

National and Global Asthma Management Guiding Principles 2023

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Learning Objectives

Describe

Describe the evolution of asthma over the past several decades

Define

Define the scientific methodology utilization in asthma management

Review

Review the current recommends germane to asthma clinical management



Asthma Epidemiology

262 million individuals are diagnosed with asthma

Mortality rate remains relatively low at approximately 1%

However, the burden and cost of treating and managing asthma remains very high

In the United States the cost of indirect and direct management exceeds 300 billion dollars

Cost exceeds 650 billion dollars globally

Two Primary Asthma Resources

National Asthma
Education and Prevention
Program (NAEPP)

• 1989

Global Initiative for
Asthma Report (GINA)

• 1993

The goal of these
governing bodies are to:

- Increase the awareness of asthma
- Recognize signs and symptoms of asthma
- Ensure effective asthma control
- Enhance the quality of life of people with asthma

The Evolution of Asthma Management

- 1960-1970s
 - Focus was on the treatment and prevention of bronchospasm
 - Rescue beta-agonist
- 1980-1990s
 - Focus shifted to avoidance of asthma triggering
 - Control chronic inflammation
 - Inhaled corticosteroids
- Currently
 - Viewed as a heterogenous disease
 - Specially individualized designed action plans
 - Use of biological therapies

Scientific Methodology

Utilized objective and standardized approaches to formulate recommendations per evidence-based reviews

Are composed of leading asthma management experts

Work in collaboration with other committee experts

- ATS, ACCP, ERS

Developments a need assessment profile based on recommends and current evidence

Conducts quality and research follow up based on recommendations

Review of Current Literature

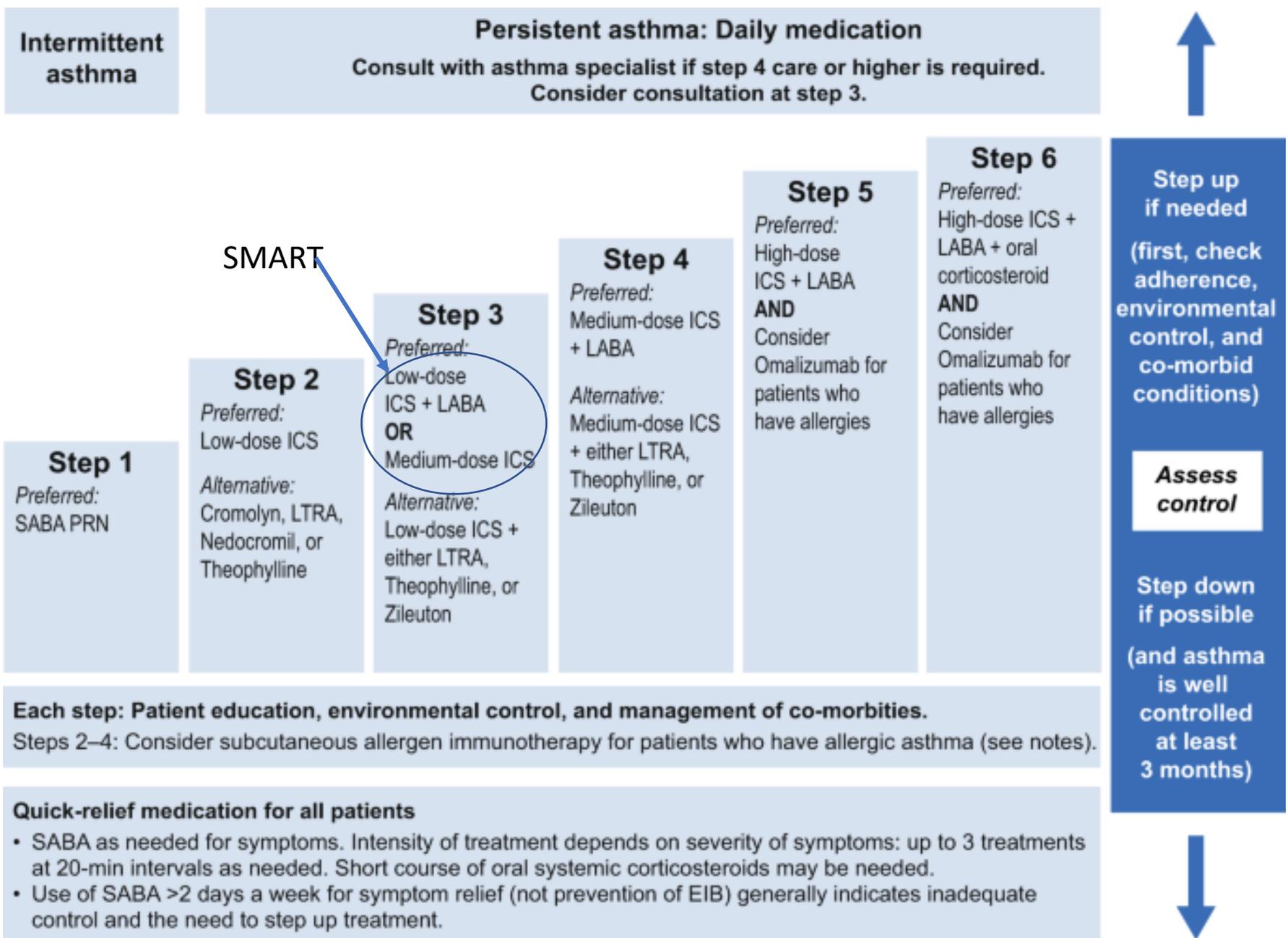
- Use of inhaled corticoid steroids in children <6 years old
- Intermittent maintenance and relief therapy
- Exercise pretreatment
- Short term Increase in inhaled steroids
- Long-acting Muscarinic Antagonists
- Exhaled Nitric Oxide as a monitoring assessment in asthma
- Indoor Allergen Mitigation
- Immunology therapy
- Bronchial Thermoplasty
- COVID-19 and Asthma

Intermittent Inhaled Corticosteroids in Children <6 yrs. Old

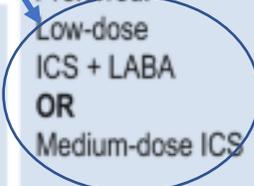
- Asthma affects about 7% of all children
- Asthma is often difficult to distinguish from other childhood diseases
 - Bronchiolitis
 - Foreign body aspiration
 - Tracheal malacia
 - IRDS
- Asthma diagnosis should be confirmed utilizing a predictive index
 - Bronchodilator response
 - Eosinophilia
 - Family history
- The recommendation is if there is recurrent wheezing, episodes ≥ 3 times, a short course of inhaled steroids should be administered (7-14 days)
 - In conjunction with a PRN SABA

Intermittent Maintenance and Relief Therapy

- Daily low dosage ICS and PRN SABA (Step2)
- **SMART**
 - Includes an ICS and LABA as a single maintenance and relief therapy
- Alternative therapies include
 - Leukotriene receptor antagonists
 - Cromolyn
 - Theophylline



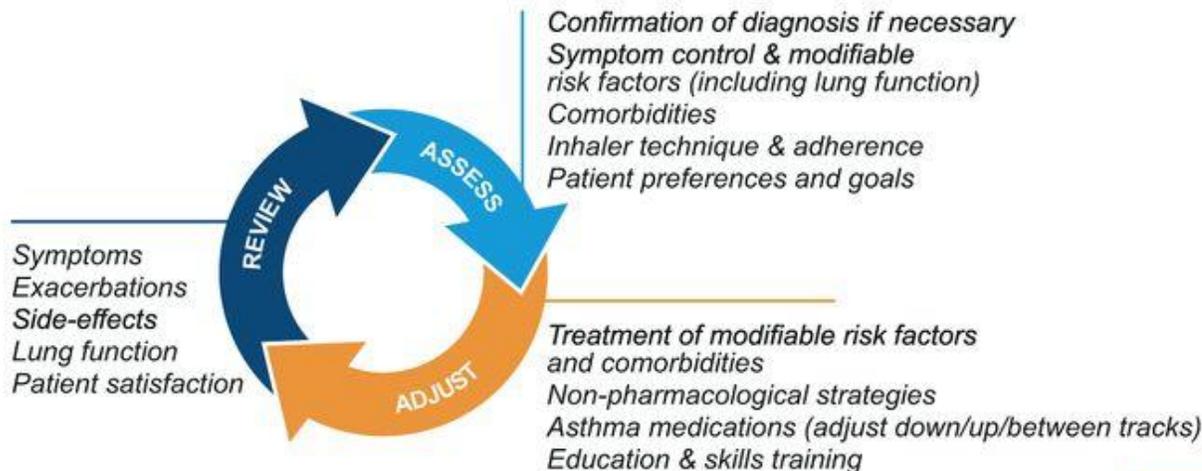
SMART



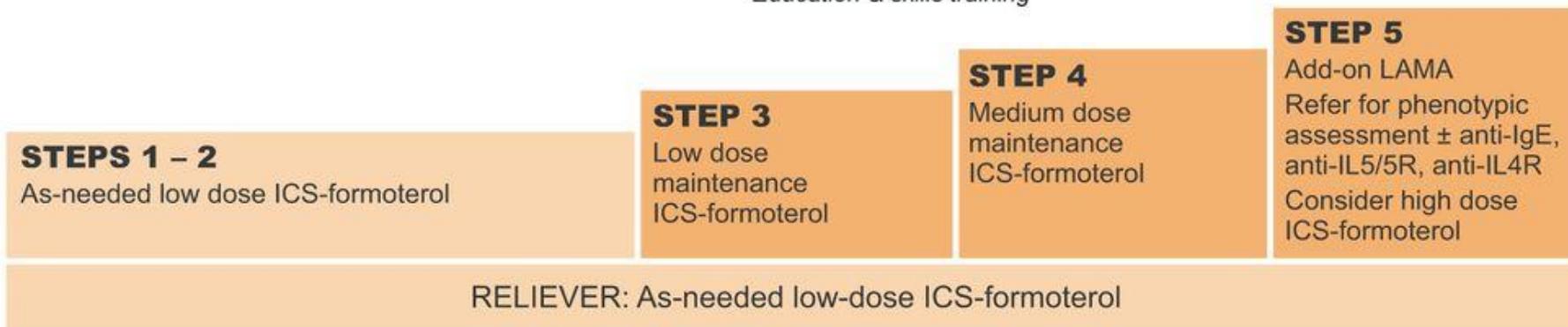
Adults & adolescents 12+ years

Personalized asthma management

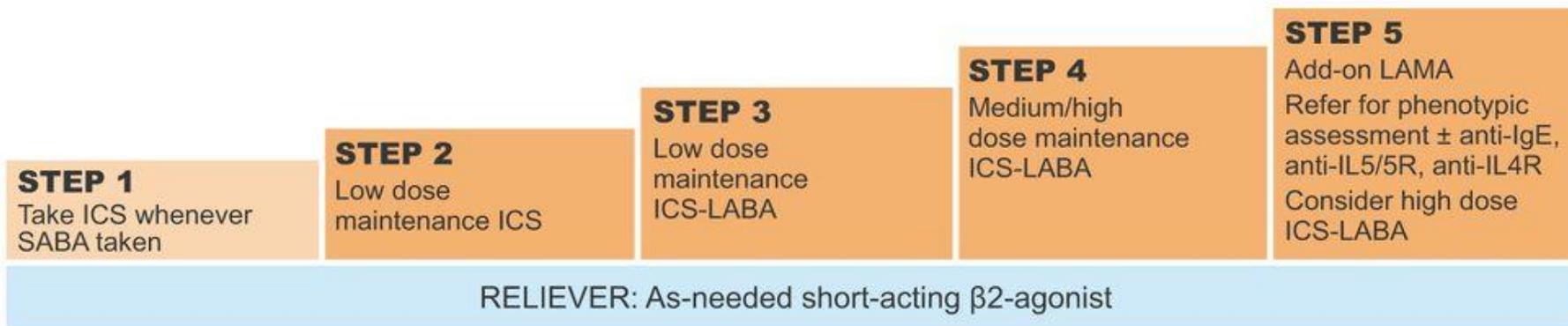
Assess, Adjust, Review
for individual patient needs



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



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



Other controller options for either track

	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; add low dose OCS but consider side-effects
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Exercise
Pretreatment
with Single
Maintenance
and Relief
Therapy

90% of asthmatic experience
exercised induced-asthma

Recommendation is to utilize
a low dose ICS with prn SABA

No benefit in adding a LABA
in this group

Short-Term Increase in Daily ICS

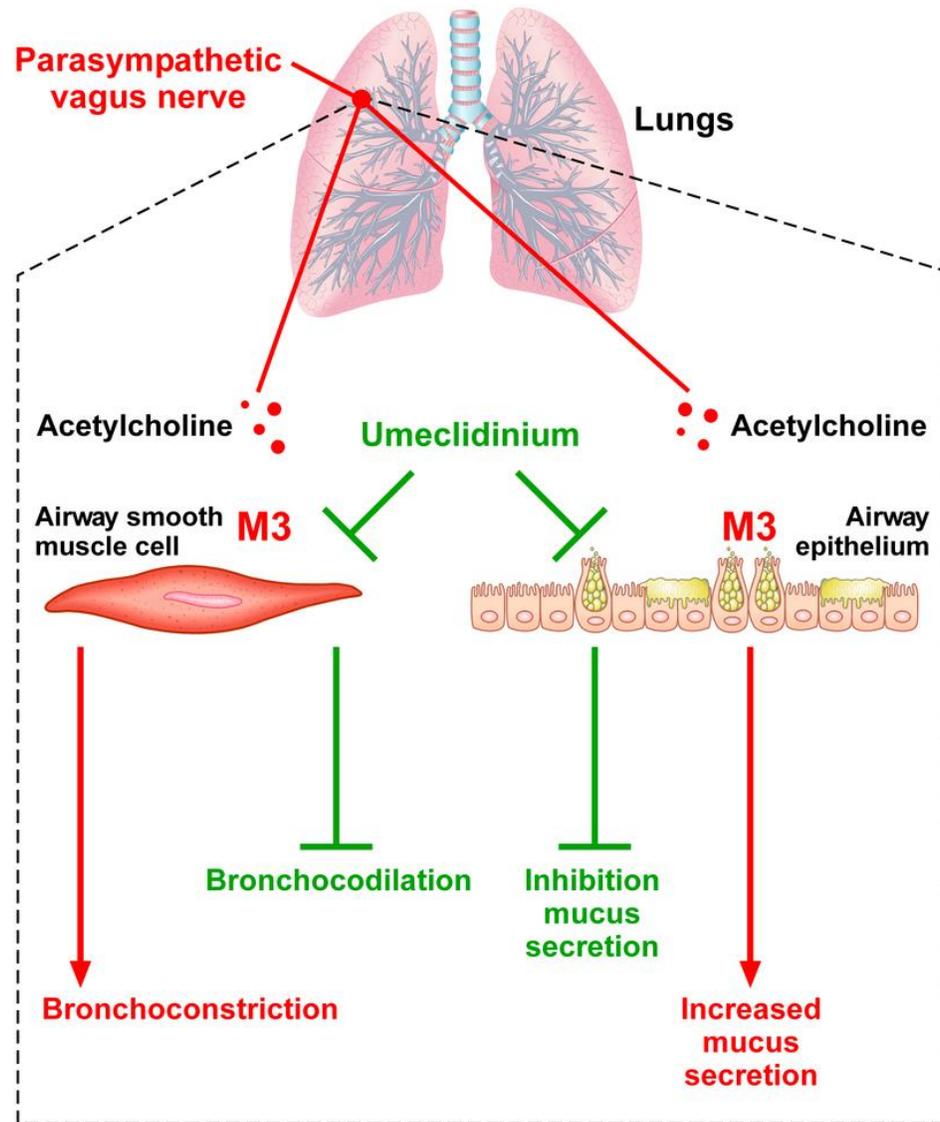
Considering doubling or tripling ICS dosage during asthma exacerbation

7-14 days dosing

More studies need to be done to determine an exact dosing regime

Long-Acting Muscarinic Antagonists

- Asthma is caused by airway inflammation, hypersecretion, and smooth muscle contraction
- The vagal nerve that controls the neurotransmitters and secretion acetylcholine in the submucosal gland, smooth muscle and epithelial cells that results in bronchospasm and hypersecretion
- LAMA block the release of acetylcholine and thus prevent bronchospasm and hypersecretion
- Sometimes recommend for asthma management
- May be useful as an add on therapy in poorly controlled asthma with other established medications.
- Should be NEVER used as a stand-alone asthmatic drug regime



Exhaled Nitric Oxide

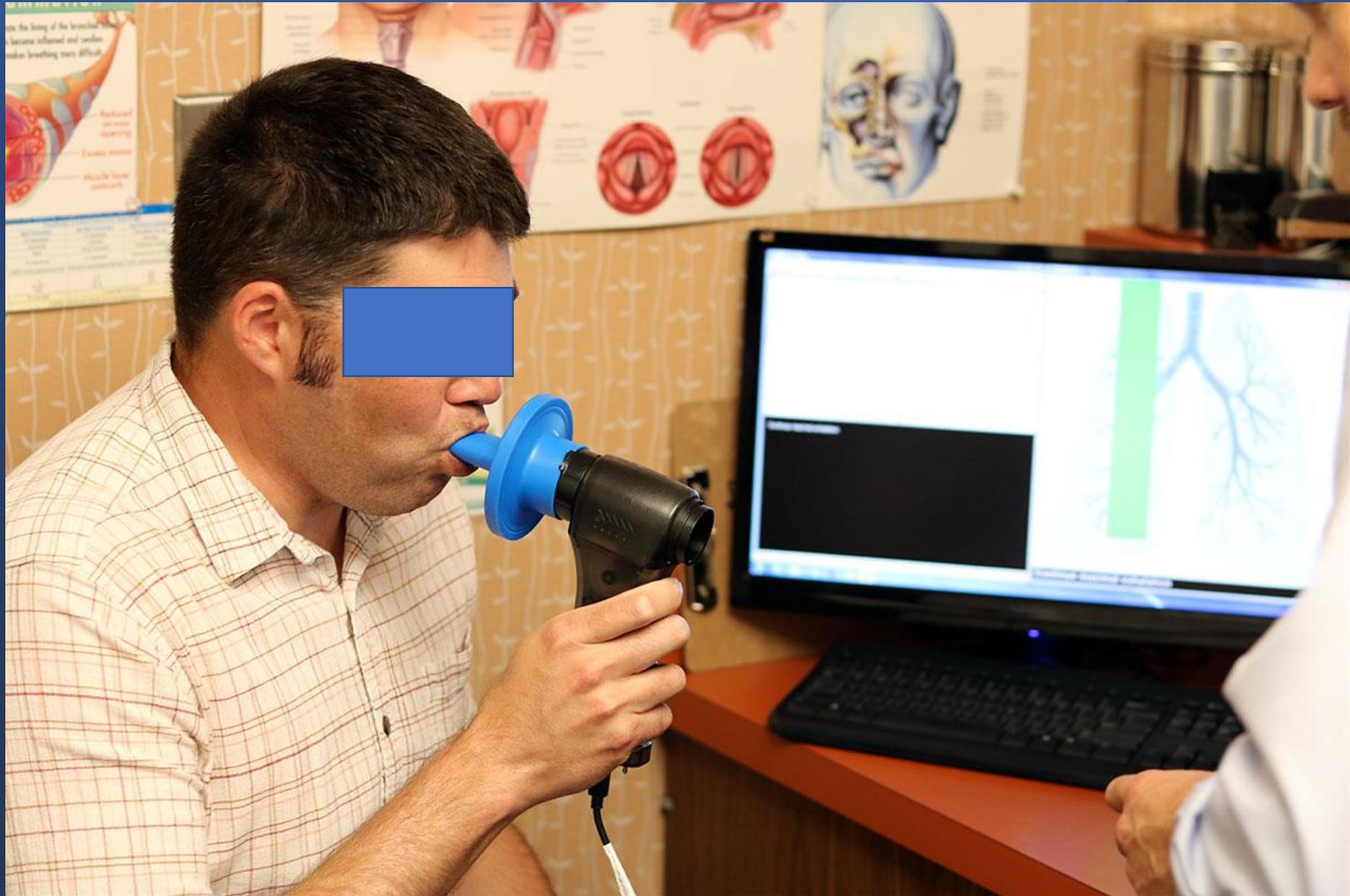
Non-invasive way to assess and monitor airway inflammation in asthma

FENO > 50ppm in non-smokers, is associated with eosinophilic airway inflammation

FENO monitoring has become the standard to monitor ICS effectiveness

The recommendation is that FENO is useful to monitor asthma medication effectiveness or patient compliance

FENO is not useful in diagnosis or predicting the development of Asthma. PFTs are the standard in diagnosis assessment.



Indoor Allergen Mitigation

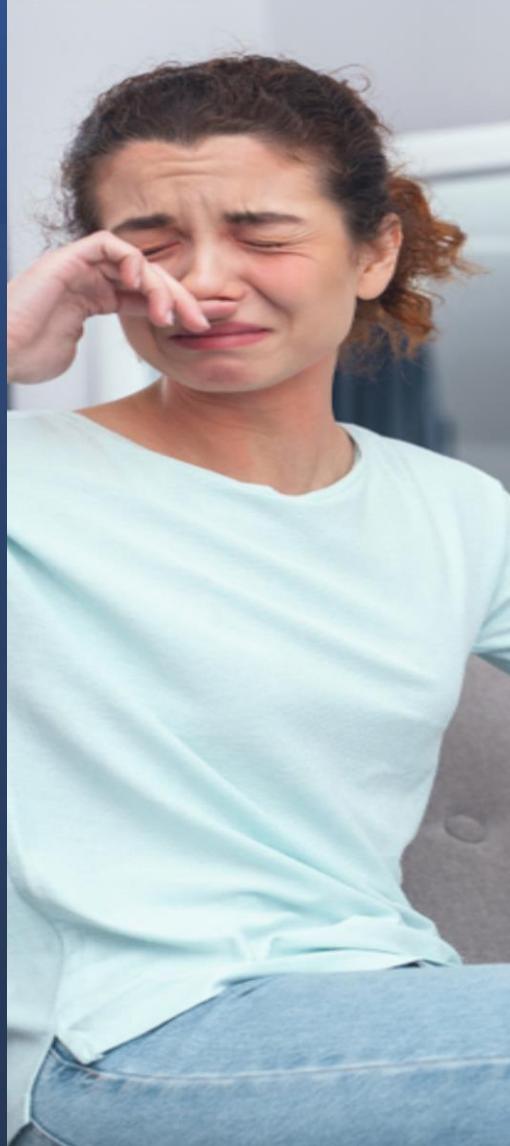
Control of environment factors is an integral part of asthma management

Common indoor allergens include:

- Dust mites
- Pet dander
- Molds
- Pest feces

Allergen mitigation include:

- Impermeable pillow and mattress covers
- Pest eradication and management
- Animal dander sensitivity



COMMON INDOOR ALLERGIES

THAT MAY BE MAKING YOU FEEL SICK

HOUSE DUST



MOLD SPORES



FABRICS



DUST MITES



PET DANDER



COCKROACHES



10 Ways to Curb Hidden Allergens at Home

1 **Avoid smoke particles**
skip the wood-burning fireplace and don't smoke inside

2 **Keep pets out of the bedroom**
limit dander in your sleeping area

3 **Take off your shoes**
avoid tracking in allergens

4 **Avoid scenting your home**
room sprays, scented candles
and oils can trigger allergies

5 **When buying furniture**
avoid cloth material and look for
easy-to-clean surfaces



6 **Wash bed linens and curtains**
reduce allergens in the air

7 **Humidity levels matter**
too much moisture increases
mold and dust mites

8 **Use HEPA filters**
use them in vacuum and furnace

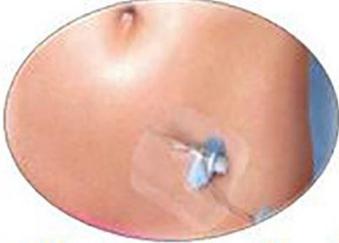
9 **Use solid flooring like tile, wood and linoleum**
they are easiest to keep clean

10 **Use exhaust fans in kitchen and bathroom**
lessen cooking fumes and moisture



Immunotherapy

- About 40% of all asthmatics suffer with allergic rhinitis
- Asthma exacerbations may be caused by exposure to a specific allergen in a specific season (ragweed)
- Recommendation is that immunotherapy as a treatment option if the allergen plays a role in asthma exacerbations
- Can be administered by subcutaneous injection or sublingually
- No studies that demonstrate
- No studies has demonstrated a reduction in:
 - Provider visits
 - Improvement in quality of life
 - ER visits

	Treatment A	Treatment B
How the treatment is administered	   <p>Infusion under skin at home</p>	   <p>Infusion into vein at clinic</p>
How many needle sticks	 <p>4 needle sticks per treatment 4 needle sticks per month</p>	 <p>2 needle sticks per treatment 8 needle sticks per month</p>
How often you take the treatment	 <p>Every 4 weeks</p>	 <p>Once per week</p>
Total time per treatment	Administration time: 5 hours	Administration time: 1 hour
	Headache & drowsiness: 12 hours	Headache & drowsiness: None
	Total time: 17 hours	Total time: 1 hour
	Time per month: 17 hours	Time per month: 4 hours

Which would you choose, if these were the only options available?

Treatment A

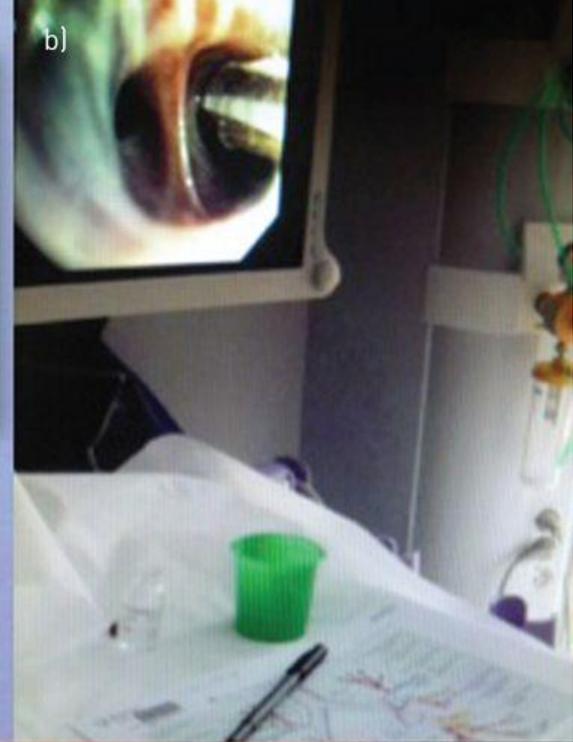
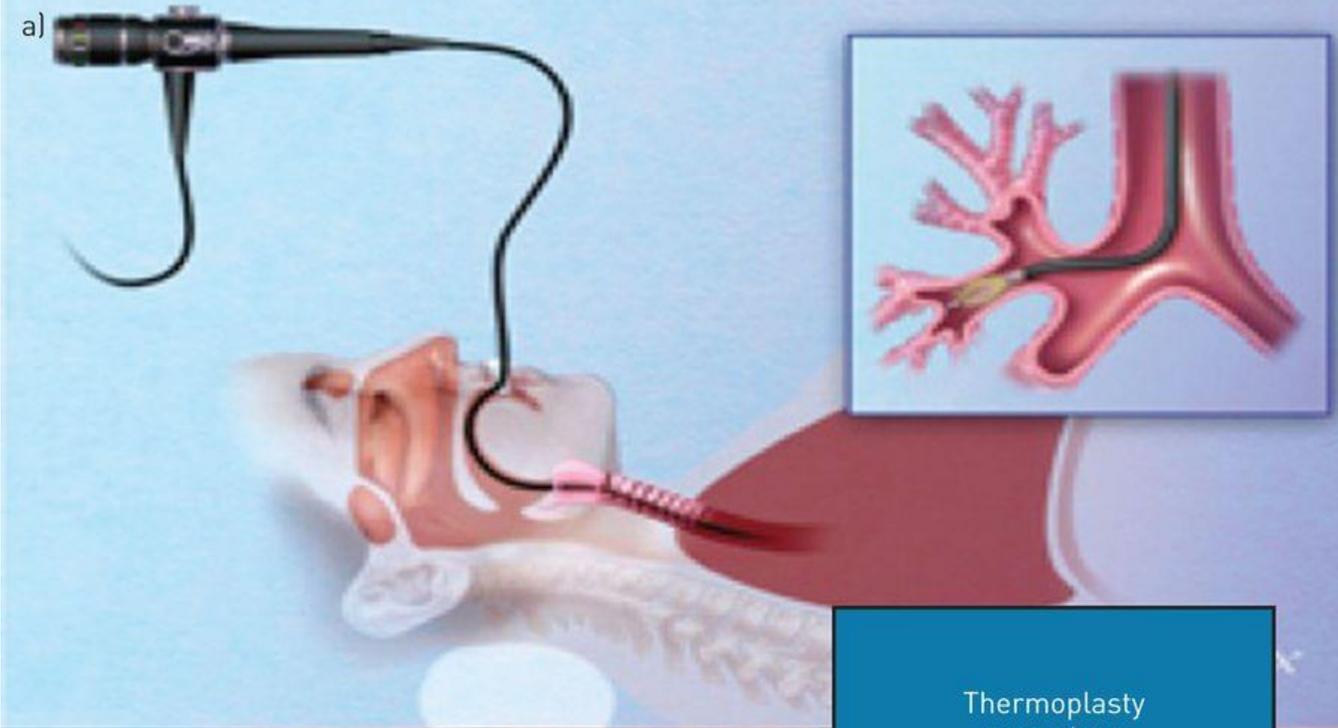


Treatment B

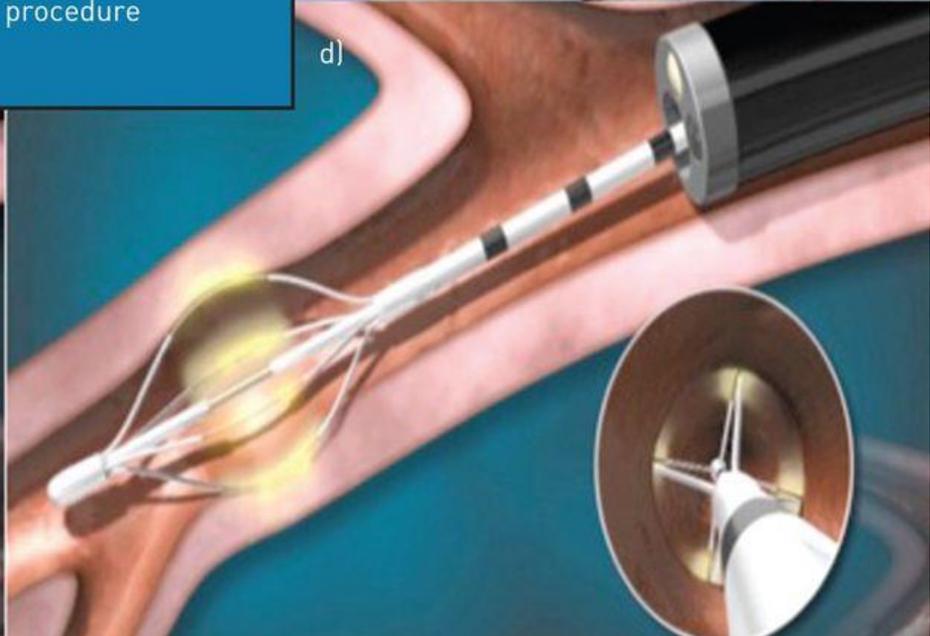
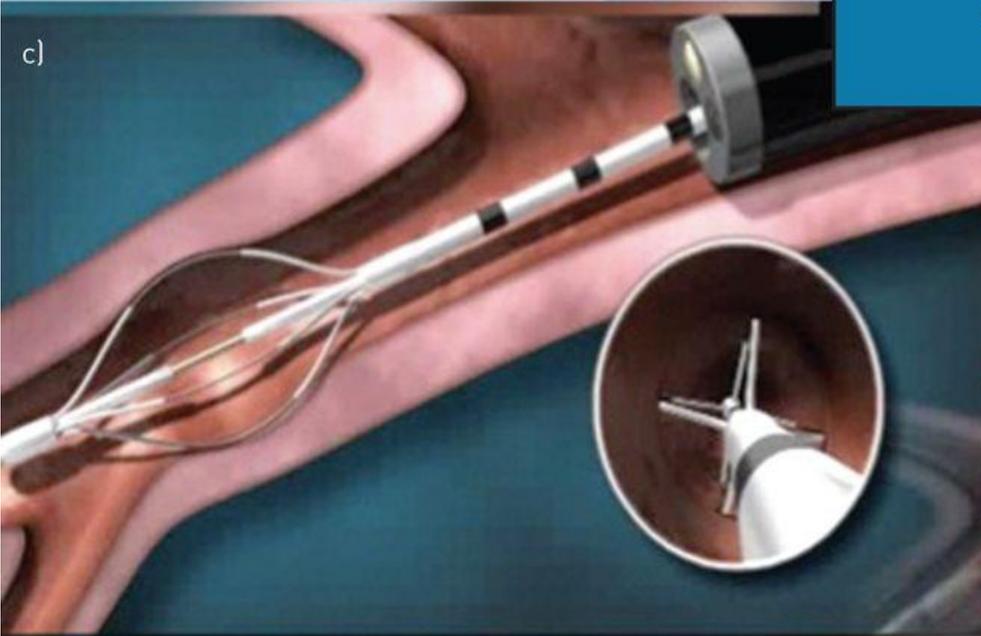


Bronchial Thermoplasty

- This bronchoscopy therapy delivers local radiofrequency to the airways
- This causes modulation of the extracellular matrix formed by inflammation
- Currently the GINA and NAEPP panels can not recommend this intervention for refractory asthma secondary to small benefits compare to the potential side effects
 - Infection
 - Bleeding
 - Atelectasis
 - No long-term benefit > 5 yrs.

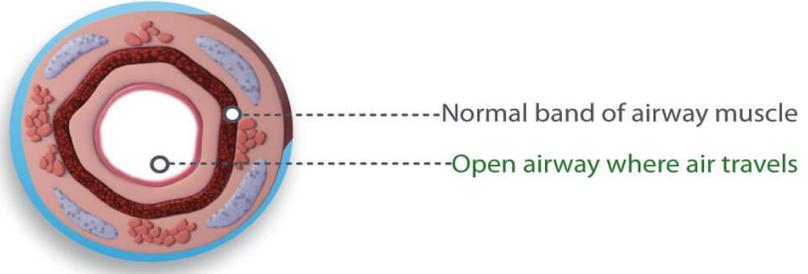


Thermoplasty procedure

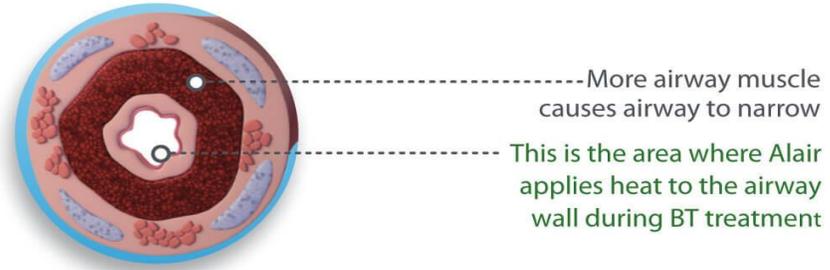


Airways Before and After Bronchial Thermoplasty Treatment

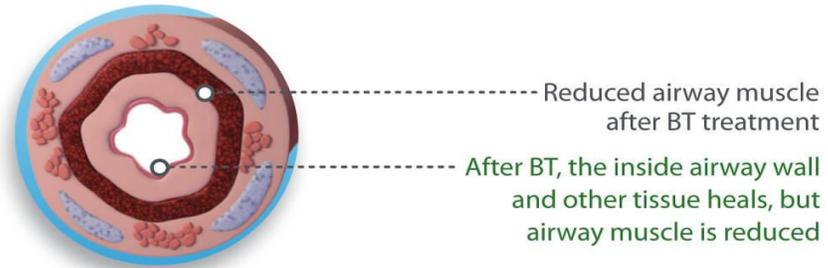
Airway of Person without Asthma



Airway of Person with Severe Asthma



Airway of Person with Severe Asthma after Treatment



COVID-19 and Asthma

- Respiratory viruses are a common trigger that can cause an exacerbation
- Asthmatic who are well controlled had no greater risk of acquiring COVID than non-asthmatic
- No increased risk of hospitalization or death
- Those that were a risk included
 - Uncontrolled asthma
 - Diabetics
 - Cardiovascular disease
 - Obesity
 - **Non vaccinated**
 - **Vaccination is recommended**

Conclusion

- Both NAEPP and GINA are valuable resources that make recommendations on best asthma management practices
 - Health care providers need to keep aware of the changing asthma management recommendations
 - Asthma management is evolutionary and will continue to adapt based on new evidence
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References

- Enilari O, Sinha S. The Global Impact of Asthma in Adult Populations. *Ann Glob Health* 2019;85(1):2
- National Heart, Lung, and Blood Institute. National Asthma Education and Prevention Program (NAEPP). <https://www.nhlbi.nih.gov/science/national-asthma-education-and-prevention-program-naepp>. Accessed February 21, 2022.
- Global Initiative for Asthma. About us. <https://ginasthma.org/aboutus/>. Accessed February 21, 2022.