



PRIMARY HEALTHCARE TEAMWORK

# Management of Bronchial Asthma

## Objectives:

- ★ Discuss the definition, epidemiology, etiology and classification of asthma.
- ★ Apply the criteria for the diagnosis of asthma in applied patient scenario.
- ★ Assess the severity of bronchial asthma
- ★ Demonstrate the use of different types of inhalers and the Peak Expiratory Flow Rate (PEFR).
- ★ Provide a comprehensive approach for the management of asthmatic patients
- ★ Reference: This lecture is intended to cover the objectives from the new 2021 GINA guidelines.

## Color index:

Original text **Important** Doctor's notes **Golden notes** Extra

# Bronchial Asthma

## Definition:

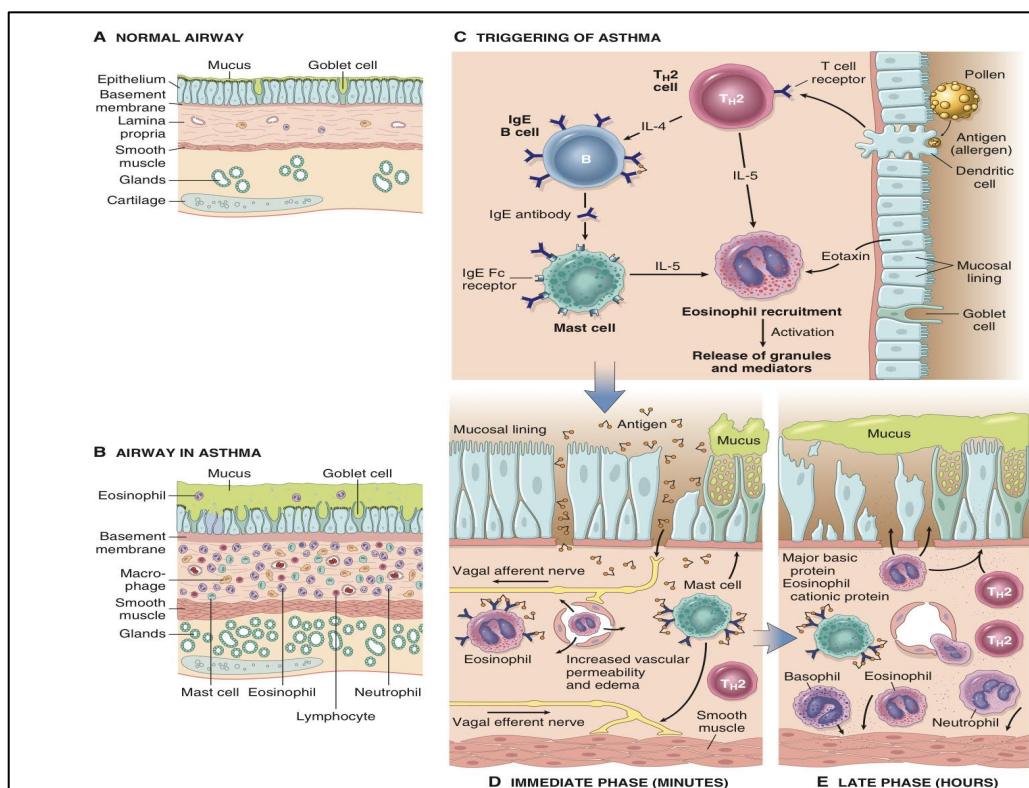
- **Asthma** is a **chronic inflammatory** disorder of the airway in which many cells play a role in particular, **mast cells, eosinophils, neutrophils, T lymphocytes, macrophages, and epithelial cells.**
- It causes recurrent episodes of **coughing, wheezing, breathlessness and chest tightness.**

## Epidemiology in Saudi Arabia

- It affects more than 2 million Saudis from which only 5% are controlled, 31% partially diagnosed and **64% are uncontrolled.**
- Occurs at any age but **75% of those diagnosed with asthma are < 7 years of age** with remission around puberty

## Etiology

- Asthma is considered multifactorial, but inflammation caused by abnormal immune response to variety of antigens (Allergens) is the main cause.
- Factors that may trigger or worsen asthma include:
  1. Viral infections.
  2. Allergens at home including (House dust mites, pollen, cockroaches).
  3. Exercise and stress.
  4. Some drugs like (Beta blockers, Aspirin and NSAIDs).



# Diagnosis Of Asthma

## Classification of Asthma:

- Early onset <12 years (Homogenous group):
  - Childhood Asthma.
  - Allergic. (Atopic Asthma)
- Late onset >12 years (Heterogeneous group):
  - Adult onset Asthma.
  - Late onset Atopic Asthma.
  - Non atopic Asthma.
  - Aspirin induced Asthma.



## Asthma Has Two Key Defining Features:

### 1. History:

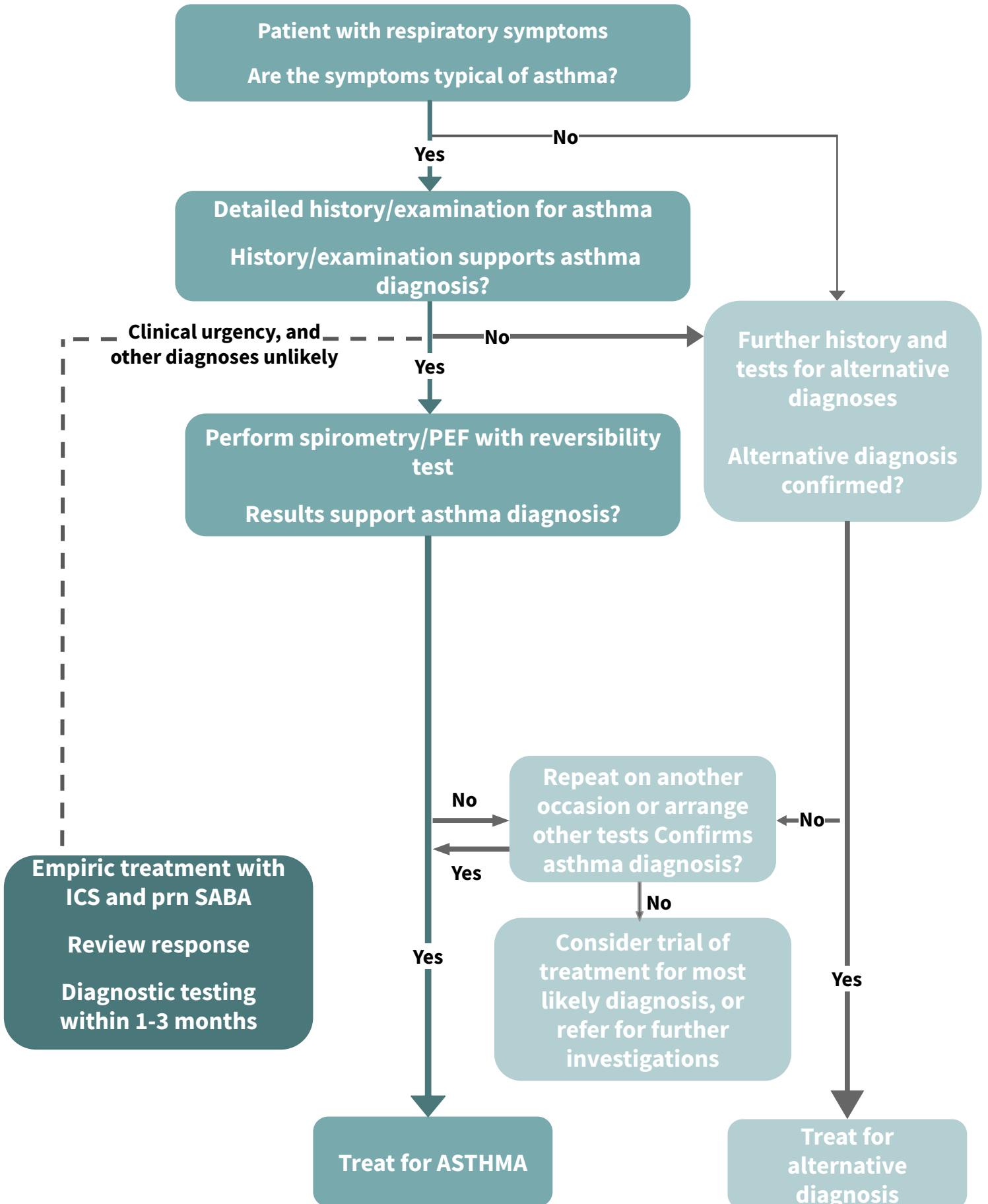
- A. **History of defining symptoms** such as a wheeze, shortness of breath, chest tightness and cough.
- B. Symptoms occur or are **worse at night or on waking**.
- C. Symptoms are often **triggered by** exercise, allergens, cold air or viral infections.

### 2. Expiratory airflow limitation:

- A. At least documented once during diagnostic process (Spirometry):
  - **Low FEV1 AND**
  - **FEV1/FVC ratio is below the lower limit of normal.** (Compared to a healthy person)
    - The FEV1/FVC ratio is normally more than 0.75–0.80 in adults, and more than 0.90 in children.
- B. Variation in expiratory lung function is greater than healthy people variability is recorded if:
  - **Bronchodilator Reversibility: FEV1 increases by more than 12% AND 200mL after inhaling a bronchodilator.**
    - This maybe absent during severe viral infections.
  - FEV1 increases by more than 12% and 200mL from baseline **after 4 weeks of anti-inflammatory treatment** (Outside respiratory infections).
  - **Average daily diurnal PEF variability is >10%.**

3. **Physical examination in people with asthma is often normal**, but the most frequent finding is wheezing on auscultation, especially on forced expiration.
4. The diagnosis of asthma should be confirmed and for future reference, the evidence documented in the patient's notes.

# Diagnosis of Asthma



# Diagnosis Of Asthma

## Assessment Of The Severity Of Bronchial Asthma

- Currently, asthma severity is assessed retrospectively **from the level of treatment required to control symptoms and exacerbations.**
- Mild asthma is asthma that can be controlled with reliever alone or low dose ICS.
- Severe asthma is asthma that requires high dose ICS-LABA.

## Assessment of Symptoms Control in Bronchial Asthma:

### Box 4. Assessment of symptom control and future risk

A. Assessment of symptom control		Level of asthma symptom control		
In the past 4 weeks, has the patient had:		Well controlled	Partly controlled	Uncontrolled
Daytime symptoms more than twice/week?	Yes <input type="checkbox"/> No <input type="checkbox"/>	None of these	1-2 of these	3-4 of these
Any night waking due to asthma?	Yes <input type="checkbox"/> No <input type="checkbox"/>			
SABA reliever needed more than twice/week?	Yes <input type="checkbox"/> No <input type="checkbox"/>			
Any activity limitation due to asthma?	Yes <input type="checkbox"/> No <input type="checkbox"/>			

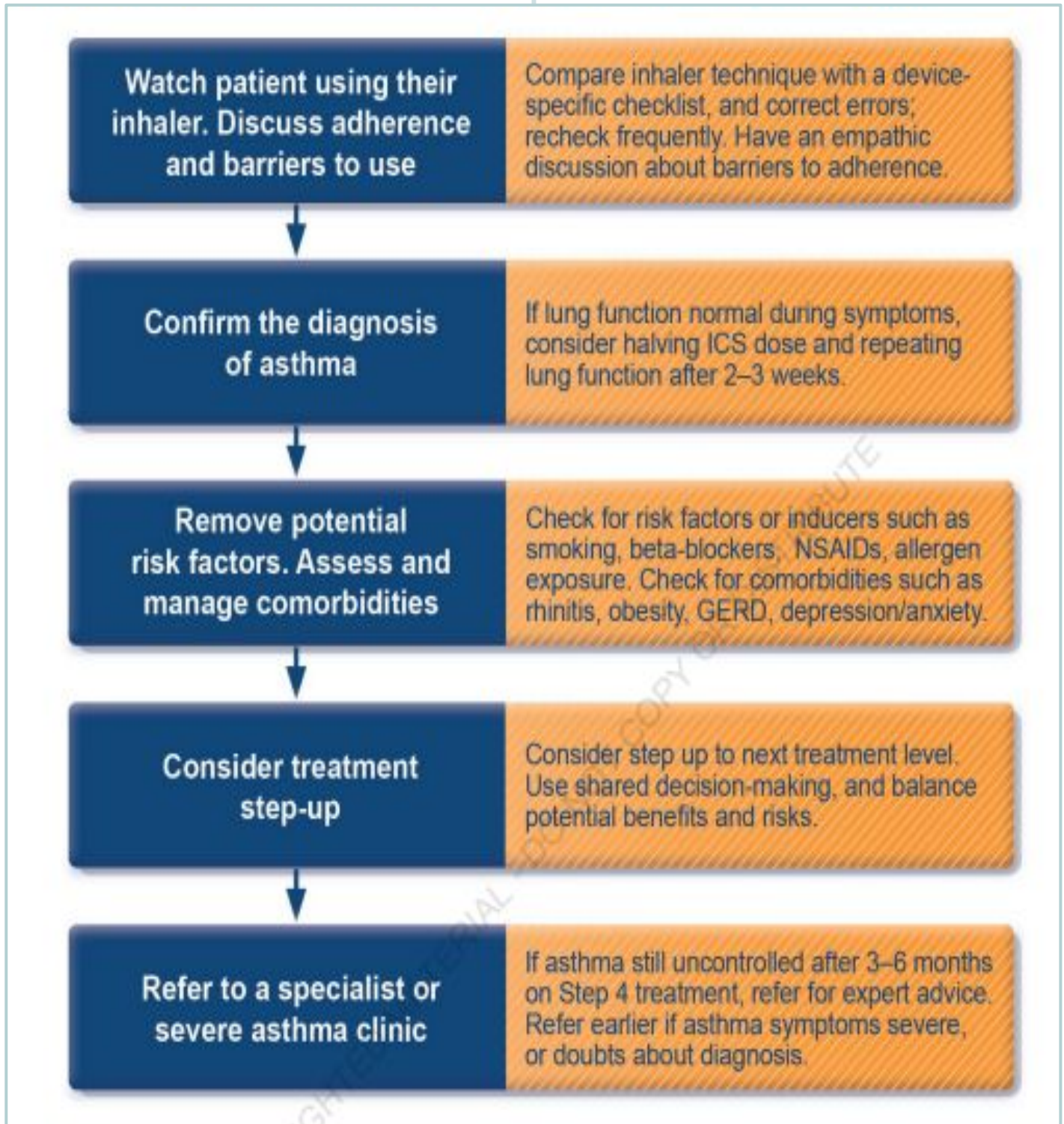
## The Role of Lung Function in Monitoring Asthma

- Once asthma has been diagnosed, lung function is most useful as an indicator of future risk. Measurement of FEV<sub>1</sub> should be recorded at diagnosis/start of treatment, 3-6 months after starting treatment and then periodically for ongoing assessment.
- Most patients should have lung function measured at least every 1-2 years.

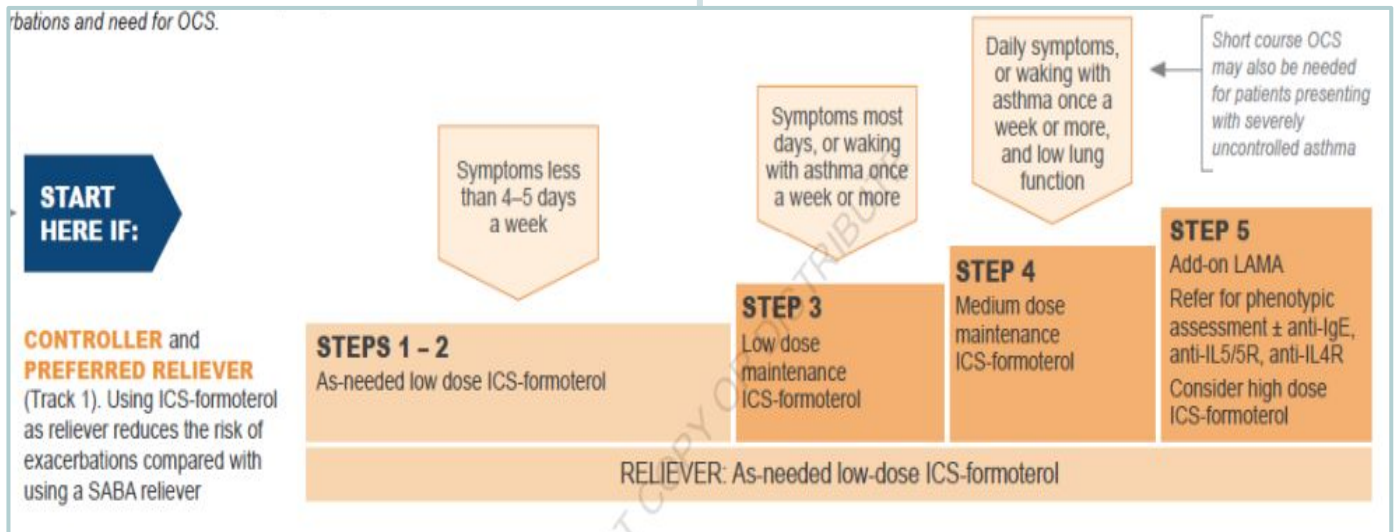
## Risk Factors For Poor Asthma Outcomes:

- Assess risk factors at diagnosis and periodically, at least every 1-2 years.
- Risk factors for poor asthma outcomes:
  - **Having uncontrolled asthma symptoms.**
    - Assessed by asthma symptoms control questionnaire.
  - **Having one or more asthma exacerbation in the last 12 months.**
  - Medications:
    - ICS not prescribed, poor adherence or high SABA use >3\*200 dose canister/year.
  - **Comorbidities:**
    - Obesity, chronic rhinosinusitis, GERD, food allergy, depression, pregnancy and poor socioeconomic state.
  - Exposure: Air pollutants, Smoking or Allergens.
  - Lung function: Low FEV<sub>1</sub> especially if <60% predicted.
  - Other tests: Sputum/blood eosinophilia, elevated FeNO.

# Investigate Uncontrolled Asthma In Primary Care



# Management of Asthma



## Stepwise Approach For The Management Of Asthma:

- **Step 1:** As needed low dose ICS-formoterol is the preferred treatment for patients with mild asthma.
- **Step 2:** As needed low doses ICS-formoterol taken for symptom relief.
- **Step 3:**
  - Low dose ICS-formoterols as both maintenance and reliever treatment in patients with or without history of severe exacerbations.
  - Before considering step 3 check adherence, inhaler technique and comorbidities.
- **Step 4:** Increasing the maintenance ICS dose to medium.
- **Step 5:** Refer for phenotypic investigation +/- add-on therapy.

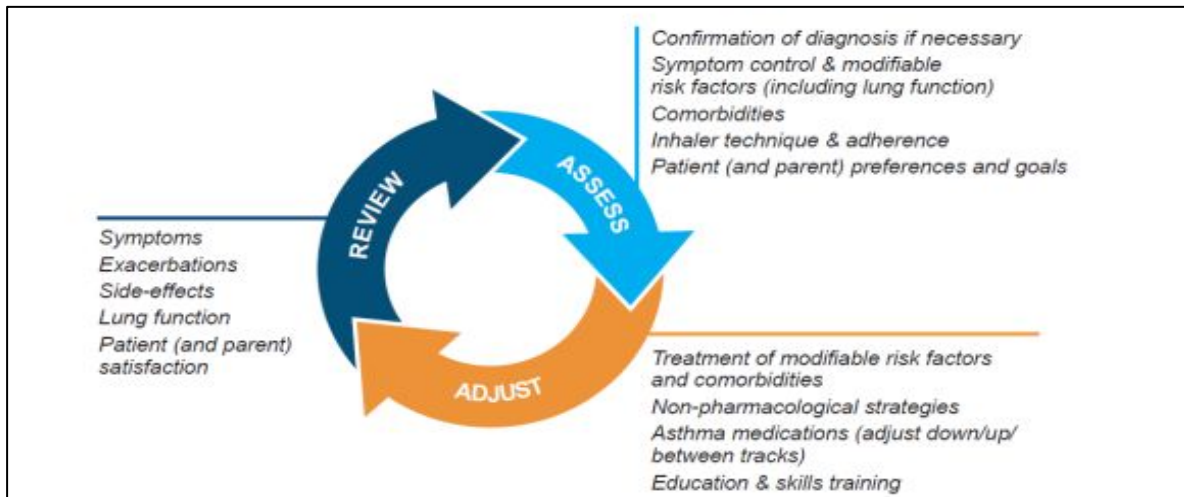
## Important Notes in Regard of Asthma Management

- For best Asthma outcomes ICS treatment should be initiated as soon as possible after the diagnosis of asthma.
- Treatment with SABA alone is no longer recommended as it is associated with increased risk of exacerbations and lower lung function.
- Most of the benefit from ICS is acquired at lower levels; most patients do not need higher doses.
- If patient is waking from asthma once or more per week; consider starting treatment from step 3.
- If the patient present with severely uncontrolled asthma at initial presentation, or the first presentation was an acute exacerbation; start the treatment at step 4.
- Review response after 2-3 months. consider step up if symptoms are still not controlled after 2-3 months, consider step down if symptoms are controlled for 3 months. **However ICS should not be completely stopped.**
- Before stepping up, assess common issues like: poor adherence, inhaler technique, risk factors (Smoking), comorbid conditions (Allergic rhinitis)

# Management of Asthma

## General Principles of Treatment:

- The long term goal of asthma management are **Risk reduction** and **symptom control**. The aim is to reduce the burden on the patient, and reduce the asthma related deaths, exacerbations, airway damage and medication side effects.
- Asthma management involves a continuous cycle to **assess, adjust** treatment and **review response**.



## Non-Pharmacological Treatment

1. Smoking cessation advice.
2. Physical activity.
3. Investigation for occupational asthma.
4. Identify Aspirin induced asthma.

## Treating Modifiable Risk Factors

- **Risk modifiers:**
  - Guided self-management.
  - Use of a regimen that minimizes exacerbations.
  - Avoidance of exposure to tobacco smoke.
  - Confirmed food allergy and avoidance of allergic food.
  - School-based programs.
  - Referral to a specialist center.

## Inhaler Technique And Adherence

Check and improve adherence with asthma medications:

1

Choose: The most appropriate device

2

Check: Inhaler technique at every opportunity

3

Correct: Using physical demonstration

4

Confirm: That you have a checklist for inhalers you prescribe



# Lecture Quiz

**Q1: A 28 year old woman who has had asthma for years. she uses SABA as needed. Over the past two months, she has activity limitation and is using her SABA inhaler most days, and on occasions has had to wake up in the middle of the night to use her inhaler. What is the most appropriate treatment option at this stage?**

- A- As needed low dose ICS-formoterol
- B- A long acting beta agonist
- C- Daily low doses ICS-formoterol
- D- Daily low dose inhaled corticosteroids

**Q2: A 20 year old man has noted mild chest tightness in the morning for the last few weeks. He is otherwise well aside from eczema. There are few wheezes on chest auscultation. What is the most appropriate investigation to make diagnosis?**

- A- Chest X-ray
- B- Spirometry
- C- Skin prick test
- D- Bronchial challenge test

**Q3: You are seeing a 19 year old college student complaining of recurrent and persistent cough. He has been treated for Bronchitis several times, and you are concerned that his true diagnosis is asthma. In addition to history, which of the following is the most important for the diagnosis of asthma?**

- A- Physical exam
- B- FEV1 increases by 10% following administration of bronchodilator
- C- Immunoglobulin E levels
- D- Average daily diurnal PEF variability is >10%

**Q4: A 35 year old woman who is having asthma for the past 10 years. on ICS-formoterol, with salbutamol PRN ( when needed). Over the past few weeks, she has been experiencing worsening symptoms. Which of the following would you use to determine if asthma is adequate controlled or not ?**

- A- Flow volume loop
- B- Sufficient symptom history
- C- Measurement of FEV1 in 1 second
- D- A history of more respiratory symptoms during long working days.

**Q5: A 17 year old man with history of mild asthma presents to your office complaining of wheezing and SOB that have developed over the last 24 hours. No medications used before. Which of the following would be initially indicated?**

- A- Formoterol
- B- As needed low dose ICS-formoterol
- C- Inhaled corticosteroids
- D- SABA

**Q6: You are caring for a 30 year old man who has had asthma since childhood. Currently The reports symptoms three or four times a week. Sometimes his symptoms cause him to skip his visit to Gym. He does not wake in the night and not using SABA inhaler to relieve symptoms. Which of the categories best characterizes his symptoms?**

- A- Controlled
- B- Severe persistent
- C- Partially controlled
- D- Uncontrolled

# THANKS!!

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*Send us your feedback:  
We are all ears!*