

Asthma Care in School



Missouri Coordinated
School Health
Conference

Presented by
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Kennett Public Schools

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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





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

The Goal of Asthma Management

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

25
MILLION
Americans diagnosed



1 in 10
CHILDREN



\$80
BILLION
annual costs



3,168
DEATHS annually



75%
higher for
black persons
than white
persons

13.8
MILLION missed
school days per year



#1
reason
kids miss
school

14.2
MILLION
missed work days per year



3 in 5
limit physical activity



71%
MISUSE
inhalers



1 in 5
CANNOT
AFFORD
medications



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?

listen
think
act

School Nursing Definition

Working
together
for
healthy
children



School Nursing Definition

“School nursing, a specialized practice of nursing, protects and promotes student health, facilitates optimal development, and advances academic success. School nurses, grounded in ethical and evidence-based practice, are the leaders who bridge health care and education, provide care coordination, advocate for quality student-centered care, and collaborate to design systems that allow individuals and communities to develop their full potential.” (NASN, 2017)

(ANA & NASN, p. 1).

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?

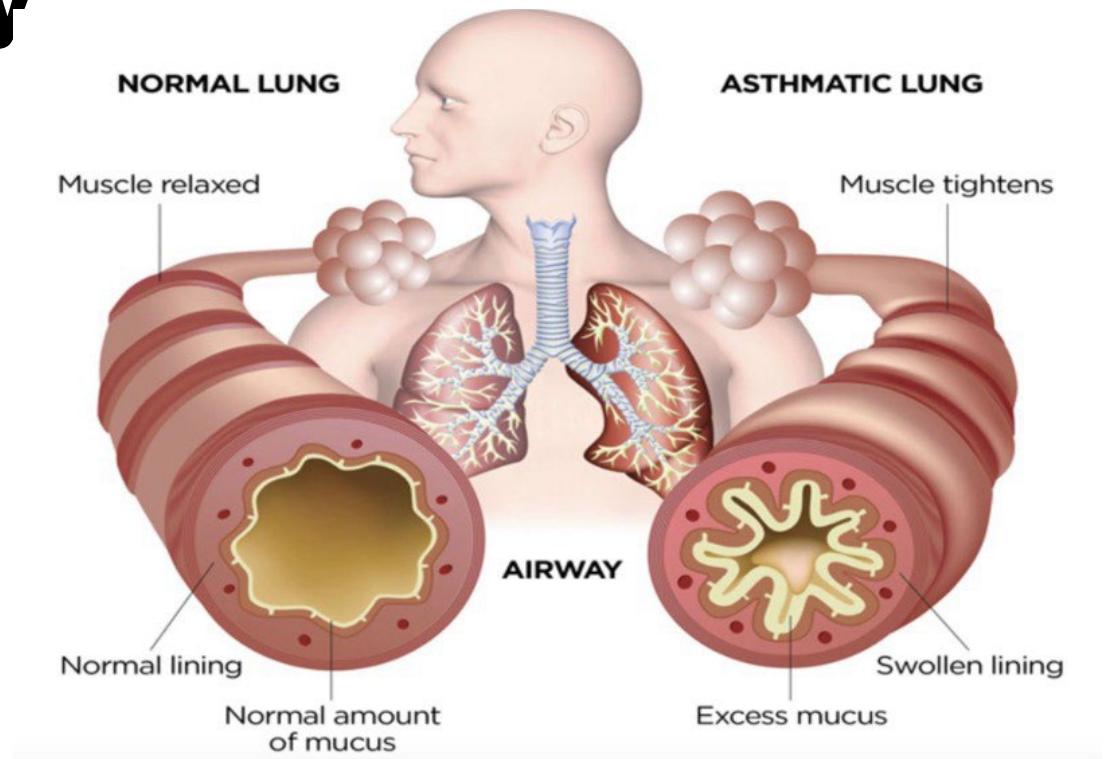
- Asthma is a problem with the tubes that carry air into the lungs making it hard to breathe.
- The airways get so narrow the air can't move freely.
- You may or may not hear wheezing.
- They will exhibit shortness of breath.



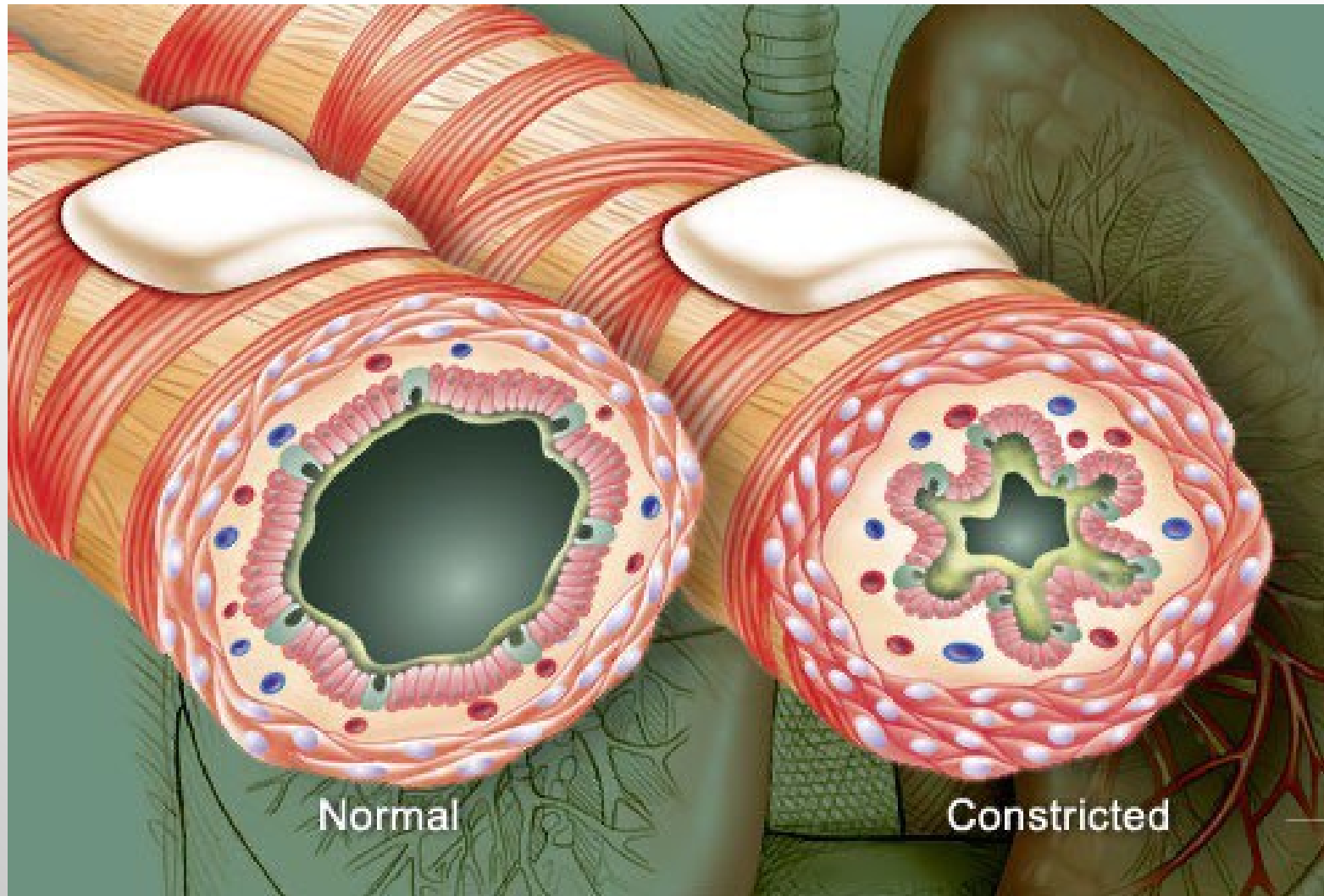
Photo –
www.webmd.com/asthma/slideshow-asthma-overview

Asthma Pathophysiology Overview

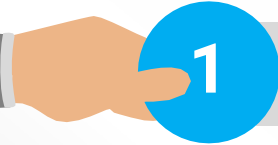
- Constricted muscles
- Inflammation
- Narrowed airways
- Airway hyper-reactivity
- Remodeled airway



Certain Triggers Can Cause Inflammation in the Airways



What is their knowledge and perception?



1

How do they perceive their asthma?



2

Does using their inhaler embarrass them?



3

Do they not participate because of fear?



4

Do they know their triggers?



5

Do they understand control?

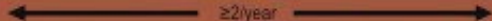
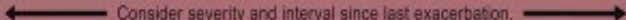


Triggering Factors

- 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	P e r s i s t e n t		
			Mild	Moderate	Severe
Impairment	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 FEV ₁ /FVC normal	FEV ₁ ≥80% predicted FEV ₁ /FVC normal	FEV ₁ >60% but <80% predicted FEV ₁ /FVC reduced 5%	FEV ₁ <60% predicted FEV ₁ /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	Step 4 or 5
		consider short course of oral corticosteroids			
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 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
--	---	--	---	---	--

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

SCORE

TOTAL

Have your child complete these questions.

to talk about your child's results.

1. How is your asthma today?

 0 Very bad	 1 Bad	 2 Good	 3 Very good
---	--	---	--

SCORE

☐

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.
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☐

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☐

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.
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☐

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
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☐

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
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☐

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.

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

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 _____

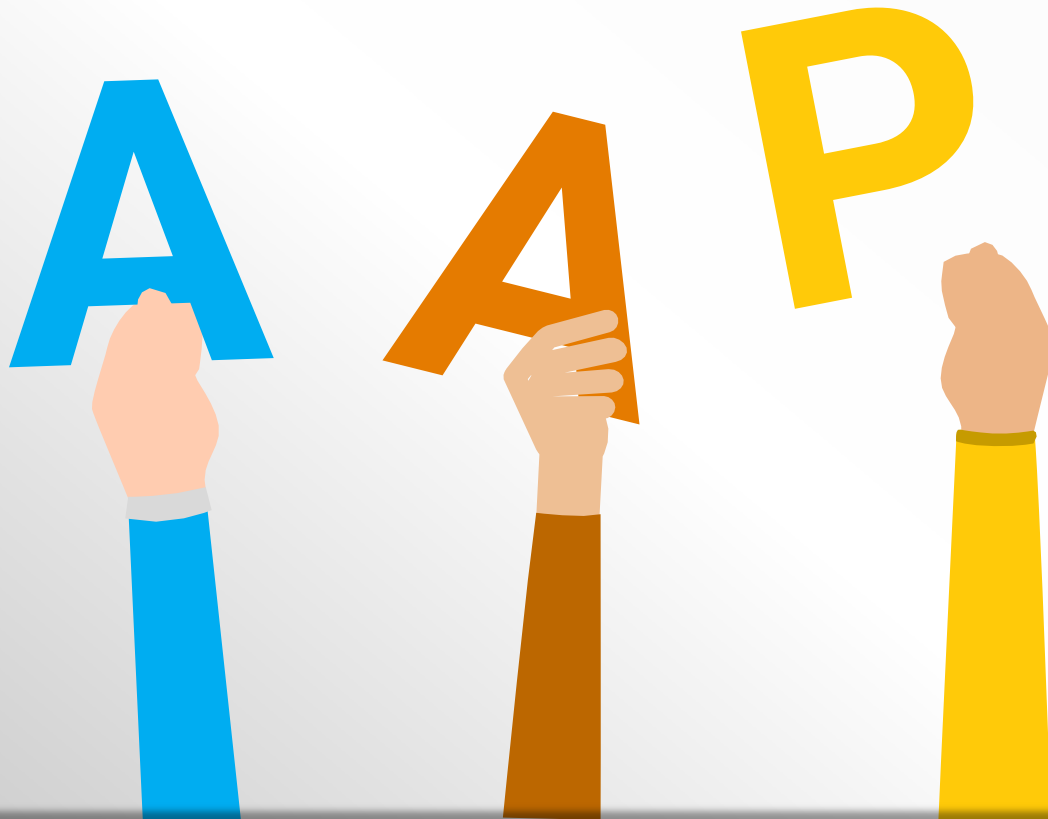
Signature of School Nurse _____ Date _____

Missouri School Asthma Manual

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



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

**Caution -
Action Plan
Working????**



Asthma Control



Control Classifications

Well Controlled
Not Well Controlled
Very Poorly Controlled

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

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.

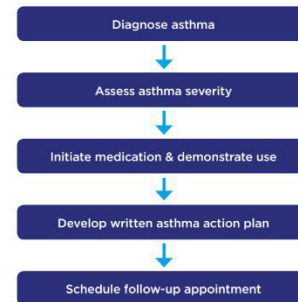
Achieving and maintaining asthma control requires providing appropriate medication, addressing environmental factors that cause worsening symptoms, helping patients learn self-management skills, and monitoring over the long term to assess control and adjust therapy accordingly.

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

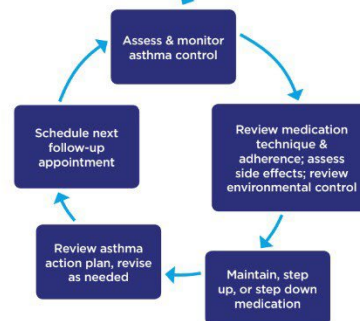
This guide summarizes recommendations developed by the National Asthma Education and Prevention Program's expert panel after conducting a systematic review of the scientific literature on asthma care. See www.nhlbi.nih.gov/guidelines/asthma for the full report and references. Medications and dosages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



INITIAL VISIT



FOLLOW-UP VISITS



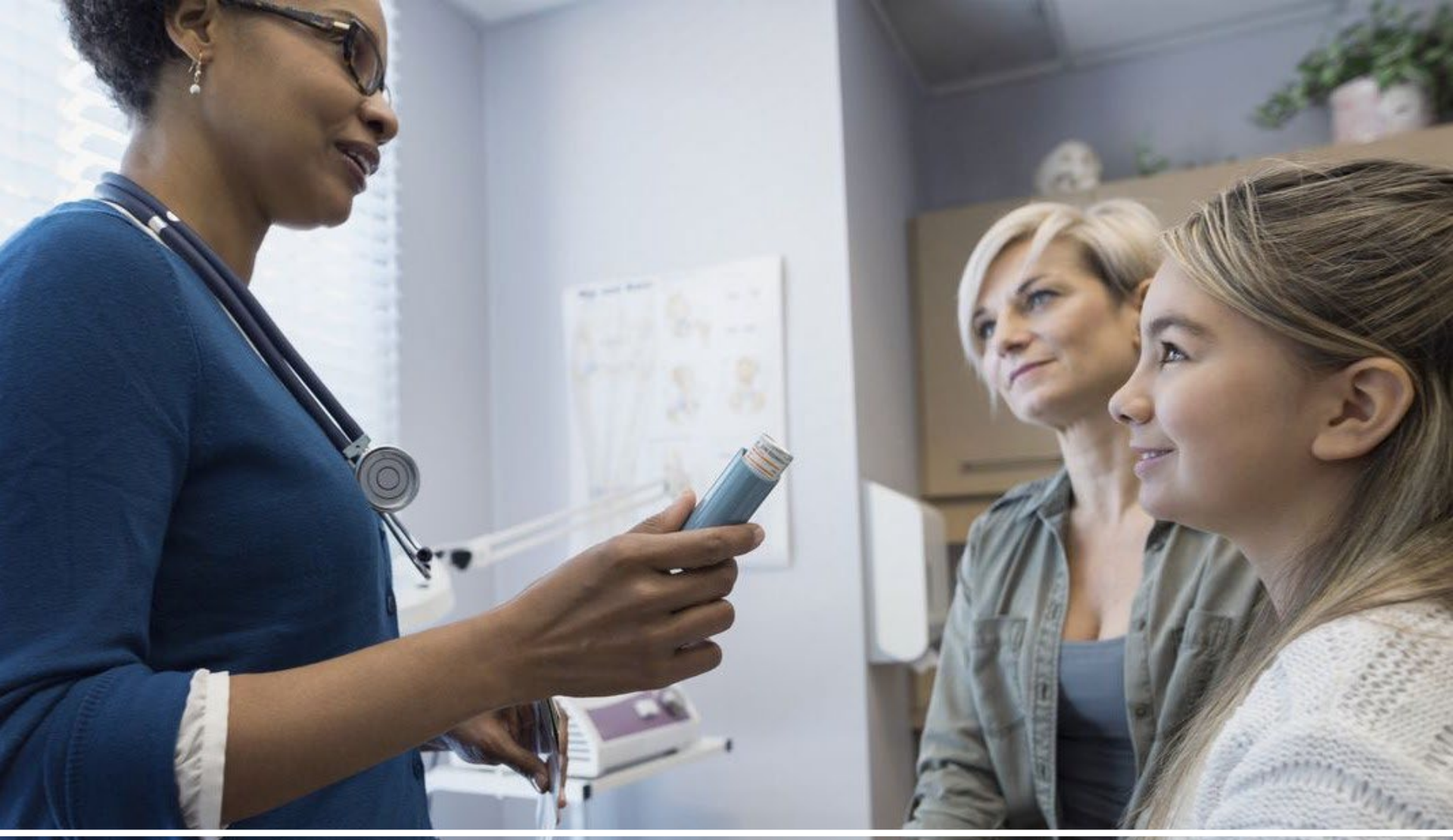
https://www.nhlbi.nih.gov/files/docs/guidelines/asthma_qrg.pdf

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
Risk	Validated questionnaires†									
	➔ ATAQ*	Not applicable	Not applicable	0	Not applicable	Not applicable	1–2	Not applicable	Not applicable	3–4
	➔ ACQ*			≤0.75†			≥1.5			Not applicable
	➔ ACT*			≥20			16–19			≤15
	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.	
Recommended Action for Treatment	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.								
	(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.					

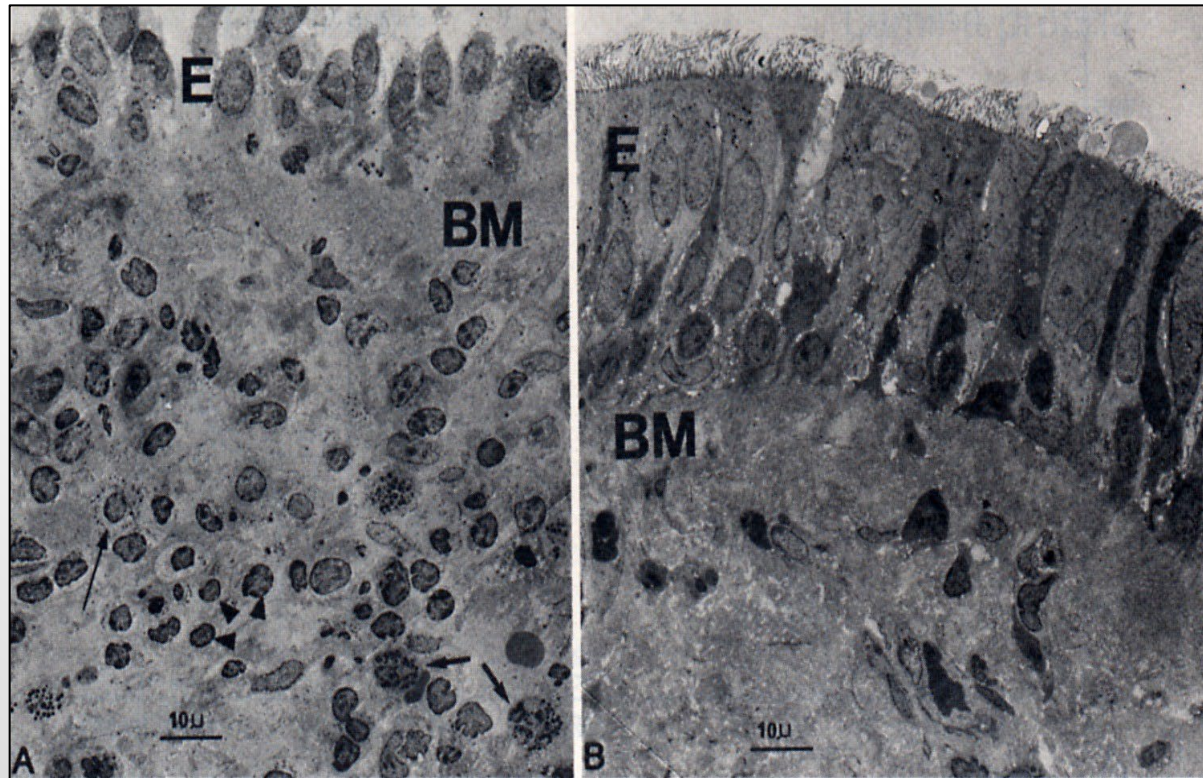
* Abbreviations: ACQ, Asthma Control Questionnaire; ACT, Asthma Control Test; ATAQ, Asthma Therapy Assessment Questionnaire; EIB, exercise-induced bronchoconstriction; FVC, forced vital capacity; FEV₁, forced expiratory volume in 1 second.



Treatment

Effects of Inhaled Corticosteroids on Inflammation

E = Epithelium
BM = Basement
Membrane

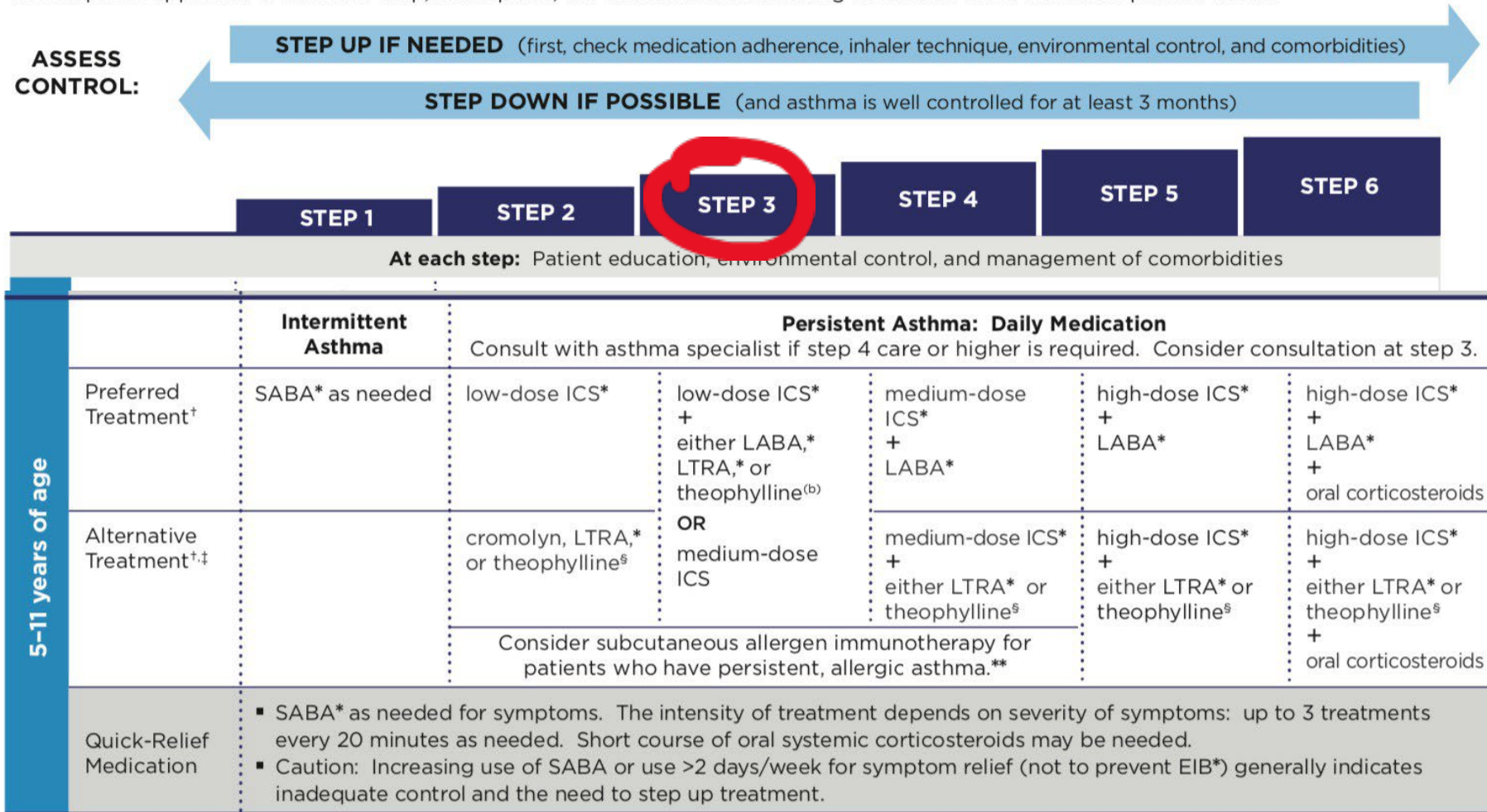


Pre- and post-3-month treatment with budesonide (BUD) 600 mcg b.i.d. n =14

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

STEPWISE APPROACH FOR MANAGING ASTHMA LONG TERM

The stepwise approach tailors the selection of medication to the level of asthma severity (see page 5) or asthma control (see page 6). The stepwise approach is meant to help, not replace, the clinical decisionmaking needed to meet individual patient needs.



◀ Back to all news

Asthma Patients Continue to Misuse Inhaler Therapy, Despite Guidelines

MAY 06, 2019

Carisa D. Brewster

“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.



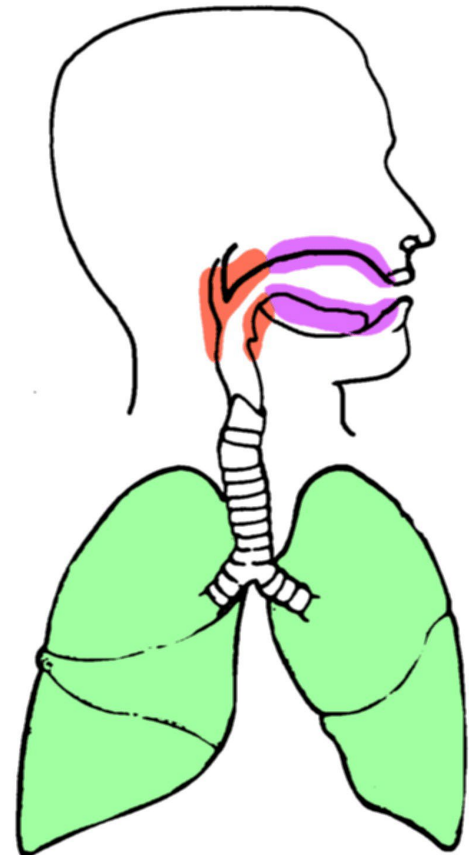
Inhaler Technique

Inhaler Fail



Inspiratory Flow Influences Drug Deposition

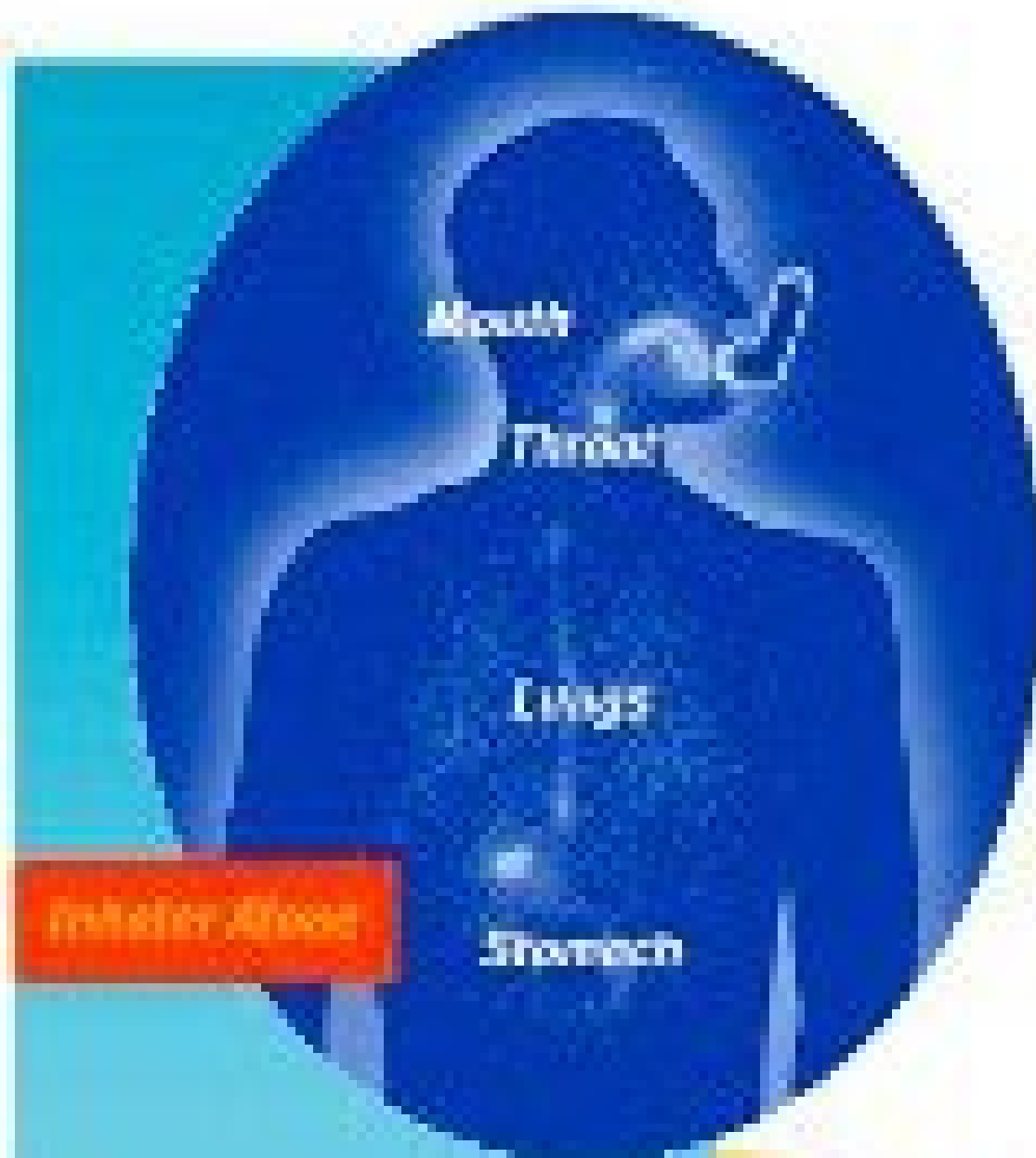
Inspiratory Flow	Drug Deposition
Too Slow	Mouth
Too Fast	Throat
Correct Speed	Lungs

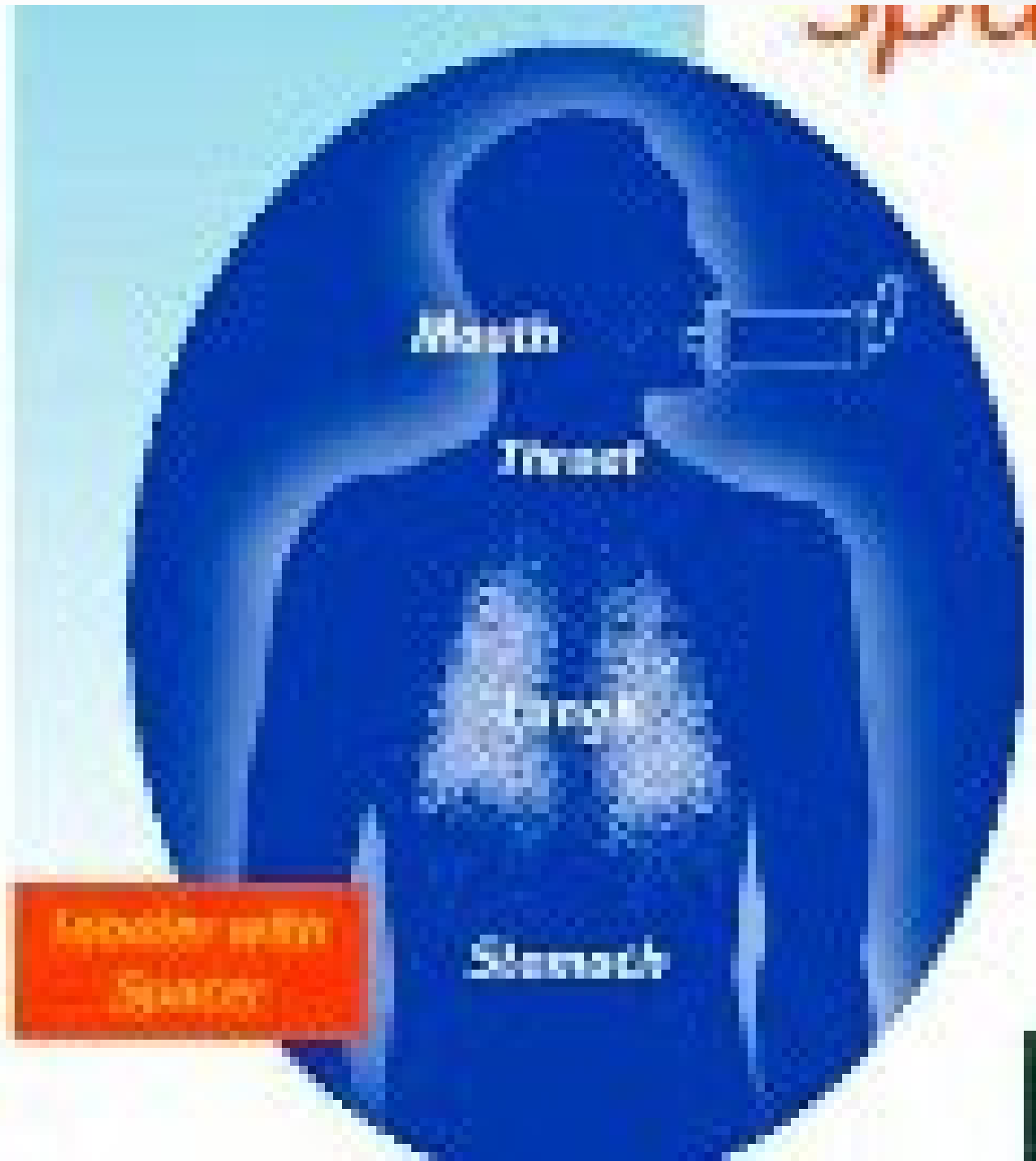


Valved- holding chamber for all MDI medications

Valved-holding Chamber for
ALL MDI Medications !!!







Inhalation Technique - Keep It Simple

Three Simple Steps



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

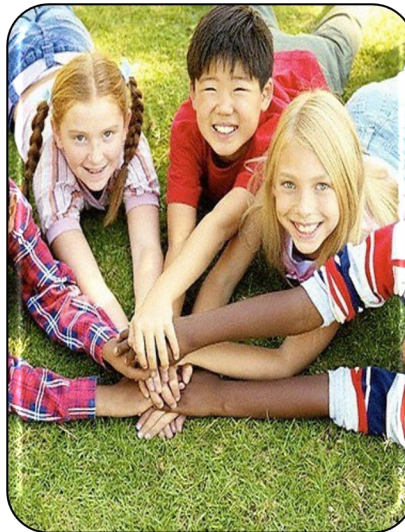
Lungs become bigger as children grow taller. Little lungs fill up faster than big lungs and don't hold as much air. These are average inhalers times by age. MDI medication should flow in the lungs at the same rate (a liter of air inhaled in 2 seconds)



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://glistastransfer.org.au/calcs/spiro.html>

What is SMART Therapy?



SMART Therapy – Single Maintenance and Reliever Therapy

SMART therapy allows people with asthma to use just one medication to control asthma symptoms. They use this single medication for both maintenance and reliever therapy.

Typical relief inhalers contain only a bronchodilator.

Maintenance medications often include an anti-inflammatory inhaled corticosteroid.

But with SMART therapy, the inhaler has both an anti-inflammatory inhaled corticosteroid and a LABA.

This is helpful as it means people are getting daily medicine to keep their airways open. And when they are experiencing symptoms, they are getting extra anti-inflammatories. This helps to reduce airway inflammation.

[https://allergyasthmanetwork.org/news/asthma-smart-therapy/#:~:text=SMART%20therapy%20is%20a%20combination,mometasone%2Fformoterol%20\(Dulera®\)](https://allergyasthmanetwork.org/news/asthma-smart-therapy/#:~:text=SMART%20therapy%20is%20a%20combination,mometasone%2Fformoterol%20(Dulera®))

SMART Therapy – Single Maintenance and Reliever Therapy

- Under asthma guidelines, SMART therapy is recommended for people with moderate to severe asthma, including children ages 5 and older. In general, SMART therapy is considered an easier treatment plan to follow.
- SMART therapy may also be considered as an as-needed treatment for mild asthma. Formoterol is a long-acting inhaled medication but it works quickly, similar to quick-relief albuterol.

SMART Therapy – Single Maintenance and Reliever Therapy

- Researchers recently conducted a series of clinical trials called SYGMA (Symbicort Given as Needed in Mild Asthma). The clinical trials found the rate of severe asthma flares in adolescents (ages 12 to 18) and adults with mild asthma was significantly lower when using Symbicort as needed, instead of just a short-acting bronchodilator as needed.
- ***Important:*** SMART therapy for mild asthma is not FDA-approved. Talk with your doctor about whether this may be an option for you or your child. Since it's not FDA-approved, your health insurance may not cover it.

[https://allergyasthmanetwork.org/news/asthma-smart-therapy/#:~:text=SMART%20therapy%20is%20a%20combination,mometasone%2Fformoterol%20\(Dulera®\)](https://allergyasthmanetwork.org/news/asthma-smart-therapy/#:~:text=SMART%20therapy%20is%20a%20combination,mometasone%2Fformoterol%20(Dulera®))

SMART Therapy – Single Maintenance and Reliever Therapy

- *Applies to Symbicort 80/4.5 or 160/4.5 (generic available, not always less expensive)*
- *Applies to Dulera 50/5 or 100/5*
- *Not Advair (contains salmeterol, no data for this use)*

*max daily puffs (5-11)=8, (>11)=12

(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.

How Many Puffs of Albuterol Are Enough?

- 2007 NHLBI Guidelines
 - *2-6 puffs of SABA every 3-4 hours* for 24-48 hours for home use
- 2018 Global Strategy for Asthma Management and Prevention¹
 - **4-10 puffs of SABA every 20 min for 1 hour**
 - 4-10 puffs of SABA every 3-4 hours with good response

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

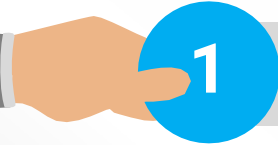


Asthma in a Minute

- 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:



1

Improve inhalation technique



2

Identify the need for ICS



3

Coordinate care with family and HCP



4

Reduce impairment



5

Improve student psychosocial wellbeing



FREE

TRAINING COURSES

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.schoolasthmanmanual.com>

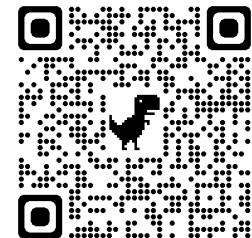


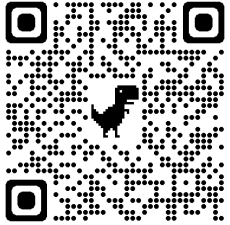
**Asthma
Ready.org**

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
SCHOOL NURSE LINK
<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

