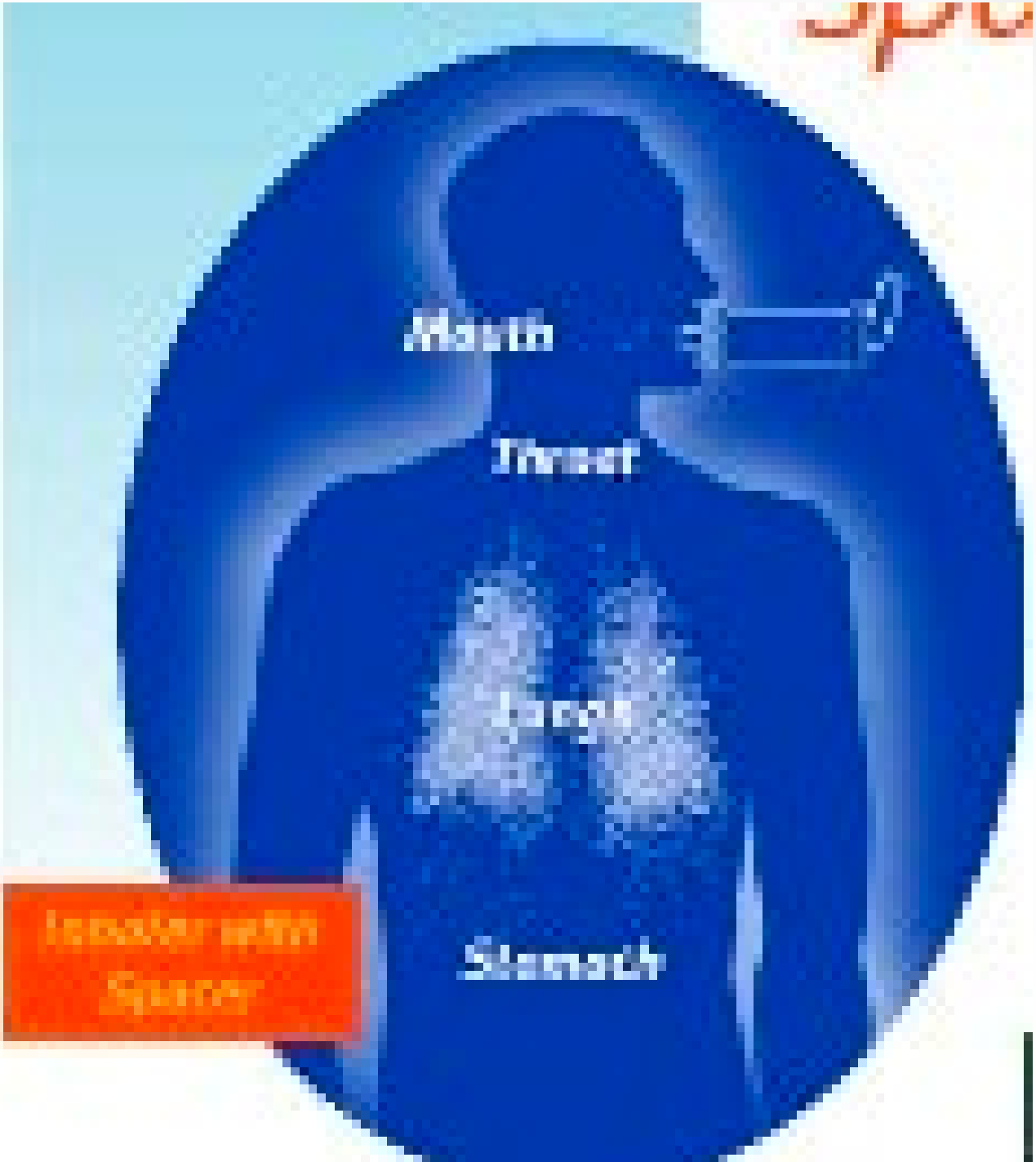
Inspiratory Flow Influences Drug Deposition

Inspiratory Flow	Drug Deposition
Too Slow	Mouth
Too Fast	Throat
Correct Speed	Lungs



Valved-holding Chamber for all MDI medications


Mouth
Throat
Lungs
Stomach


Mouth
Throat
Lungs
Stomach

Inhalation Technique – Keep It Simple

Three Simple Steps

Old Air Out → Aim Up → Fill Up Slowly

With many spacers, there is a whistle sound if the inhalation is too fast.

If you hear a whistle, slow down, take longer to fill the lungs next time (students can practice without medication).

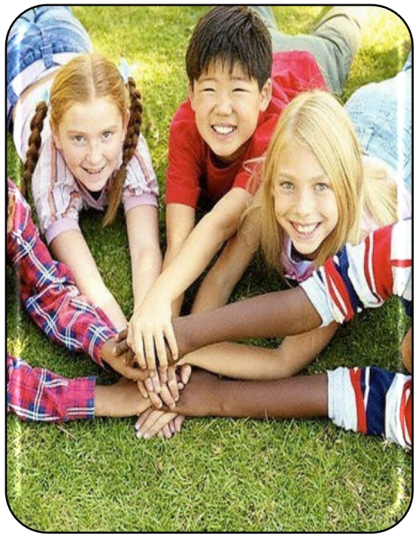
Average Inhalation Time by Age

Lungs become bigger as children grow taller. Little lungs fill up faster than big lungs and don't hold as much air. These are average inhalers times by age. MDI medication should flow in the lungs at the same rate (a liter of air inhaled in 2 seconds)

Average Inhalation Time by Age

Elementary Age

2 to 3 seconds



Middle School

4 to 6 seconds

High School

6 to 10 seconds

Target Inhalation Time

Target time is the amount of time it takes for a student to fill up their lungs, which is based on the size of the lungs, represented by the value: FEV1. The FEV1 changes with age, height, gender, and race

Target Time for Metered Dose Inhalers (MDIs) = FEV1 X 2

The Predicted Value for FEV1 can be used in place of actual during the Pandemic.

*If time allows (**Non-Emergency**), it is more accurate, and more effective to calculate the predicted FEV1 to determine **Personalized Target Time.***

Predicted FEV1 can be calculated using the Global Lung Initiative free, online spirometry values calculator:

http://gligastransfer.org.au/

SMART Therapy – the latest approach to evidence-based medication management for asthma

Single **M**aintenance **a**nd **R**eliever **T**herapy

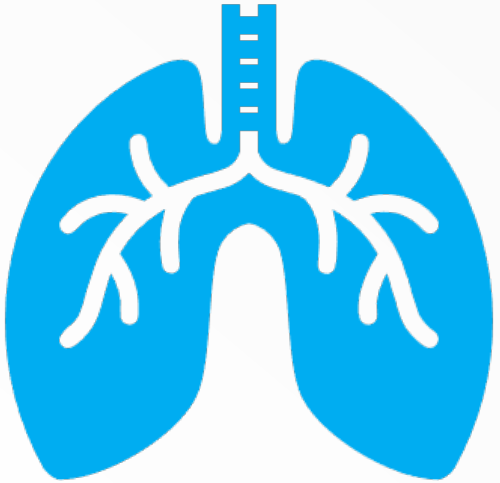
SNAC-S Session Facilitators –
Tammy Rood, DNP, CPNP-PC, AE-C and
Dr. Ragini Kapoor

Presentation Overview

- Define SMART and AIR
- Identify SMART inhalers
- LABA vs. SABA
- When is SMART therapy recommended?
- The maximum daily dose of SMART therapy varies by age
- Is it safe to use albuterol if on SMART therapy?
- What does a SMART asthma action plan look like?

SMART and AIR Definitions

- Two evidence-based resources:
  - National Heart Lung and Blood Institute (NHLBI) guidelines, last updated 2020
  - Global Initiative for Asthma (GINA), updated 2024
- **SMART therapy stands for Single Maintenance and Reliever Therapy.**
  - It is sometimes called MART therapy → Maintenance and Reliever Therapy
  - **SMART and MART are the same.**
- **AIR – Anti-inflammatory inhaler reliever** that has BOTH the inhaled corticosteroid (ICS, anti-inflammatory) and rapid-acting bronchodilator
  - ICS- formoterol
  - ICS-SABA



SMART Inhalers – Can You Name Them?

- A **COMBINATION** inhaler – contains ICS and an inhaled long-acting beta-agonist (LABA) → formoterol
  - budesonide/formoterol (Symbicort® OR Breyna® [generic])
  - mometasone/formoterol (Dulera®)
- In asthma guidelines for SMART therapy, the **budesonide/formoterol combination is the recommended first treatment for moderate to severe asthma**.

SABA vs. LABA – What is the Difference?

- **The main difference between SABA and LABA is the DURATION of their effects.**
- **Short-acting beta-agonist → Has a short half-life, used for immediate symptom relief.**
- **Long-acting beta-agonist → Provide prolonged, sustained treatment due to increased half-life.**

When is SMART Therapy Recommended?

- **Per updated guidelines, SMART therapy is the preferred treatment for all persons 5 years and older with moderate to severe persistent asthma.**
- Is generally considered to be an EASIER treatment plan to follow.
- **FORMOTEROL** is a long-acting inhaled medication in SMART therapy, but it works QUICKLY (within 2 to 3 minutes), similar to quick-relief albuterol.
- People with moderate asthma have daily symptoms or wake up at night due to symptoms at least once a week.
- Advair (fluticasone/salmeterol) is **NOT** recommended for SMART therapy → salmeterol is a SLOW-acting LABA

The MAXIMUM Daily Dose of SMART Therapy

Based on the AGE of the person →

- includes both daily doses + doses given for quick relief

Age	Maximum Daily Number of Puffs
5 - 11 years	Maximum of 8 (EIGHT) puffs daily
12 years - adult	Maximum of 12 (TWELVE) puffs daily

Is it Safe to Use Albuterol if on SMART Therapy?

- **YES!!**
- The goal of SMART therapy is to **SIMPLIFY** asthma management by using one inhaler for both daily maintenance and quick relief of symptoms, reducing the need to remember which inhaler to use for which situation.
- However, if the SMART inhaler is not available, or if experiencing asthma symptoms on SMART therapy, you **CAN** use albuterol for quick-relief.
- **Important to monitor usage → do not use albuterol more than every 3 to 4 hours for symptoms or exceed the maximum daily SMART therapy dose.**

Allergy & Asthma Network

(Example of action plan template for budesonide/formoterol. A similar action plan could be constructed for other ICS/formoterol formulations, eg, mometasone/formoterol)

My Asthma Action Plan

For Single Inhaler Maintenance and Reliever Therapy (SMART) with budesonide/formoterol

Name: _____ **Action plan provided by:** _____

Date: _____ **Doctor:** _____

Usual best PEF: _____ L/min *(if used)* **Doctor's phone:** _____

Normal mode

My SMART Asthma Treatment is:

☐ budesonide/formoterol 160/4.5 (12 years or older)

☐ budesonide/formoterol 80/4.5 (4-11 years)

My Regular Treatment Every Day:

(Write in or circle the number of doses prescribed for this patient)

Take [1, 2] inhalation(s) in the morning

and [0, 1, 2] inhalation(s) in the evening, every day

Reliever

Use 1 inhalation of budesonide/formoterol whenever needed for relief of my asthma symptoms

I should always carry my budesonide/formoterol inhaler

My asthma is stable if:

- I can take part in normal physical activity without asthma symptoms

AND

- I do not wake up at night or in the morning because of asthma

Other Instructions

_____

_____

Asthma Flare-up

If over a Period of 2-3 Days:

- My asthma symptoms are getting worse **OR NOT** improving

OR

- I am using more than 6 budesonide/formoterol reliever inhalations a day (if aged 12 years or older) or more than 4 inhalations a day (if aged 4-11 years)

I should:

☐ Continue to use my regular everyday treatment **PLUS** 1 inhalation budesonide/formoterol whenever needed to relieve symptoms

☐ Start a course of prednisolone

☐ Contact my doctor

Course of Prednisolone Tablets:

Take _____mg prednisolone tablets

per day for _____days **OR**

_____

_____

If I need more than **12 budesonide/formoterol inhalations (total)** in any day (or more than 8 inhalations for children 4-11 years), I **MUST** see my doctor or go to the hospital the same day.

Asthma Emergency

Signs of an Asthma Emergency:

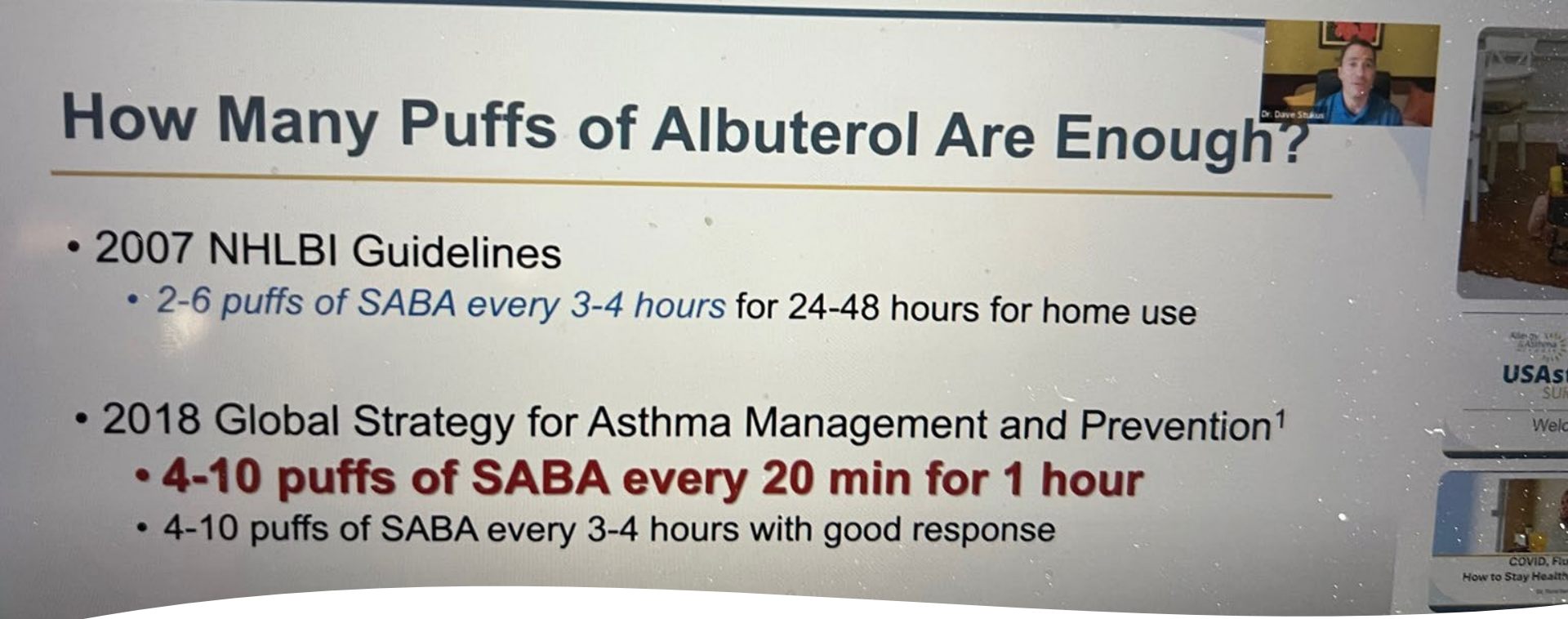
- Symptoms getting worse quickly
- Extreme difficulty breathing or speaking
- Little or no improvement from my budesonide/formoterol reliever inhalations

If I have any of the above danger signs, I should dial _____ for an ambulance and say I am having a severe asthma attack.

While I am waiting for the ambulance start my asthma first aid plan:

- Sit upright and stay calm.
- Take 1 inhalation of budesonide/formoterol. Wait 1-3 minutes. If there is no improvement, take another inhalation of budesonide/formoterol (up to a maximum of 6 inhalations on a single occasion).
- If only albuterol is available, take 4 puffs as often as needed until help arrives.
- Start a course of prednisolone tablets (as directed) while waiting for the ambulance.
- Even if my symptoms appear to settle quickly, I should see my doctor immediately after a serious attack.

Modified from Australian action plan with permission from National Asthma Council Australia and AstraZeneca Australia



Acute Asthma Treatment – Dilate!!!!

- Short Acting
- Long Acting
- Anti-Cholinergics – impratropium, nebulizer meds
- Anti-Muscarinics

Asthma in A Minute

- Program created by Dottie Bardon, BSN, MEd, RN, NCSN
- School nurses can teach key asthma lessons, one minute at a time

Asthma in a Minute

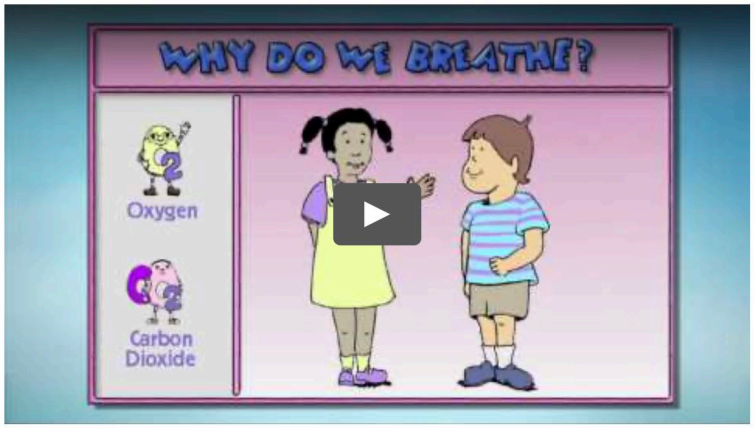
- Checklist: teaching outline for school nurses
- Chart: capture airflow data to share with PCP
- Cards: easy to read and quick access

Conclusion -- School nurses can:

Teaming Up for Asthma Control - TUAC

- Asthma literacy program provided by the school nurse
- Focuses on 4 key messages:
  - Airflow must be measured to know how much asthma is limiting breathing
  - Inhaled corticosteroids must be taken every day to improve asthma control
  - Breathing medicines in the lungs requires practice and coaching
  - Triggers should be avoided to keep asthma from getting worse

Why We Breathe



How We Breathe

Airstuff

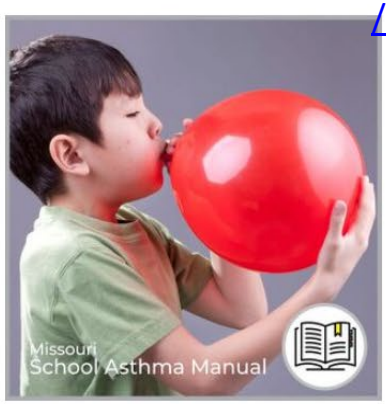
Your Nose

https://asthmaready.org/learn-about-asthma/

digital version

Missouri School Asthma Manual

http://www.schoolasthmamanual.com/



What is the **Missouri School Asthma Manual**?

The *Missouri School Asthma Manual* is a collection of resources designed to assist school nurses and others who seek to improve school asthma services. Materials were selected and organized in the original print edition and this accompanying website to make it easier for school nurses to locate forms and resources they need for day-to-day support of students with asthma. This website features only content in the 234-page print edition *Missouri School Asthma Manual* (2011 edition), which was developed by the Missouri Department of Health and Senior Services Asthma Prevention and Control Program and the University of Missouri Asthma Ready Communities. Refer to the print edition for references and sources.

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Missouri
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CONNECT TO A HEALTH PLAN
WHY CONNECT
FERPA
MORE...
MISSOURI
SCHOOL NURSE LINK
RESOURCE CONNECTION
http://www.schoolnurselink.com/
Hello, school nurse.
Welcome to School Nurse Link.
On this simple, easy-to-navigate site you will find information to support care of your students, especially those with chronic conditions.
The School Nurse Link program connects all schools (public, charter and private) with resources offered by Medicaid health plans in Missouri. Together, these plans cover about 500,000 children across the state, located in every community.

Improving Asthma Control
The Real Picture