Dr. Taylor Lin, MD

Asthma Educator Meeting

10/27/2023

The 15 Minute Comprehensive Asthma Visit

DISCLOSURES

- Consultant for Guidepoint
- Consultant for BebeFoodie

OBJECTIVES

- Review high-yield clinical evaluation of asthmatic patients including history, exam, spirometry, and asthma symptom screeners
- Review updated asthma treatment guidelines for children and adults, including SMART therapy
- Strategies to troubleshoot common challenges in asthma care, including poor medication adherence, poor symptom perceivers, and social determinants of health that negatively impact asthma outcomes
- Review when to refer your asthma patients to specialty care and new treatment options for severe persistent asthma

BACKGROUND

- **Heterogenous disorder**
- **Common**
  - 5.8% of children have asthma (CDC, 2020)
  - 8.4% of adults have asthma (CDC, 2020)
- **Different phenotypes with variable response to treatment and natural history**
  - E.g. Th2 high, Th2 low
- **Environmental exposures interact with genetic predisposition**
  - Allergens
  - Pollutants, occupational exposures
  - Viruses, bacteria
- **3 components of asthma**
  1. Airway inflammation
  2. Airflow obstruction (reversible)
  3. Airway hyperreactivity

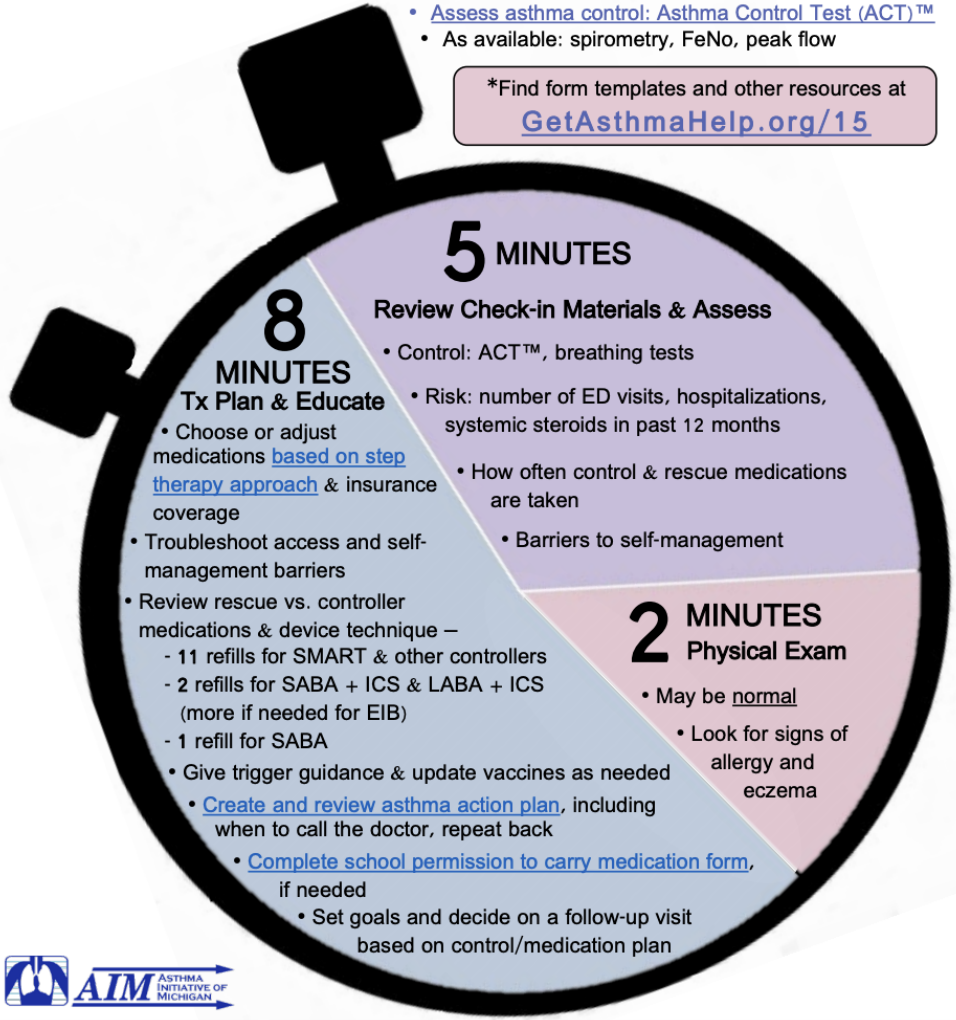
AIM Asthma Initiative of Michigan
FOR HEALTHY LUNGS

ASTHMA VISIT IN 15 MINUTES

At Check-in

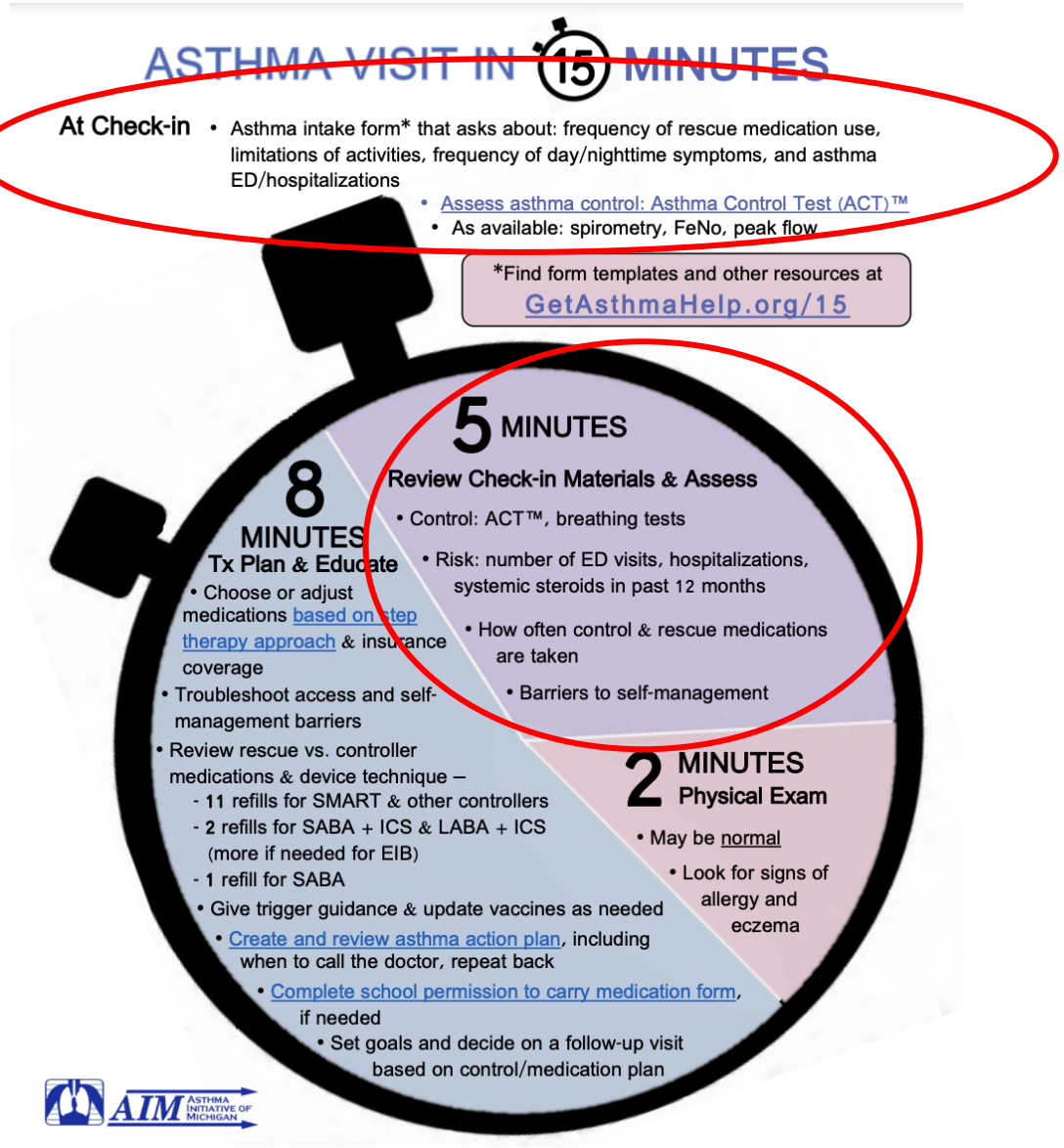
- Asthma intake form* that asks about: frequency of rescue medication use, limitations of activities, frequency of day/nighttime symptoms, and asthma ED/hospitalizations
- Assess asthma control: Asthma Control Test (ACT)™
- As available: spirometry, FeNo, peak flow

*Find form templates and other resources at GetAsthmaHelp.org/15



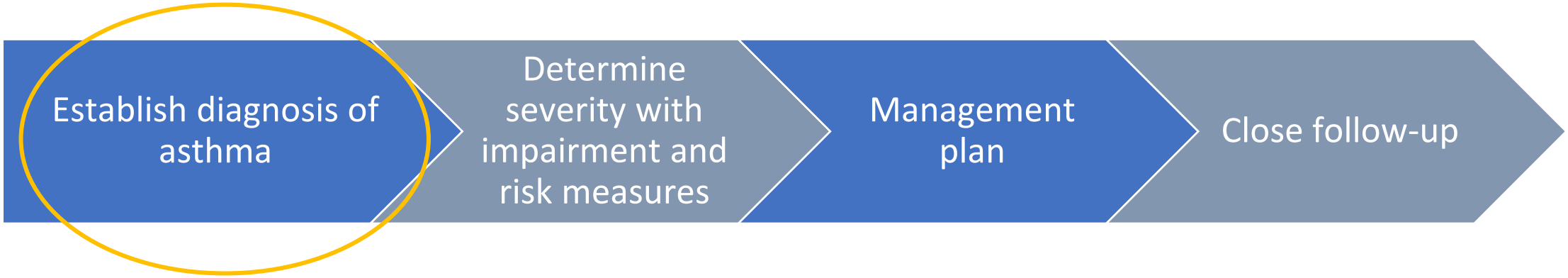
AIM Asthma Initiative of Michigan

https://getasthmahelp.org/15.aspx



Check In & History

NEW PATIENT ASTHMA VISIT



DIAGNOSIS

1. SYMPTOMS

- Variable, recurring
- Wheezing, chest tightness, coughing (nocturnal, early morning)

2. AIRWAY OBSTRUCTION

- Variable
- Low FEV1, low FEV1/FVC
- Obstruction reversible with bronchodilator (FEV1 or FVC improve by >12%) or incompletely reversible

3. INFLAMMATION

- Eosinophils, T lymphocytes, neutrophils, mast cells, macrophages

4. HYPERRESPONSIVENESS

- Bronchial smooth muscle contraction (bronchoconstriction) in response to stimuli

DIAGNOSIS BASICS

Episodic symptoms of airway hyperresponsiveness or obstruction (at least partially reversible with bronchodilator)

BOX 3–1. KEY INDICATORS FOR CONSIDERING A DIAGNOSIS OF ASTHMA

Consider a diagnosis of asthma and performing spirometry if any of these indicators is present.* These indicators are not diagnostic by themselves, but the presence of multiple key indicators increases the probability of a diagnosis of asthma. Spirometry is needed to establish a diagnosis of asthma.

- Wheezing—high-pitched whistling sounds when breathing out—especially in children. (Lack of wheezing and a normal chest examination do not exclude asthma.)
- History of any of the following:
  - Cough, worse particularly at night
  - Recurrent wheeze
  - Recurrent difficulty in breathing
  - Recurrent chest tightness
- Symptoms occur or worsen in the presence of:
  - Exercise
  - Viral infection
  - Animals with fur or hair
  - House-dust mites (in mattresses, pillows, upholstered furniture, carpets)
  - Mold
  - Smoke (tobacco, wood)
  - Pollen
  - Changes in weather
  - Strong emotional expression (laughing or crying hard)
  - Airborne chemicals or dusts
  - Menstrual cycles
- Symptoms occur or worsen at night, awakening the patient.

Must exclude alternative diagnoses

BOX 3–3. DIFFERENTIAL DIAGNOSTIC POSSIBILITIES FOR ASTHMA

Infants and Children

Upper airway diseases

- Allergic rhinitis and sinusitis

Obstructions involving large airways

- Foreign body in trachea or bronchus
- Vocal cord dysfunction
- Vascular rings or laryngeal webs
- Laryngotracheomalacia, tracheal stenosis, or bronchostenosis
- Enlarged lymph nodes or tumor

Obstructions involving small airways

- Viral bronchiolitis or obliterative bronchiolitis
- Cystic fibrosis
- Bronchopulmonary dysplasia
- Heart disease

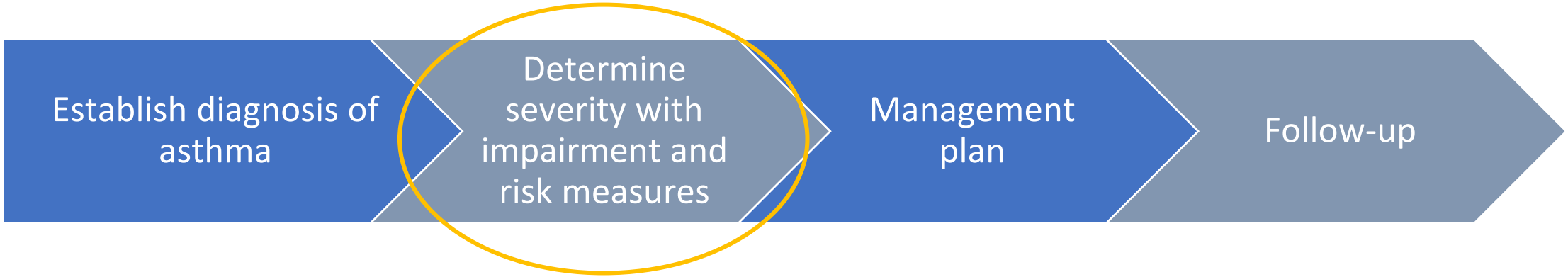
Other causes

- Recurrent cough not due to asthma
- Aspiration from swallowing mechanism dysfunction or gastroesophageal reflux

Adults

- COPD (e.g., chronic bronchitis or emphysema)
- Congestive heart failure
- Pulmonary embolism
- Mechanical obstruction of the airways (benign and malignant tumors)
- Pulmonary infiltration with eosinophilia
- Cough secondary to drugs (e.g., angiotensin-converting enzyme (ACE) inhibitors)
- Vocal cord dysfunction

NEW PATIENT ASTHMA VISIT - 2



CLASSIFICATION

Patient's *impairment* and *risk* will determine **severity** and **control**, dictate **treatment**

Impairment

- Frequency and intensity of patient's current symptoms and functional limitations

Risk

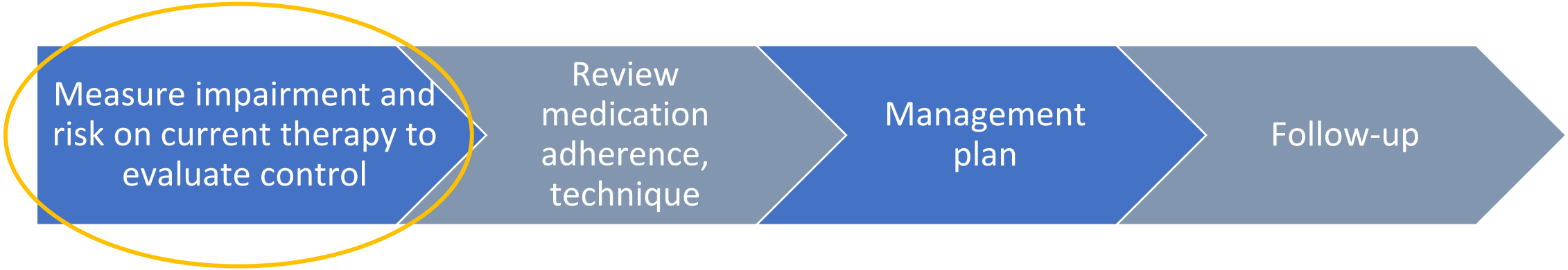
- Likelihood of adverse events such as exacerbations, progressive decline of lung function, or medication adverse effects

DETERMINING SEVERITY

Components of Severity		Intermittent			Persistent								
					Mild			Moderate			Severe		
		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	Ages 0–4 years	Ages 5–11 years	Ages ≥12 years
Impairment	Symptoms	≤2 days/week			>2 days/week but not daily			Daily			Throughout the day		
	Nighttime awakenings	0	≤2x/month		1–2x/month	3–4x/month		3–4x/month	>1x/week but not nightly		>1x/week	Often 7x/week	
	SABA* use for symptom control (not to prevent EIB*)	≤2 days/week			>2 days/week but not daily	>2 days/week but not daily and not more than once on any day		Daily			Several times per day		
	Interference with normal activity	None			Minor limitation			Some limitation			Extremely limited		
	Lung function		Normal FEV_1 between exacerbations	Normal FEV_1 between exacerbations									
	→ FEV_1* (% predicted)	Not applicable	>80%	>80%	Not applicable	>80%	>80%	Not applicable	60–80%	60–80%	Not applicable	<60%	<60%
	→ FEV_1/FVC*		>85%	Normal†		>80%	Normal†		75–80%	Reduced 5%†		<75%	Reduced >5%†
Risk	Asthma exacerbations requiring oral systemic corticosteroids‡	0–1/year			≥2 exacerb. in 6 months, or wheezing ≥4x per year lasting >1 day AND risk factors for persistent asthma	≥2/year		*Generally, more frequent and intense events indicate greater severity.*					
		*Consider severity and interval since last asthma 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.**						*Generally, more frequent and intense events indicate greater severity.*					
Recommended Step for Initiating Therapy *(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.*		Step 1			Step 2			Step 3	Step 3 medium-dose ICS* option	Step 3	Step 3	Step 3 medium-dose ICS* option or Step 4	Step 4 or 5
								Consider short course of oral systemic corticosteroids.					
		In 2–6 weeks, depending on severity, assess level of asthma control achieved and adjust therapy as needed. For children 0–4 years old, if no clear benefit is observed in 4–6 weeks, consider adjusting therapy or alternate diagnoses.											

NHLBI EPR3 Asthma Guidelines

ESTABLISHED PATIENT ASTHMA VISIT



DETERMINING CONTROL

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*	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
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.					

NHLBI EPR 3 Asthma Guidelines

ACT Ages 4-11 Years

Childhood Asthma Control Test for children 4 to 11 years.

This test will provide a score that may help the 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. Bring this test to the doctor to talk about the 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, how many days did your child have any daytime asthma symptoms?

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

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

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

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

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

TOTAL

https://www.greenhillspeds.com/wp-content/uploads/2015/12/Asthma-Control-Test-4-to-11-years.pdf

ACT Ages
12 and Older

FOR PATIENTS:

Take the Asthma Control Test™ (ACT) for people 12 yrs and older.

Know your score. Share your results with your doctor.

1. In the past **4 weeks**, how much of the time did your **asthma** keep you from getting as much done at work, school or at home?	All of the time	1	Most of the time	2	Some of the time	3	A little of the time	4	None of the time	5	SCORE
2. During the past **4 weeks**, how often have you had shortness of breath?	More than once a day	1	Once a day	2	3 to 6 times a week	3	Once or twice a week	4	Not at all	5	
3. During the past **4 weeks**, how often did your **asthma** symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?	4 or more nights a week	1	2 or 3 nights a week	2	Once a week	3	Once or twice	4	Not at all	5	
4. During the past **4 weeks**, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?	3 or more times per day	1	1 or 2 times per day	2	2 or 3 times per week	3	Once a week or less	4	Not at all	5	
5. How would you rate your **asthma** control during the **past 4 weeks**?	Not controlled at all	1	Poorly controlled	2	Somewhat controlled	3	Well controlled	4	Completely controlled	5	TOTAL

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:

- A simple, 5-question tool that is self-administered by the patient
- Clinically validated by specialist assessment and spirometry[1]
- Recognized by the National Institutes of Health

https://www.greenhillspeds.com/wp-content/uploads/2015/12/Asthma-Control-Test-4-to-11-years.pdf

6 HIGH YIELD QUESTIONS

How has your breathing been since your last visit?

How many days a week are you having symptoms requiring your albuterol rescue inhaler?

Has your activity been limited because of your breathing problems?

Are you waking up at night with cough or difficulties breathing? How many nights in the last month?

Since your last visit have you been to the ED, hospitalized, or required oral steroids for your asthma?

Explain to me how you take your asthma medications. How many days/week do miss your medication (if on daily ICS)?

FOLLOW UP INTAKE FORM

GIST Guideline Implementation Steps & Tools
GetAsthmaHelp.org/GIST

ASTHMA PATIENT FOLLOW-UP TOOL *Assess patient's asthma control and device technique.*

☐ ACT™ Test Score _____ **Severity level at diagnosis:** ☐ Intermittent ☐ Mild Persistent ☐ Moderate Persistent ☐ Severe Persistent

HIGHEST LEVEL OF CHECKED BOX = CONTROL LEVEL / FOLLOW CONTROL LEVEL DOWN TO FIND TREATMENT STEP → SEE TREATMENT STEPWISE APPROACH

	WELL CONTROLLED	NOT WELL CONTROLLED	VERY POORLY CONTROLLED
IMPAIRMENT	**SYMPTOMS:** ☐ 2 day/week or less, not more than once per day **NIGHTTIME AWAKENINGS:** ☐ No more than once/month **INTERFERENCE W/NORMAL ACTIVITY:** ☐ None **SHORT-ACTING B_2-AGONIST USE:** ☐ 2 days/week or less **FEV_1 OR PEAK FLOW:** ☐ Age 5 & over: More than 80% predicted/personal best **FEV_1/FVC:** ☐ Age 5 & over: more than 80% **ACT SCORE:** ☐ 20 or more	**SYMPTOMS:** ☐ More than 2 days/week or multiple times on 2 days/week or less **NIGHTTIME AWAKENINGS:** ☐ Ages 0-4: More than once/month ☐ Ages 5-11: 2 times/month or more ☐ Age 12 & over: 1-3 times/week **INTERFERENCE W/NORMAL ACTIVITY:** ☐ Some limitation **SHORT-ACTING B_2-AGONIST USE:** ☐ More than 2 days/week **FEV_1 OR PEAK FLOW:** ☐ Age 5 & over: 60-80% pred./personal best **FEV_1/FVC:** ☐ Age 5 & over: 75-80% **ACT SCORE:** ☐ 16-19	**SYMPTOMS:** ☐ Throughout the day **NIGHTTIME AWAKENINGS:** ☐ Ages 0-4: More than once/week ☐ Ages 5-11: 2 times/week or more ☐ Age 12 & over: 4 times/week or more **INTERFERENCE W/NORMAL ACTIVITY:** ☐ Extremely limited **SHORT-ACTING B_2-AGONIST USE:** ☐ Several times/day **FEV_1 OR PEAK FLOW:** ☐ Age 5 & over: Less than 60% pred./personal best **FEV_1/FVC:** ☐ Age 5 & over: less than 75% **ACT SCORE:** ☐ 15 or less
RISK	**EXACERBATIONS REQUIRING ORAL STEROIDS** ☐ All ages: 0-1/year	**EXACERBATIONS REQUIRING ORAL STEROIDS** ☐ Age 0-4: 2-3/year ☐ Age 5 & over: 2/year or more; consider severity	**EXACERBATIONS REQUIRING ORAL STEROIDS** ☐ Age 0-4: More than 3/year ☐ Age 5 & over: 2/year or more; consider severity
TREATMENT STEP	☐ Maintain current step ☐ Consider step down if well controlled for at least 3 months	✓ Check adherence & environmental control ☐ Step up 1 step and assess response in 2-6 weeks	✓ Check adherence & environmental control ☐ Consider short course of oral corticosteroids ☐ Consider co-morbid conditions ☐ Step up 1-2 steps and assess response in 2 weeks
		☐ For side effects, consider alternative treatment options	
	☐ Rescue medication for all ages, all severity/control levels: Short-acting B_2-agonist PRN. Treatment intensity depends on symptom severity. ☐ Provide written Asthma Action Plan; review/update ☐ Spirometry annually for age 5 & over ☐ Flu vaccine recommended annually, pneumooccal vaccine for adults ☐ Consider referral to a specialist if not well controlled within 3-6 months using stepwise approach **OR** 2 or more ED visits or hospitalizations for asthma in a year.		

https://getasthmahelp.org/gist-asthma-guideline-implementation-steps-and-tools.aspx

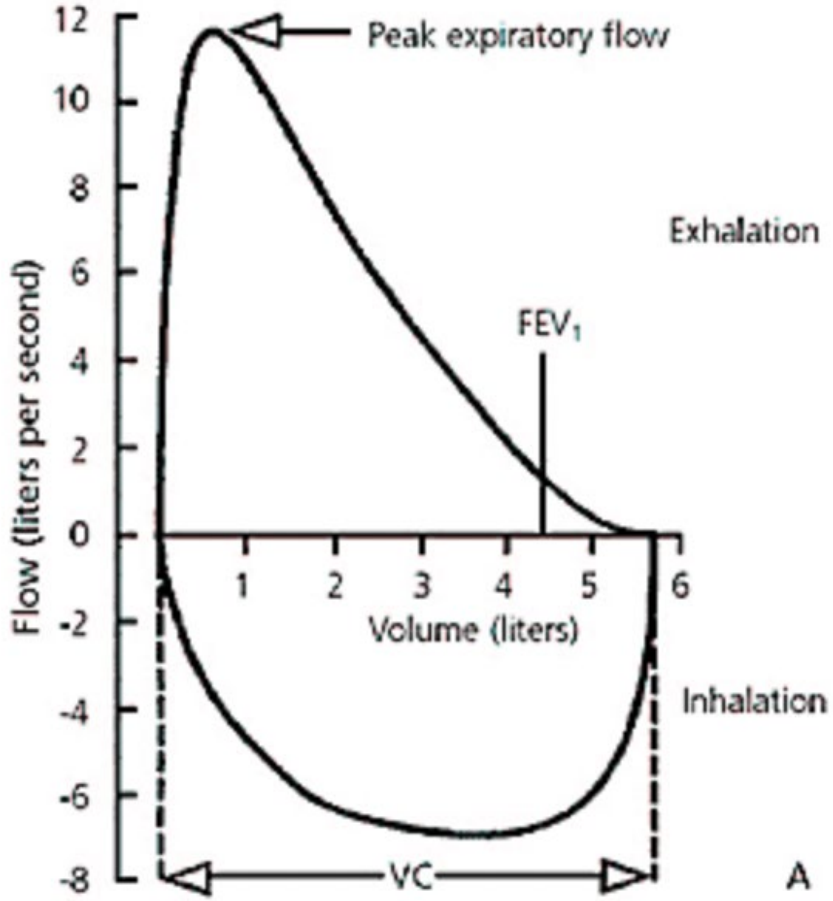
OBJECTIVE MEASUREMENTS

- Spirometry
- Exhaled Nitric Oxide (FeNO)
- Peak Flow

SPIROMETRY

Definitions:

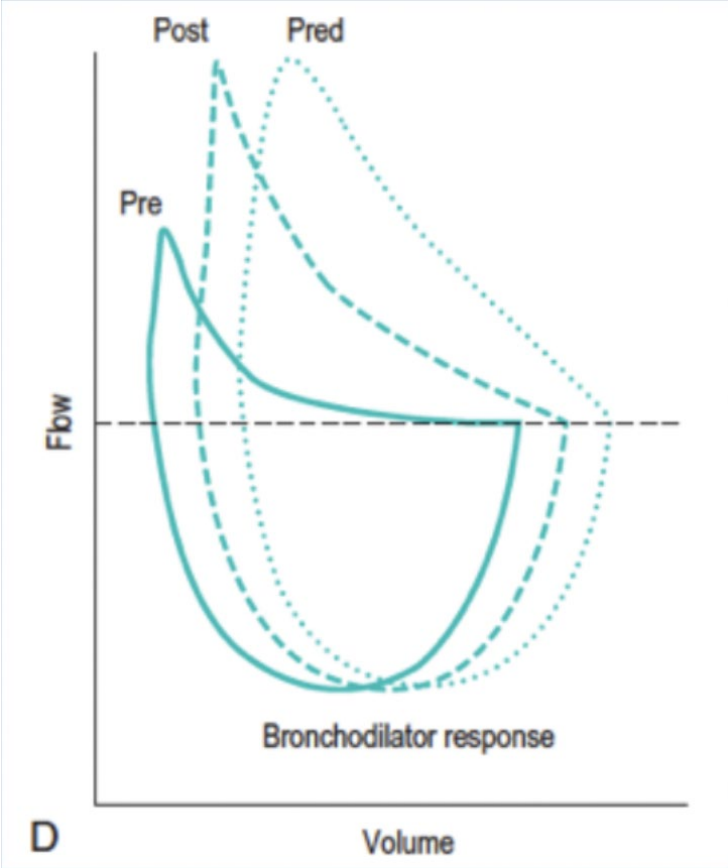
- **FEV1 -** Forced expiratory volume
  - Volume of air exhaled forcibly in the first second after maximal inhalation
- **FVC** – Forced vital capacity
  - Total amount of air exhaled on forced exhalation
- **FEV1/FVC** – percentage of FVC exhaled in the first second
- **PEFR** - Peak expiratory flow rate
  - Maximal expiratory flow rate generated with forceful exhalation after full inspiration



SPIROMETRY - 2

- Technique:
  - Should be done off SABA for 4 hours, LABA 12 hours
  - 2-4 puffs of albuterol after pre-bronchodilator testing, wait 10-15 minutes and then post-test
  - Adequate effort required: exhale for at least 6 seconds
  - Repeat at least 3 times with minimal variability between trials (within 150 mL)
- Most effective if over age 5
- Recommended every 3-6 months if changing or optimizing initial therapy, then every 1-2 years if asthma stable

REVERSIBLE AIRWAY OBSTRUCTION



Middleton's Allergy textbook, 2013

1. **Obstruction**
   - Compare to others with same age, sex, weight, height, ethnicity
   - Low FEV1/FVC ratio
     - <80% predicted or <70% predicted in older adults

     OR
     - greater than -1.64 SD from predicted
   - Low FEV1
     - <80% predicted

     OR
     - greater than -1.64 SD from predicted
2. **Reversible**
   - FEV1 improves by at least 12% & 200 mL post-bronchodilator

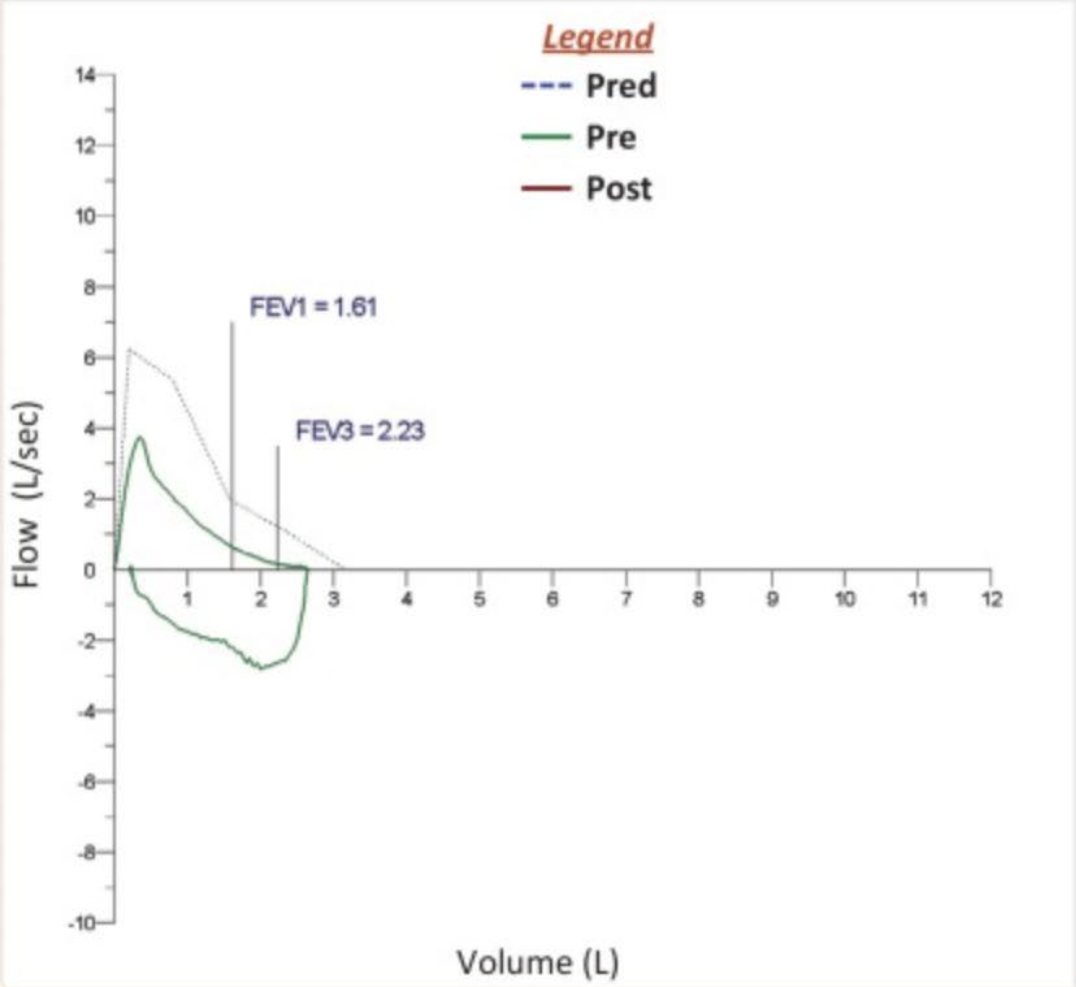
     OR
   - FVC improves by at least 12% & 200 mL post-bronchodilator

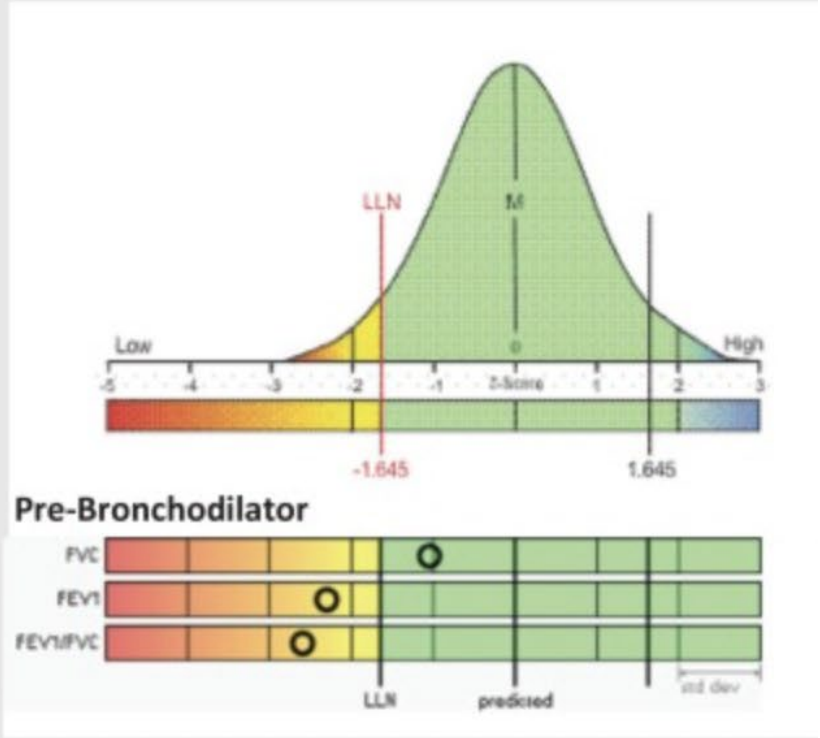
- Can also see decreased FEF25-75 (incdicates small airway obstruction) but this is variable

Spirometry (BTPS)

Pre Bronchodilator

		Actual	Range		Predicted	% Pred	Z-score
StartTime		09:14	----	----	----	----	----
FVC	L	2.64	2.36	3.99	3.16	84	−1.07
FEV_1	L	1.61	1.84	3.08	2.47	65	−2.24
FEV_1 / FVC	%	61	66	89	79	77	−2.26





Haynes JM, Can J Respir Ther. 2018

FeNO

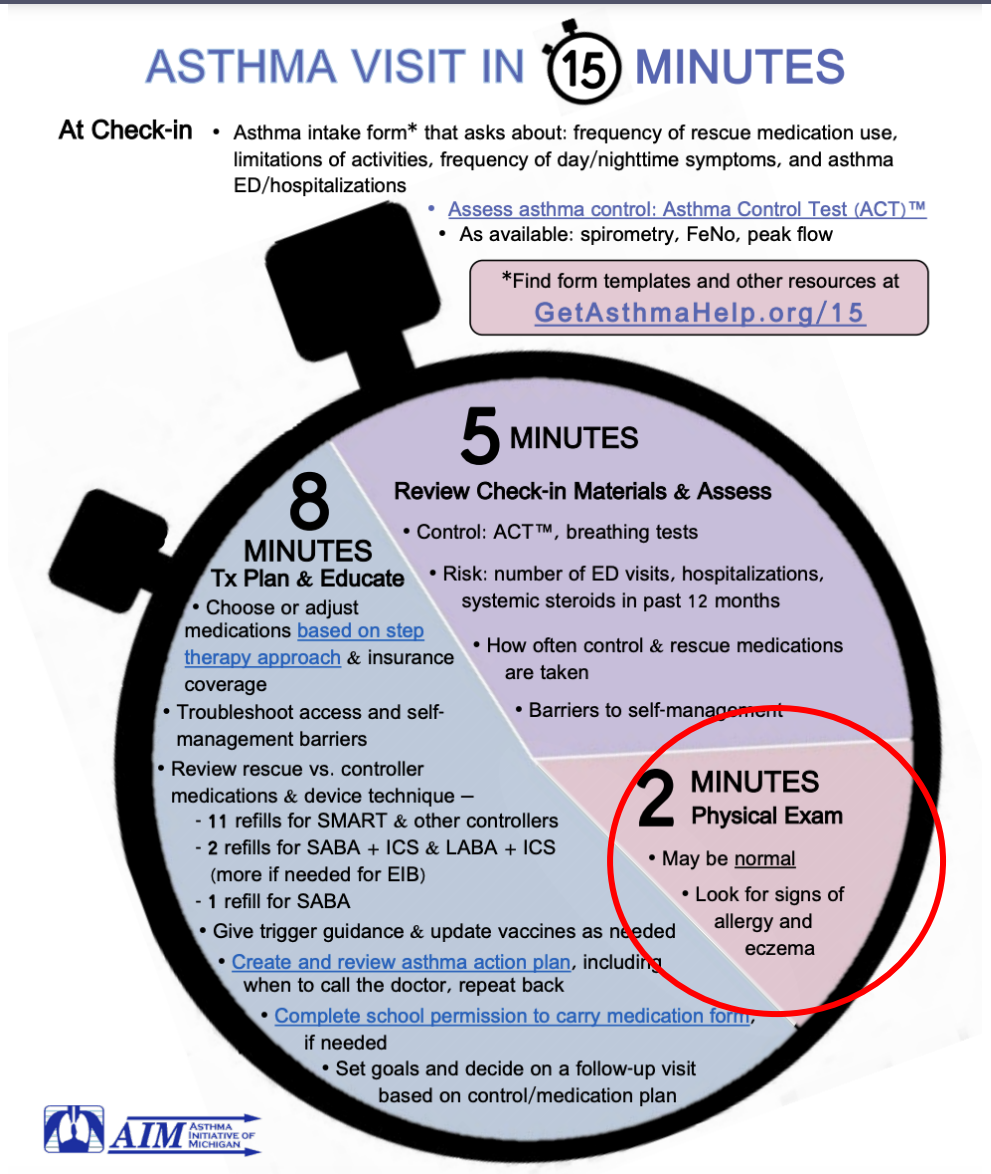
- FeNO = **fraction of exhaled nitric oxide**
- Indicates eosinophilic/allergic (Th2) airway inflammation
- Interpretation
  - >50 ppb adults, >35 ppb children suggests allergic airway inflammation
  - <25 ppb adults, <20 ppb children indicative of absent allergic airway inflammation
  - Interpretation is affected by common things:
    - Caffeine, EtOH, smoking: reduce FeNO
    - Allergic rhinitis, viral illness: increase FeNO
- Very useful for monitoring patients on therapy -> the trends of FeNO are clinically relevant

FeNO - 2

- **EPR4 updates regarding FeNO:**
  - FeNO use for monitoring was associated with significant reduction in asthma exacerbations (but not improved control or quality of life)
  - Use in age 5 or above if asthma diagnosis is uncertain
  - Helpful for monitoring allergic asthma in ages 5 and up
  - FeNO should not be used in isolation for asthma control evaluation
  - FeNO should not be used in children aged 0-4 to predict development of asthma

PEAK FLOW MONITORING

- Easy, cheap, useful home monitoring
- Take 2 forced exhalation measurements/day for 2-3 weeks while asthma under good control to identify your peak volumes
  - GREEN – 80-100% of personal best
  - YELLOW – 50-80% of personal best
  - RED- <50% of personal best
- Include on personalized asthma action plan
- Can look up predicted average peak flows: https://www.med.umich.edu/1info/FHP/practiceguides/asthma/pefrates.pdf University of Michigan



Physical Exam

PHYSICAL EXAM FINDINGS

ASTHMA

Wheezing, cough, diminished airflow, hyperexpanded thorax in children **may have normal pulmonary exam**

ATOPIC DERMATITIS

Erythematous papules, plaques, excoriation, lichenification, intensely pruritic

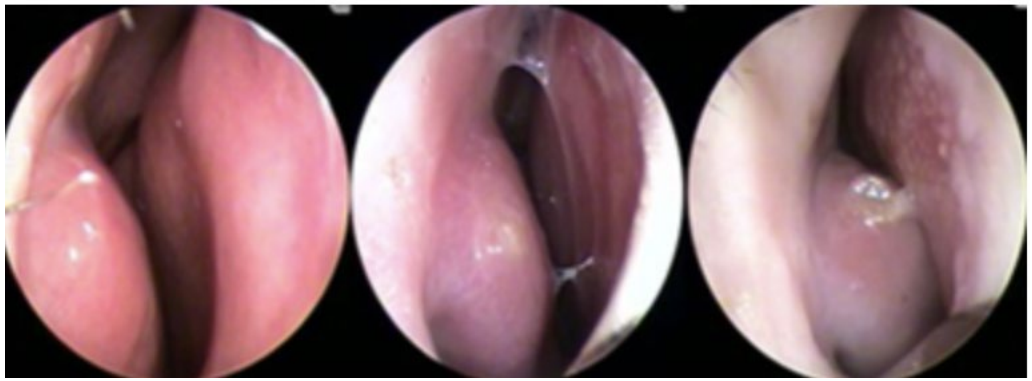
ALLERGIC RHINITIS

turbinate hypertrophy, pale appearing nasal mucosa, allergic shiners, allergic salute, Dennie-Morgan lines, allergic facies

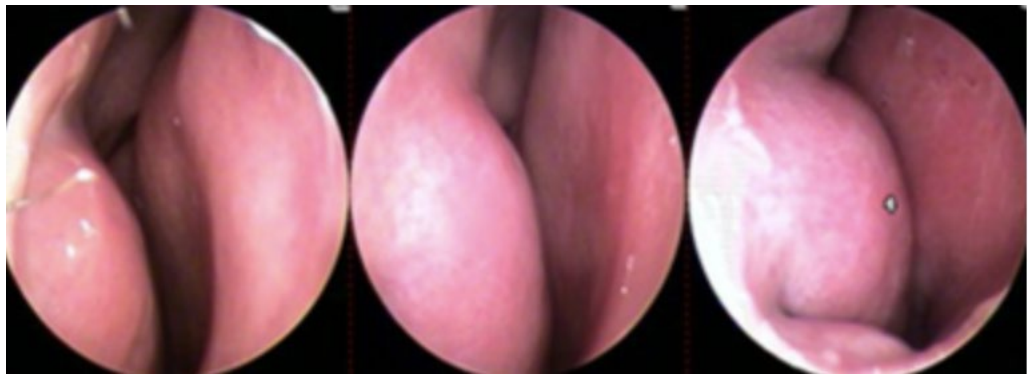
POSSIBLE HISTORY OF:

Aspirin/NSAID hypersensitivity reactions, nasal polyps, food allergy, GERD, OSA

ALLERGIC RHINITIS, POLYPOSIS



Pallor of nasal mucosa



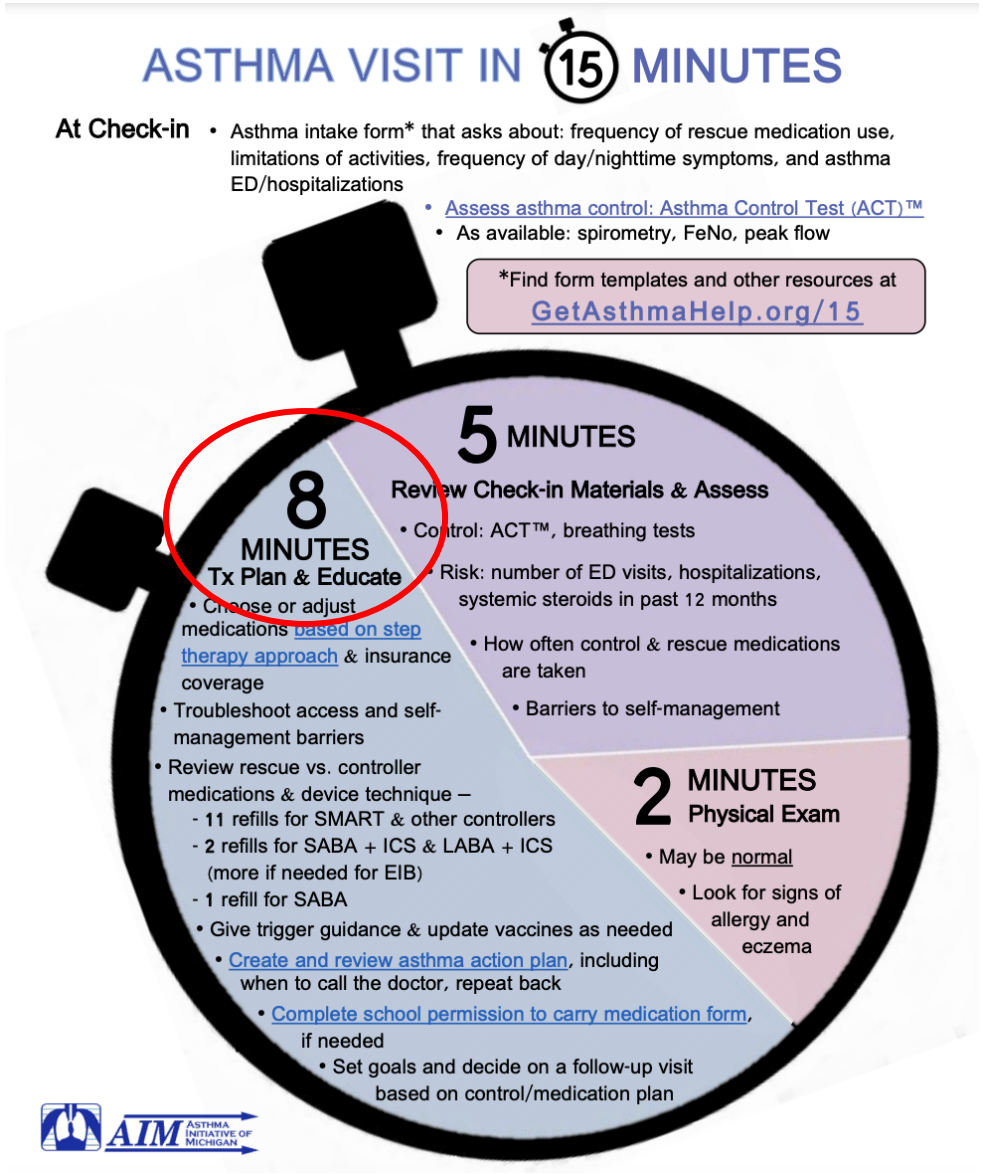
Nasal turbinate hypertrophy

Dennie-Morgan lines
& allergic shiner

Nasal polyps

Transverse nasal crease
“allergic salute”

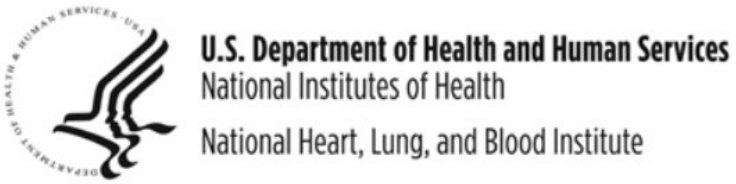
Up To Date – Nasal Polyposis
https://brownmedpedsresidency.org/a-salute-to-allergic-rhinitis/



Treatment Plan & Education

ASTHMA TREATMENT GUIDELINES

- Global
  - GINA – **Global Initiative for Asthma**[1]
  - Updated annually
  - Clinical strategy rather than a formal guideline
- National
  - NHLBI – **National Heart, Lung, and Blood Institute**[2]
  - Updated rarely
  - Also called “EPR” for expert panel report
    - EPR3 from 2007
    - EPR4 is the 2020 update to EPR3
- Guidelines differ slightly in their recommendations



1. ginaasthma.org
2. nhlbi.nih.gov

IDENTIFY YOUR RESOURCES

Resources help you with the complexity of management -

- NHLBI (EPR), GINA
- Age groups
  - NHLBI: 0-4, 5-11, >/= 12
  - GINA: 6-11, >/= 12
- Many different medication choices
- Inhaled steroids with different dose ranges for low, medium, and high doses in different age groups
- Different inhaler delivery devices requiring different techniques
  - Dry powdered inhalers (DPI)
  - Metered dose inhalers (MDI)
- Inhaler may require spacer, face mask for young children
- Asthma care is far from “one size fits all”

New Primary Care 15-minute Asthma Visit Resources

Provider Tools & Resources

- AIM Asthma Guidelines: NHLBI, GINA and ACAAI Yardsticks
- 2020 Focused Updates to the Asthma Management Guidelines: Clinician's Guide
- AIM Health Care Provider home page
- Asthma Guidelines Implementation Steps & Tools (GIST)
- AIM e-AAPs
- Medicaid Health Plan Pharmacy Benefit and Common Formulary
- University of Michigan Health System Asthma Resources
    - Asthma Practice Guidelines-PDF
    - Persistent asthma requirements for classification-PDF
- Asthma Medication Poster (Minnesota Dept. of Health)
- Asthma Medication Poster (Allergy & Asthma Network)
- Asthma Care Map/Checklist SOBRAP-PDF
- Planned Asthma Visit Checklist SOBRAP-PDF
- Key Asthma Educational Messages SOBRAP-PDF
- Script for 8-minute asthma visit with smoking cessation counseling-PDF
- Script for 5-minute asthma visit with influenza vaccine-PDF

Patient Handouts & Resources

- How to Use a Spacer with Facemask SOBRAP-PDF
- How to Use a Spacer SOBRAP-PDF
- Simple medication guide SOBRAP-PDF
- My Asthma Diary SOBRAP-PDF
- My Child's Asthma Diary SOBRAP-PDF
- Triggers checklist SOBRAP-PDF
- Reduce triggers checklist SOBRAP-PDF
- University of Michigan Patient Education Clearinghouse
  University of Michigan Patient Education Clearinghouse has individual patient education sheets for asthma medications. Type "how to use your" in the search box
- Inhaler training videos – all types (COPD Foundation)
- Michigan Asthma Resource Kit (MARK) – patient handouts

https://getasthmahelp.org/15.aspx

RECOMMENDED APPROACH TO THERAPY

1. **Choose or adjust therapy based on step therapy approach, keeping in mind insurance coverage**
2. Troubleshoot medication access and self-management barriers
3. Review rescue vs controller medications & device technique
4. Give trigger guidance and update vaccines as needed
5. Create and review Asthma Action Plan, including when to call doctor (recommend “repeat back” technique)
6. Complete school permission form to carry asthma medication if needed
7. Set goals and follow-up visit

STEPWISE APPROACH

Components of Severity		Intermittent			Persistent								
					Mild			Moderate			Severe		
		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	Ages 0–4 years	Ages 5–11 years	Ages ≥12 years
Impairment	Symptoms	≤2 days/week			>2 days/week but not daily			Daily			Throughout the day		
	Nighttime awakenings	0	≤2x/month		1–2x/month	3–4x/month		3–4x/month	>1x/week but not nightly		>1x/week	Often 7x/week	
	SABA* use for symptom control (not to prevent EIB*)	≤2 days/week			>2 days/week but not daily	>2 days/week but not daily and not more than once on any day		Daily			Several times per day		
	Interference with normal activity	None			Minor limitation			Some limitation			Extremely limited		
	Lung function		Normal FEV_1 between exacerbations	Normal FEV_1 between exacerbations									
	➔ FEV_1* (% predicted)	Not applicable	>80%	>80%	Not applicable	>80%	>80%	Not applicable	60–80%	60–80%	Not applicable	<60%	<60%
	➔ FEV_1/FVC*		>85%	Normal†		>80%	Normal†		75–80%	Reduced 5%†		<75%	Reduced >5%†
Risk	Asthma exacerbations requiring oral systemic corticosteroids‡	0–1/year			≥2 exacerb. in 6 months, or wheezing ≥4x per year lasting >1 day AND risk factors for persistent asthma	≥2/year		*Generally, more frequent and intense events indicate greater severity.*			*Generally, more frequent and intense events indicate greater severity.*		
		*Consider severity and interval since last asthma 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 Therapy *(See "Stepwise Approach for Managing Asthma Long Term," page 7)*		Step 1			Step 2			Step 3	Step 3 medium-dose ICS* option	Step 3	Step 3	Step 3 medium-dose ICS* option or Step 4	Step 4 or 5
								Consider short course of oral systemic corticosteroids.					
The stepwise approach is meant to help, not replace, the clinical decisionmaking needed to meet individual patient needs.		*In 2–6 weeks, depending on severity, assess level of asthma control achieved and adjust therapy as needed. For children 0–4 years old, if no clear benefit is observed in 4–6 weeks, consider adjusting therapy or alternate diagnoses.*											

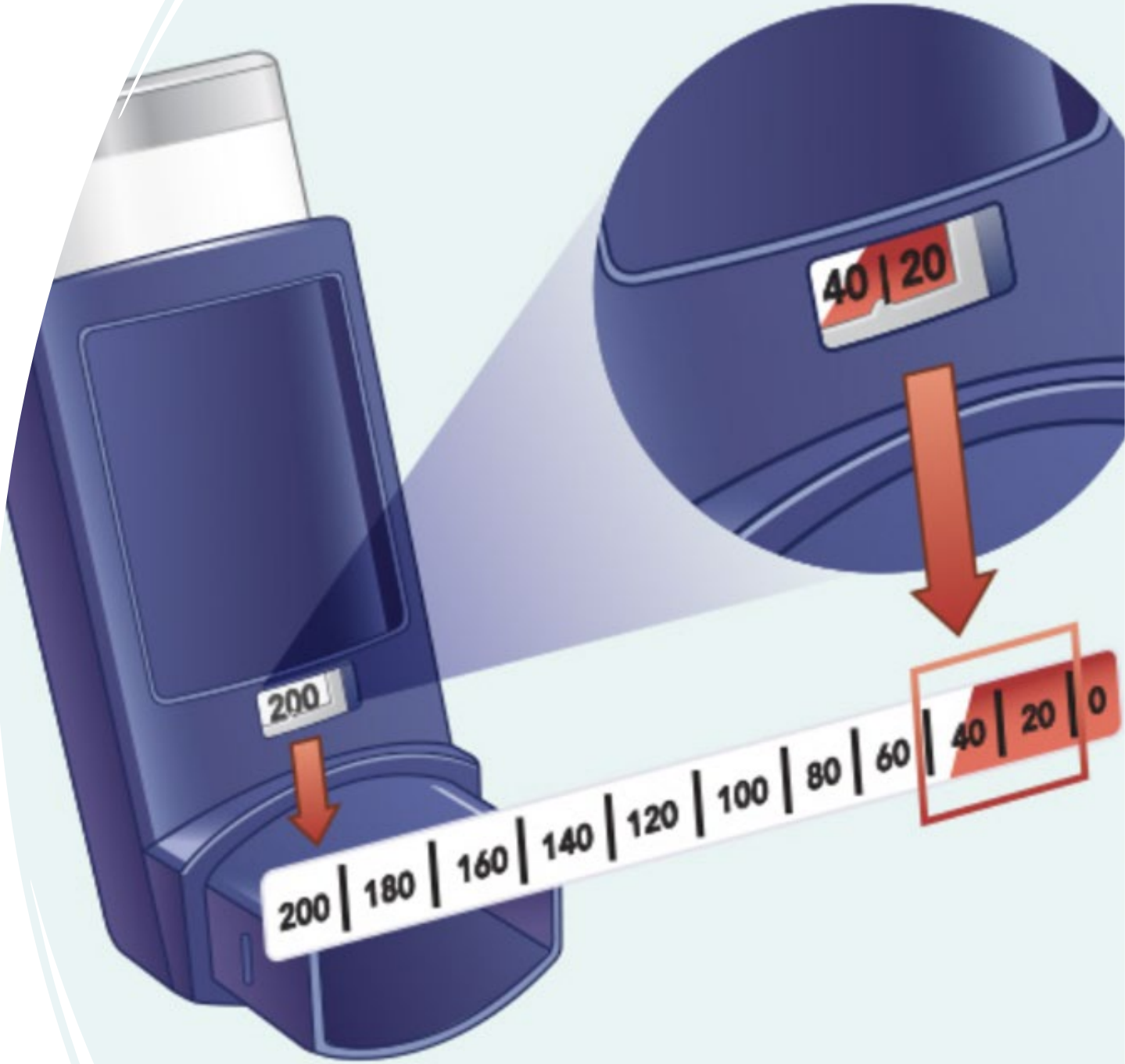
NHLBI EPR 3 Asthma Guidelines

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*	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
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.					

REMINDER

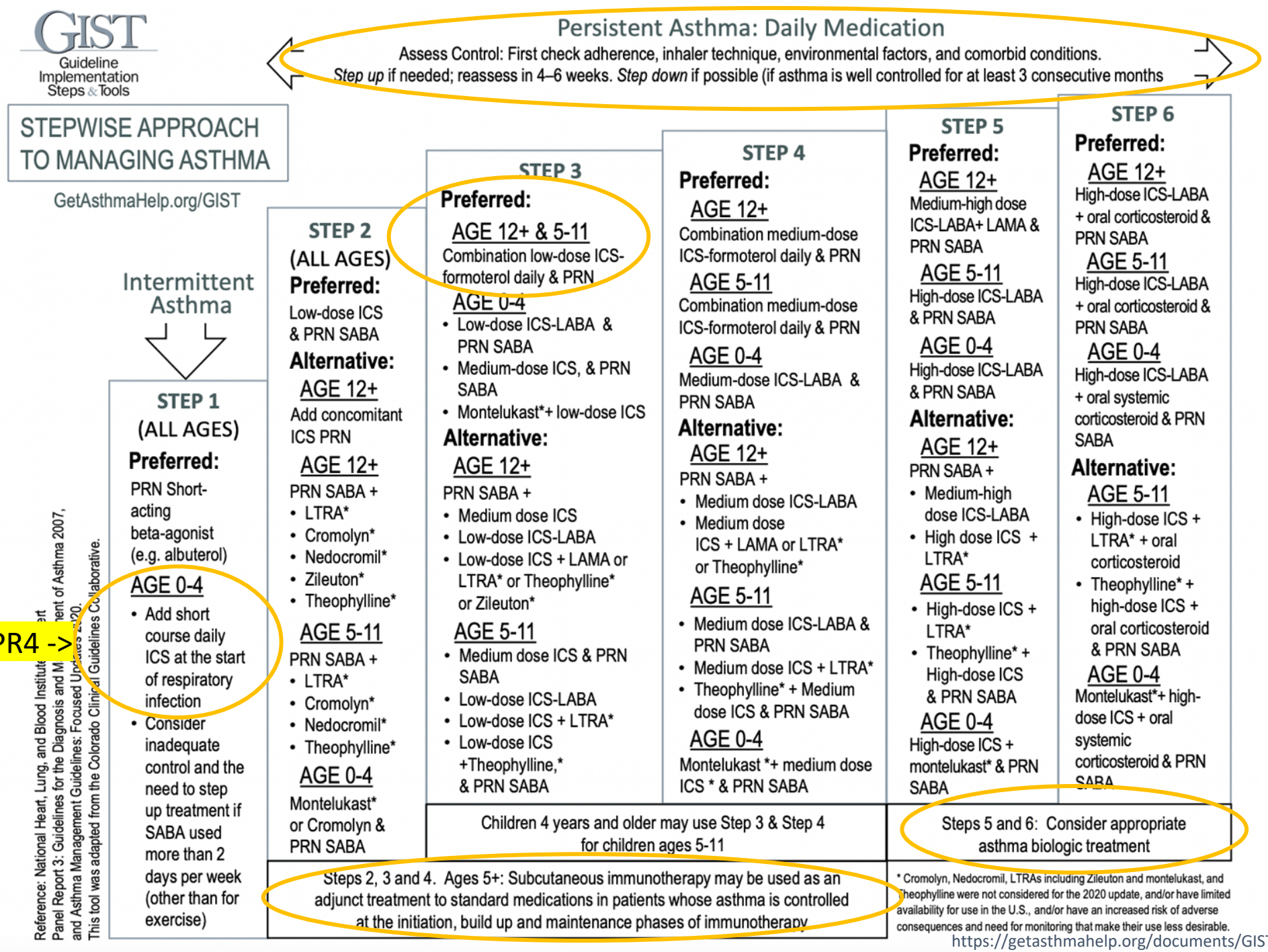
Before stepping up therapy, make sure you review:

- Adherence
- Technique (spacer, mask, etc)
- Expiration date of inhalers



SUMMARY OF NHLBI TREATMENT APPROACH

*New with EPR4 ->



https://getasthmahelp.org/documents/GIST-Stepwise-2020-Update.pdf

RESOURCE: MEDICATIONS

Long Term Control

Brand Name(s)	Generic Name
	Zafirlukast
	Fluticasone and Salmeterol
	Flunisolide
	Ciclesonide
	Mometasone
	Fluticasone, Vilanterol
	Reslizumab
	Mometasone and formoterol
	Dupilumab
	Benralizumab
	Fluticasone

https://getasthmahelp.org/medications-list.aspx

Medication Detail

Medication Type Long Term Control, should be taken every day as prescribed

Generic Names Fluticasone

Brand Names [redacted]

Description This medication is an inhaler that is used to control long term symptoms of asthma. This medication prevents irritation and swelling in the airways.

Delivery

MDI (metered dose inhaler); DPI (dry powder inhaler)

Spacer

- [redacted] HFA can be used with a spacer.
- [redacted] Diskus **cannot** be used with a spacer.
- [redacted] Ellipta **cannot** be used with a spacer.
- [redacted] RespiClick **cannot** be used with a spacer.

https://getasthmahelp.org/medications-list.aspx

FLUTICASONE

Age	Previous Therapy	Recommended Starting Dosage	Highest Recommended Dosage
Aged ≥ 12 years	Bronchodilators alone	88 mcg twice daily	880 mcg twice daily
	Inhaled corticosteroids	88-220 mcg twice daily	880 mcg twice daily
Aged 4-11 years	--	88 mcg twice daily	88 mcg twice daily

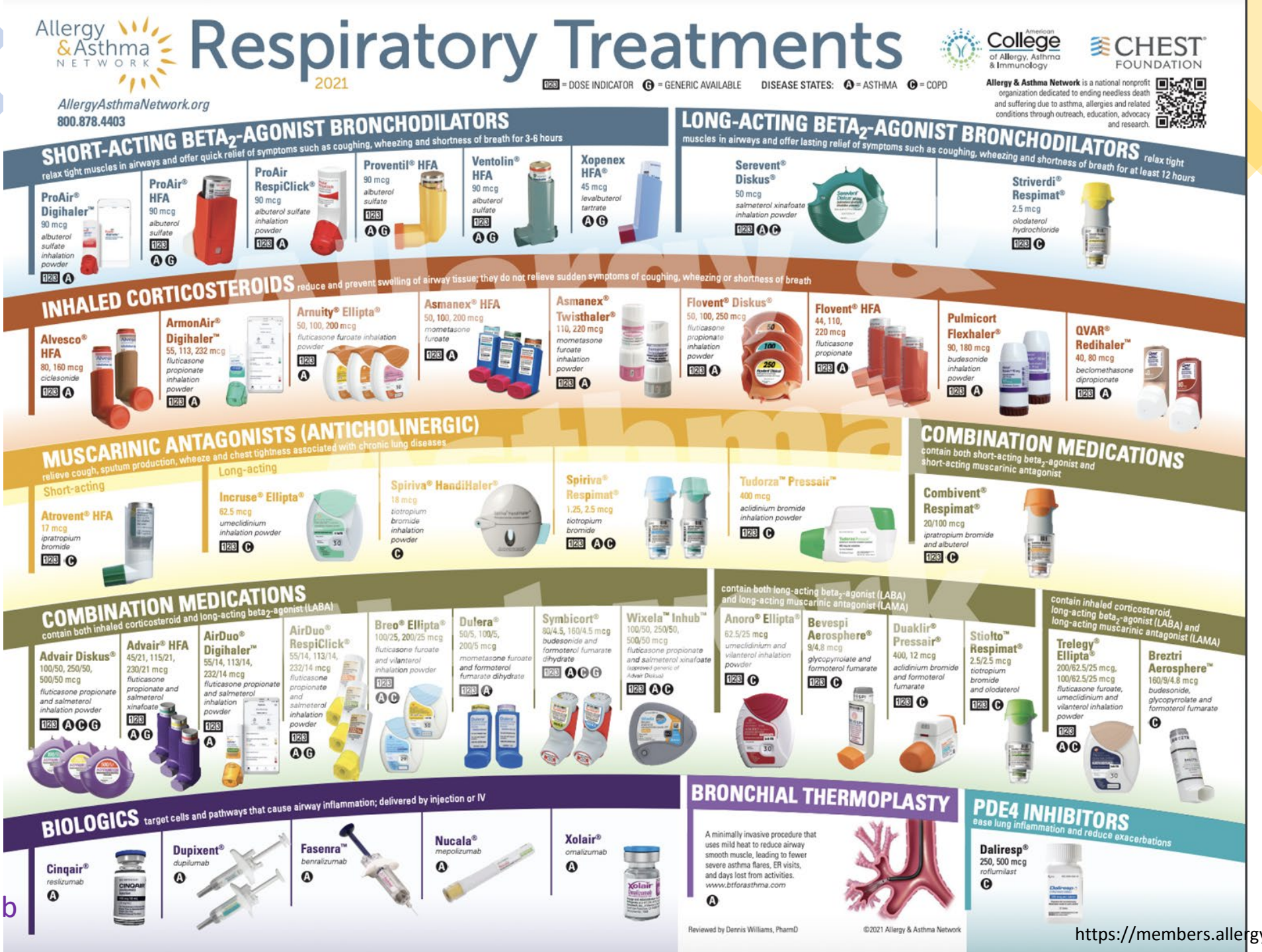
Age	Previous Therapy	Recommended Starting Dosage	Highest Recommended Dosage
Aged ≥ 12 years	Bronchodilators alone	100 mcg twice daily	1000 mcg twice daily
	Inhaled corticosteroids	100-250 mcg twice daily	1000 mcg twice daily
Aged 4-11 years	--	50 mcg twice daily	100 mcg twice daily

Age	Previous Therapy	Recommended Starting Dosage	Highest Recommended Dosage
Aged ≥ 12 years	None	100 mcg once daily	200 mcg daily
	Inhaled corticosteroids	100-200 mcg once daily	200 mcg daily
Aged 5 to 11 years	--	50 mcg once daily	50 mcg once daily

Age	Previous Therapy	Recommended Starting Dosage	Highest Recommended Dosage
Aged ≥ 12 years	No prior treatment with inhaled corticosteroids	55 mcg twice daily	232 mcg twice daily
	Inhaled corticosteroids	55-232 mcg twice daily	232 mcg twice daily
	is not indicated for children less than 12 years old		

https://getasthmahelp.org/medications-list.aspx

Inhaled Corticosteroid Daily Dosages				
Medication	Age	Low	Medium	High
Beclomethasone • MDI 40, 80 mcg/puff, divided BID	Adult 5-11	80-240 80-160	240-480 160-320	>480 >320
Budesonide • DPI 90, 180 mcg/inh, divided BID	Adult 5-11	200-540 180-360	540-1080 360-720	>1080 >720
Budesonide • Neb soln 0.25, 0.5, 1 mg, divided BID	5-11 0-4	0.5 0.25-0.5	1.0 0.5-1.0	2.0 >1.0
Ciclesonide • MDI 80, 160 mcg/puff, divided BID	Adult	160-320	320-640	>640
Fluticasone • DPI 50, 100, 250 mcg/puff, divided BID	Adult 4-11	100-300 100-200	300-600 200-400	>600 >400
Fluticasone • MDI 44, 110, 220 mcg/puff, divided BID	Adult 0-11	88-264 88-176	264-440 176-352	>440 >352
Mometasone • DPI 110, 220 mcg/puff, daily PM or BID	Adult 5-11	220 110	440 220-440	>440 >440



Anti-TSLP (Tezepelumab)

https://members.allergyasthmanetwork.org/store

SEVERE DIFFICULT TO TREAT ASTHMA - BIOLOGICS

Class	Name	Age*	Asthma indication*	Other indications*
Anti-IgE	Omalizumab (SC)	≥6 years	Severe allergic asthma	Nasal polyposis, chronic spontaneous urticaria
Anti-IL5 Anti-IL5R	Mepolizumab (SC) Reslizumab (IV) Benralizumab (SC)	≥6 years ≥18 years ≥12 years	Severe eosinophilic/Type 2 asthma	Mepolizumab: EGPA, CRSwNP, hypereosinophilic syndrome
Anti-IL4R	Dupilumab (SC)	≥6 years	Severe eosinophilic/Type 2 asthma, or maintenance OCS	Moderate-severe atopic dermatitis, CRSwNP; eosinophilic esophagitis
Anti-TSLP	Tezepelumab (SC)	≥12 years	Severe asthma	

CRSwNP = chronic rhinosinusitis with nasal polyposis
OCS = oral corticosteroid

SMART

- S.M.A.R.T. - **S**ame **M**aintenance **A**s **R**eliever **T**herapy
- Using ***ICS-formoterol*** when you have acute symptoms
  as well as for maintenance therapy
    Superior reduction in asthma exacerbations compared to ICS maintenance and PRN SABA
- Maximum dose (dictated by formoterol component)-
  - Children 4-11 yo: **8 puffs**/24 hours
  - Adults: **12 puffs**/24 hours
- Good candidates: 4 and older with history of severe exacerbation, difficulty taking daily ICS or prefer to not take daily medication, confusing SABA with ICS inhaler regularly
- Poor candidates: poor perceivers, cost, insurance coverage
- Challenges: understanding of use, pharmacy refills (send more than usual!)

GINA RECOMMENDS AGAINST SABA ALONE

- Fundamental change in asthma treatment per GINA guidelines – no longer recommending to treat intermittent asthma with SABA as needed alone
- Why?
  - Evidence has shown using ***ICS-formoterol*** as reliever reduces risk of asthma exacerbations compared to SABA alone, with similar symptom control and lung function
  - Regular use of SABA leads to tachyphylaxis effect and reduced response to bronchodilator over time
  - Overuse of SABA is associated with increased exacerbations and mortality
  - Daily ICS adherence in general is very poor
- Can also take ICS at time when you take SABA (if not on ICS-formoterol)

GINA Asthma Guideline 2022; https://ginasthma.org/gina-reports/

Adults & adolescents 12+ years

Personalized asthma management
Assess, Adjust, Review
for individual patient needs

Confirmation of diagnosis if necessary
Symptom control & modifiable risk factors (see Box 2-2B)
Comorbidities
Inhaler technique & adherence
Patient preferences and goals

Symptoms
Exacerbations
Side-effects
Lung function
Patient satisfaction

Treatment of modifiable risk factors and comorbidities
Non-pharmacological strategies
Asthma medications (adjust down/up/between tracks)
Education & skills training

CONTROLLER and **PREFERRED RELIEVER** (Track 1). Using ICS-formoterol as reliever reduces the risk of exacerbations compared with using a SABA reliever

STEPS 1 – 2	STEP 3	STEP 4	STEP 5
As-needed low dose ICS-formoterol	Low dose maintenance ICS-formoterol	Medium dose maintenance ICS-formoterol	Add-on LAMA Refer for assessment of phenotype. Consider high dose maintenance ICS-formoterol, ± anti-IgE, anti-IL5/5R, anti-IL4R, anti-TSLP
RELIEVER: As-needed low-dose ICS-formoterol			

See GINA severe asthma guide

CONTROLLER and **ALTERNATIVE RELIEVER** (Track 2). Before considering a regimen with SABA reliever, check if the patient is likely to be adherent with daily controller

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
Take ICS whenever SABA taken	Low dose maintenance ICS	Low dose maintenance ICS-LABA	Medium/high dose maintenance ICS-LABA	Add-on LAMA Refer for assessment of phenotype. Consider high dose maintenance ICS-LABA, ± anti-IgE, anti-IL5/5R, anti-IL4R, anti-TSLP
RELIEVER: As-needed short-acting beta$_2$-agonist				

Other controller options for either track (limited indications, or less evidence for efficacy or safety)	*Low dose ICS whenever SABA taken, or daily LTRA, or add HDM SLIT*	*Medium dose ICS, or add LTRA, or add HDM SLIT*	*Add LAMA or LTRA or HDM SLIT, or switch to high dose ICS*	*Add azithromycin (adults) or LTRA. As last resort consider adding low dose OCS but consider side-effects*

GINA Asthma Guideline 2022; https://ginasthma.org/gina-reports/

APPROACH TO THERAPY

1. Choose or adjust therapy based on step therapy approach, keeping in mind insurance coverage
2. **Troubleshoot medication access and self-management barriers**
3. **Review rescue vs controller medications & device technique**
4. Give trigger guidance and update vaccines as needed
5. Create and review Asthma Action Plan, including when to call doctor (recommend “repeat back” technique)
6. Complete school permission form to carry asthma medication if needed
7. Set goals and follow-up visit

SELF MANAGEMENT BARRIERS

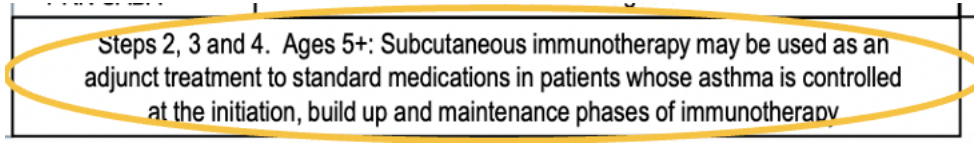
- **POOR PERCEIVERS**
  - Evaluation: spirometry
  - Home monitoring: peak flow
- **POOR ADHERENCE**
  - Identify reason (e.g. transportation, language, insurance coverage)
  - Poor understanding of asthma (e.g. periods of feeling well)
- **INAPPROPRIATE USE**
  - Wait to use until symptoms too severe
  - No spacer, no mask
  - Inappropriate technique
    - *https://www.copdfoundation.org/Learn-More/Educational-Materials-Resources/Educational-Video-Series.aspx*
  - Expired medication, empty inhalers
  - Confusing their albuterol with inhaled corticosteroid
- **AGE**
  - As your pediatric patients and families about who manages the inhalers!

APPROACH TO THERAPY - 2

1. Choose or adjust therapy based on step therapy approach, keeping in mind insurance coverage
2. Troubleshoot medication access and self-management barriers
3. Review rescue vs controller medications & device technique
4. **Give trigger guidance and update vaccines as needed**
5. Create and review Asthma Action Plan, including when to call doctor (recommend “repeat back” technique)
6. Complete school permission form to carry asthma medication if needed
7. Set goals and follow-up visit

TRIGGERS TO ADDRESS

- Environmental allergies
  - Pollen, dust mites, mold, animal dander
  - Allergy shots now included in asthma guidelines as adjunct therapy


Steps 2, 3 and 4. Ages 5+: Subcutaneous immunotherapy may be used as an adjunct treatment to standard medications in patients whose asthma is controlled at the initiation, build up and maintenance phases of immunotherapy

- Exposures
  - Wood burning smoke, tobacco smoke, perfumes and other strong odors, volatile organic compounds
  - Work-related exposures
- Foods (in food allergic patients)
- Illness
- Exercise
- Weather – cold, poor air quality
- NSAIDs (for some patients)
- Gastroesophageal reflux

- RESOURCE:

https://getasthmahelp.org/asthma-triggers.aspx

EPR 4 UDPATE REGARDING ALLERGENS & SCIT

RECOMMENDATIONS

- In individuals with asthma who have symptoms related to exposure to identified indoor allergens, confirmed by history taking or allergy testing, the Expert Panel conditionally recommends a multi-component allergen-specific mitigation intervention.

- In individuals with asthma who have sensitization or symptoms related to exposure to dust mites, the Expert Panel conditionally recommends impermeable pillow/mattress covers only as part of a multicomponent allergen mitigation intervention, not as a single-component intervention.

- In individuals with asthma who have sensitization or symptoms related to exposure to pests (cockroaches and rodents), the Expert Panel conditionally recommends the use of integrated pest management alone, or as part of a multicomponent allergen-specific mitigation intervention.

ALLERGY SHOTS (age 5 and older) ->

RECOMMENDATION

In individuals ages 5 years and older with mild to moderate allergic asthma, the Expert Panel conditionally recommends the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in those individuals whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy.

VACCINES IN ASTHMA

- Pneumococcal vaccines
- Influenza vaccine annually
  - And yes, even patients with anaphylaxis to egg can safely have their flu vaccine!
- COVID vaccinations with boosters on regular schedule
- Tdap
- All other age-appropriate recommended vaccines!

RECOMMENDED APPROACH TO THERAPY

1. Choose or adjust therapy based on step therapy approach, keeping in mind insurance coverage
2. Troubleshoot medication access and self-management barriers
3. Review rescue vs controller medications & device technique
4. Give trigger guidance and update vaccines as needed
5. **Create and review Asthma Action Plan, including when to call doctor (recommend “repeat back” technique)**
6. **Complete school permission form to carry asthma medication if needed**
7. Set goals and follow-up visit

Note: Hovering your mouse over a field will show the instructions for that field.

Asthma Action Plan
Students (5 - 18 years old)

AIM Asthma Initiative of Michigan
www.GetAsthmaHelp.org
This form is free to download and use

Student's Name | Age | Birth Date | Today's Date

Parent/ Guardian | Doctor | Phone

Phone | 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 through the night
- Able to play
- Peak flow is 80% of personal best ( )

Personal best =

Asthma, Allergy and GERD/Acid Reflux Medicines	How much to take & when to take it

▸ **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:		

Next:
- If not breathing better after 2 treatments, 20 minutes apart, GO TO RED ZONE.
- 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, talk well
- Ribs suck in
- Peak flow below 60% of personal best (<)

	Asthma Rescue Medicine	How much to take
First:		

Next:
- Wait 15 minutes to see if the treatment(s) have helped.
- If not 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 triggers: Colds/flu | Cigarette smoke | Wood smoke | Exercise or play | Dust, dust mites | Changes in weather, temperature | Reflux/GERD | Cockroaches | Flowers, grass, trees, weeds, pollen | Stress/emotions | Incense, perfumes, cleaners | Mold/mildew | Animal dander, rodents | Ozone alert days | Foods: | Other:

This student is approved to carry and take the quick-relief medication(s) named above on his/her own. Date

Doctor/Provider *(sign)* *(print)* Phone

My child may carry and take the quick-relief medication(s) named above on his/her own.

This signed form allows trained school staff to give the medication(s) named above to my child, per school policy.

This plan may be used to share information about my child's asthma for one year with: *(Add names and contact information as needed.)*

Healthcare Provider/Center | School

Daycare Provider | Coach | Other

Parent/Guardian *(sign)* Date Phone

Adapted from the original design by the Pediatric Asthma Coalition of New Jersey *rev. 03/2019*

***Available in many different languages**

https://getasthmahelp.org/actionplans.aspx

RECOMMENDED APPROACH TO THERAPY - 2

1. Choose or adjust therapy based on step therapy approach, keeping in mind insurance coverage
2. Troubleshoot medication access and self-management barriers
3. Review rescue vs controller medications & device technique
4. Give trigger guidance and update vaccines as needed
5. Create and review Asthma Action Plan, including when to call doctor (recommend “repeat back” technique)
6. Complete school permission form to carry asthma medication if needed
7. **Set goals and follow-up visit**

SOCIAL DETERMINANTS OF HEALTH IN ASTHMA

ASTHMA MORTALITY

- Prior intubation/mechanical ventilation for asthma attack
- Hospitalization or ED visit in the last year for asthma
- Poor medication adherence
- Current use of inhaled corticosteroid (ICS)
- Recently stopped ICS
- Poor perception of dyspnea
- **Black or Hispanic**
- **Inner city residence**
- **Low socioeconomic status**

Black, Hispanic, and Indigenous individuals in the U.S. face THE HIGHEST BURDEN OF ASTHMA.

These disparities are caused by complex factors including systemic and structural racism.

Compared to white Americans:

Black Americans are nearly **1.5 times** more likely to have asthma

Puerto Rican Americans are nearly **2 times** more likely to have asthma

Black Americans are **5 times** more likely to visit the emergency department due to asthma

Black Americans are **3 times** more likely to die from asthma

When sex is factored in, **BLACK WOMEN** have the highest rates of death due to asthma

Asthma and Allergy Foundation of America

aafa.org/asthmadisparities

https://www.aafa.org/asthma-disparities-burden-on-minorities.aspx

ASTHMA DISPARITIES IN INDIGENOUS AMERICANS

Though limited, existing data show stark disparities in asthma-related outcomes of American Indian (AI) and Alaska Native (AN) populations.

Compared to white individuals:

AI/AN children are **50% more likely** to have asthma, and AI/AN adults are 28% more likely[1]

AI/AN individuals have a **10% higher risk** of death from chronic lower respiratory diseases[2]

The Washington State Department of Health found that, compared to other adults with asthma, AI/AN adults:[3]

Are nearly **2 times** as likely to experience asthma symptoms every day

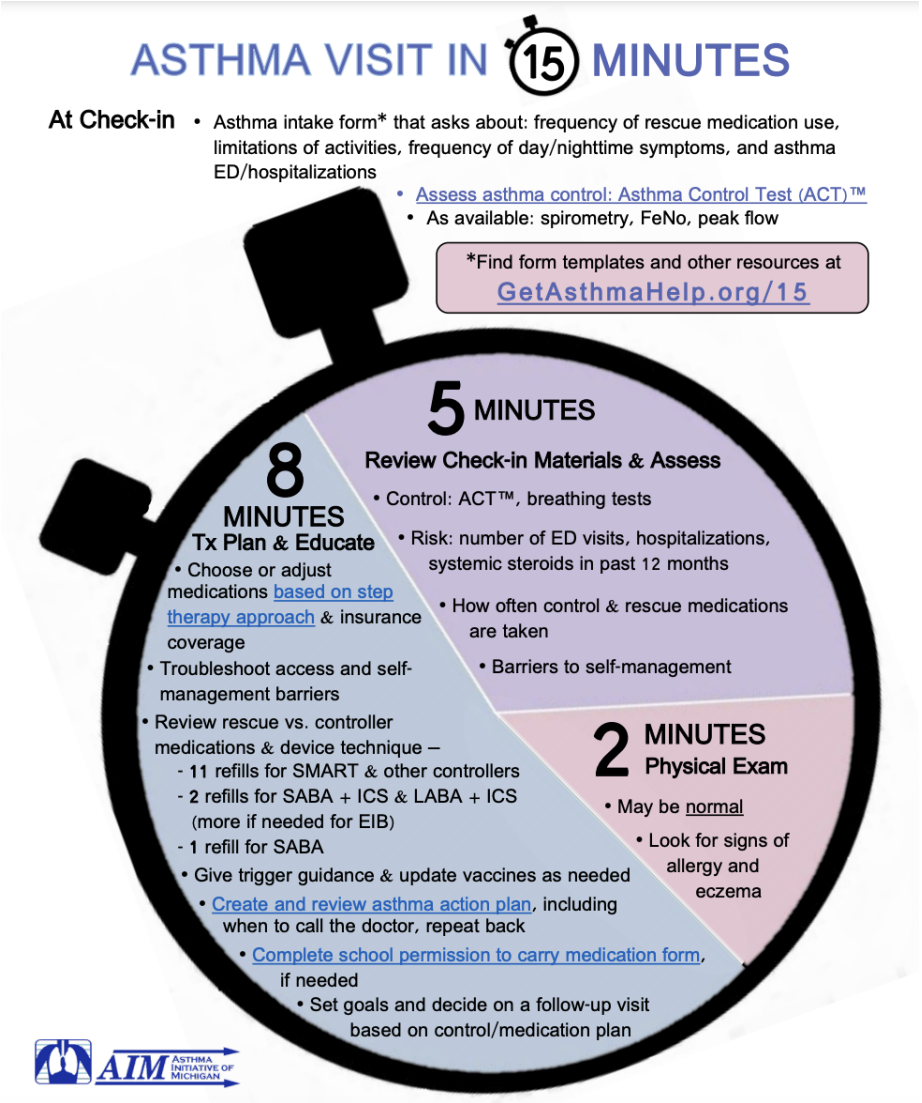
Report **waking up more** during the night because of asthma

Are more likely to experience **poor mental health** and emotional issues

https://www.aafa.org/asthma-disparities-burden-on-minorities.aspx

- **Incorporate telemedicine**
- **Improve recruitment practices and protocol design in clinical trials**
- **Encourage physician diversity**
- **Improve efforts to build trust in communities that experienced systemic oppression**
- **Support policy reform to address systemic racism**

GRAPHIC: https://www.aafa.org/asthma-disparities-burden-on-minorities.aspx
Udemgba et al. *J Allergy Clin Immunol Pract*. 2022



BEYOND THE 15 MINUTES

REFERRALS

- **Consider referrals to an asthma specialist (allergist, pulmonologist) if:**
  - Patient not responding as expected to therapy
  - Asthma diagnosis is unclear (may need spirometry, methacholine challenge, CXR, CT chest, etc)
  - Severe asthma symptoms, high risk status
  - Physician time constraints
  - Patient requires extensive education and frequent follow-up
  - Patient requires treatment of comorbidities:
    - COPD or other primary lung disorders (Pulmonary)
    - Allergic rhinoconjunctivitis (Allergy)
    - Nasal polyposis (Allergy, ENT)
    - Aspirin-exacerbated respiratory disease (Allergy)
    - Food allergies (Allergy)
    - Atopic dermatitis (Allergy, Derm)

QUICK FACTS: MONTELUKAST AND NEUROPSYCH EFFECTS

- 2020 FDA Black Box warning
- All leukotriene modifiers
- Possible side effects to counsel your patients on:
  - Sleeping disorders
    - Nightmares
    - Insomnia
  - Psychiatric disorders
    - Depression
    - Anxiety
    - Hallucinations
    - OCD
    - Suicidal ideation

ASTHMA IN PREGNANCY

	PREFERRED	AVOID
Steroid	Budesonide (Category B), prednisone	
Bronchodilator	B2-adrenergic agonists (albuterol), salmeterol	
Antileukotriene	Montelukast, zafirlukast	zileuton

- **Continuing to take asthma medications for optimal control is safer than stopping medications**
- 1/3 of pregnant women have worsening asthma, 1/3 no change, 1/3 improve
- Exacerbations seen most commonly between 24-36 weeks GA
- **IN PRACTICE – can keep them on their current ICS choice if well controlled or can switch to budesonide (shared decision making)**

ANOTEHR RESOURCE: *https://getasthmahelp.org/asthma-pregnancy-health-professional.aspx*

Asthma and Allergic Diseases in Pregnancy: A Review." World Allergy Organization Journal 2009;2:26-36.
Murphy VE, et al. "Severe asthma exacerbations during pregnancy." Obstetrics and Gynecology 2005;106:1046-1054.

A message from

If you would like help staying on top of the latest asthma research, events, and opportunities with asthma information sent directly to your email, contact **GetAsthmaHelpInfo@gmail.com**

Questions?

Dr. Taylor Lin, MD

Allergy & Immunology Associates of Michigan

tlin@annarborallergy.com

annarborallergy.com

Ph 737-434-3007