



433 Teams

PRIMARY HEALTH CARE

Bronchial asthma

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Objectives

- ❖ Diagnosis of Asthma in children and adults

 - History

 - Clinical

 - Use of PEFR to assess in diagnosis

 - Investigations "PFT; Spirometry"

- ❖ Factors trigger Asthma

- ❖ How to assess the severity of Asthma

- ❖ Exercise induced asthma (triggers and management)

- ❖ Management of Asthma

 - Rescue management

 - Prophylaxis

 - How to use different types of inhalers

 - Asthma education for patient and how patient can use inhalers properly

- ❖ Highlight on COPD "Diagnosis by PFT and Treatment"

Practical: Examination of Respiratory system (chest), How to do?

Asthma

is a disease with many variations (heterogeneous), usually characterized by chronic airway inflammation

diagnosis

Asthma has two key defining features :

- 1- a history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity.
- 2- variable expiratory airflow limitation.

CRITERIA FOR MAKING THE DIAGNOSIS OF ASTHMA

history

- People with asthma generally have more than one symptom
- variably over time and vary in intensity
- occur or are worse at night or on waking
- often triggered by exercise, laughter, allergens or cold air
- occur with or worsen with viral infections

Physical examination often normal, but the most frequent finding is wheezing on auscultation, especially on forced expiration

Evidence of variable expiratory airflow limitation

- At least once during the diagnostic process when FEV₁ is low, document that the FEV₁/FVC ratio is reduced.
- Document that variation in lung function is greater than in healthy people :
 - 1- FEV₁ increases by more than 12% after inhaling a bronchodilator. This is called '**bronchodilator reversibility**'*
 - 2- Average daily diurnal PEF variability* is >10% (in children, >13%)
 - 3- FEV₁ increases by more than 12% and 200mL from baseline after 4 weeks of anti-inflammatory treatment

*Bronchodilator reversibility may be absent during severe exacerbations or viral infections. If bronchodilator reversibility is not present when it is first tested, the next step depends on the clinical urgency and availability of other tests

Factors that may trigger or worsen asthma symptoms

These responses are more likely when asthma is uncontrolled. Some

1-viral infections

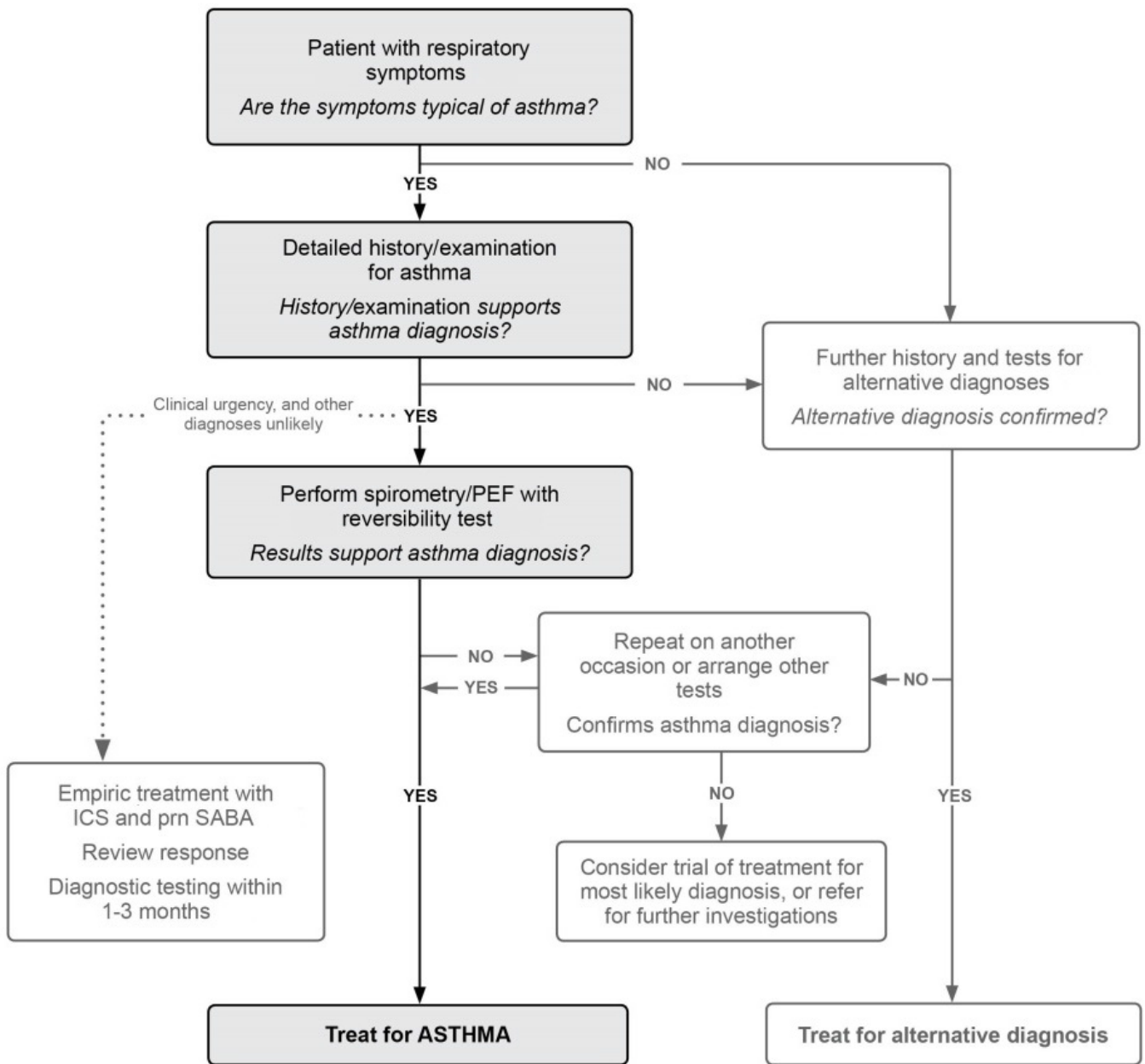
4-tobacco smoke

2-domestic or occupational allergens (e.g. house dust mite, pollens, cockroach)

5-exercise and stress

3-drugs can induce or trigger asthma, e.g. beta-blockers, and (in some patients), aspirin or other NSAIDs

Box 1. Diagnostic flow-chart for asthma in clinical practice



Classifying asthma severity and initiating treatment in youths greater than or equal to 12 years of age and adults

Components of severity		Classification of asthma severity (≥12 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment Normal FEV ₁ /FVC: 8 to 19 years 85 percent 20 to 39 years 80 percent 40 to 59 years 75 percent 60 to 80 years 70 percent	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3 to 4x/month	>1x/week but not nightly	Often 7x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily, and not more than 1x on any day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> • Normal FEV₁ between exacerbations • FEV₁ >80 percent predicted • FEV₁/FVC normal 	<ul style="list-style-type: none"> • FEV₁ ≥80 percent predicted • FEV₁/FVC normal 	<ul style="list-style-type: none"> • FEV₁ >60 but <80 percent predicted • FEV₁/FVC reduced 5 percent 	<ul style="list-style-type: none"> • FEV₁ <60 percent predicted • FEV₁/FVC reduced >5 percent
Risk	Exacerbations requiring oral systemic glucocorticoids	0 to 1/year (see footnote)	≥2/year (see footnote)		
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
In two to six weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.					

Exercise induced asthma

In exercise-induced asthma, the muscle bands around the airways are sensitive to these changes in temperature and humidity and react by contracting, which narrows the airway. This results in symptoms of asthma. The symptoms of exercise-induced asthma generally begin within 5 to 20 minutes after the start of exercise, or 5 to 10 minutes after brief exercise has stopped.

Severity Signs	Mild \ Moderate	Severe	Life threatening
Talking	Phrases	Words	
Agitated	no	yes	Drowsy
Position	Sitting \ lying	Sit in forward	Confused
RR	High	> 30 \ min	Silent Chest
Pulse	100-120 bpm	>120 bpm	
Accessory muscle	Not used	used	
O2 Sat	90-95%	<90%	
FEV1	>50%	<=50%	

Management

Treatment of exacerbation

*Start treatment with repeated doses of **SABA** (usually by pMDI and spacer), early **oral corticosteroids**, and controlled flow **oxygen** if available.

*Check response of symptoms and saturation frequently, and measure lung function after 1 hour.

***Titrate oxygen to maintain saturation of 93–95% in adults** and adolescents (94–98% in children 6–12 years).

***For severe exacerbations**, add **ipratropium bromide**, and consider giving **SABA by nebulizer**.

*In acute care facilities, intravenous **magnesium sulfate** may be considered if the patient is not responding to intensive initial treatment

TREATING TO CONTROL SYMPTOMS AND MINIMIZE RISK

Treatment of asthma for symptom control and risk reduction includes:

- | |
|---|
| • Medications.* |
| • Treating modifiable risk factors |
| • Non-pharmacological therapies and strategies |

*Every patient with asthma should have a reliever medication, and most adults and adolescents with asthma should have a controller medication

1-(medication)

Before starting initial controller treatment :

- Record evidence for the diagnosis of asthma, if possible
- Document symptom control and risk factors
- Assess lung function, when possible
- Train the patient to use the inhaler correctly, and check their technique
- Schedule a follow-up visit

For the best outcomes, regular daily controller treatment should be initiated as soon as possible after the diagnosis of asthma is made, because:

- Early treatment with low dose ICS leads to better lung function than if symptoms have been present for more than 2–4 years
- Patients **NOT** taking ICS who experience a severe exacerbation have lower long-term lung function than those who have started ICS

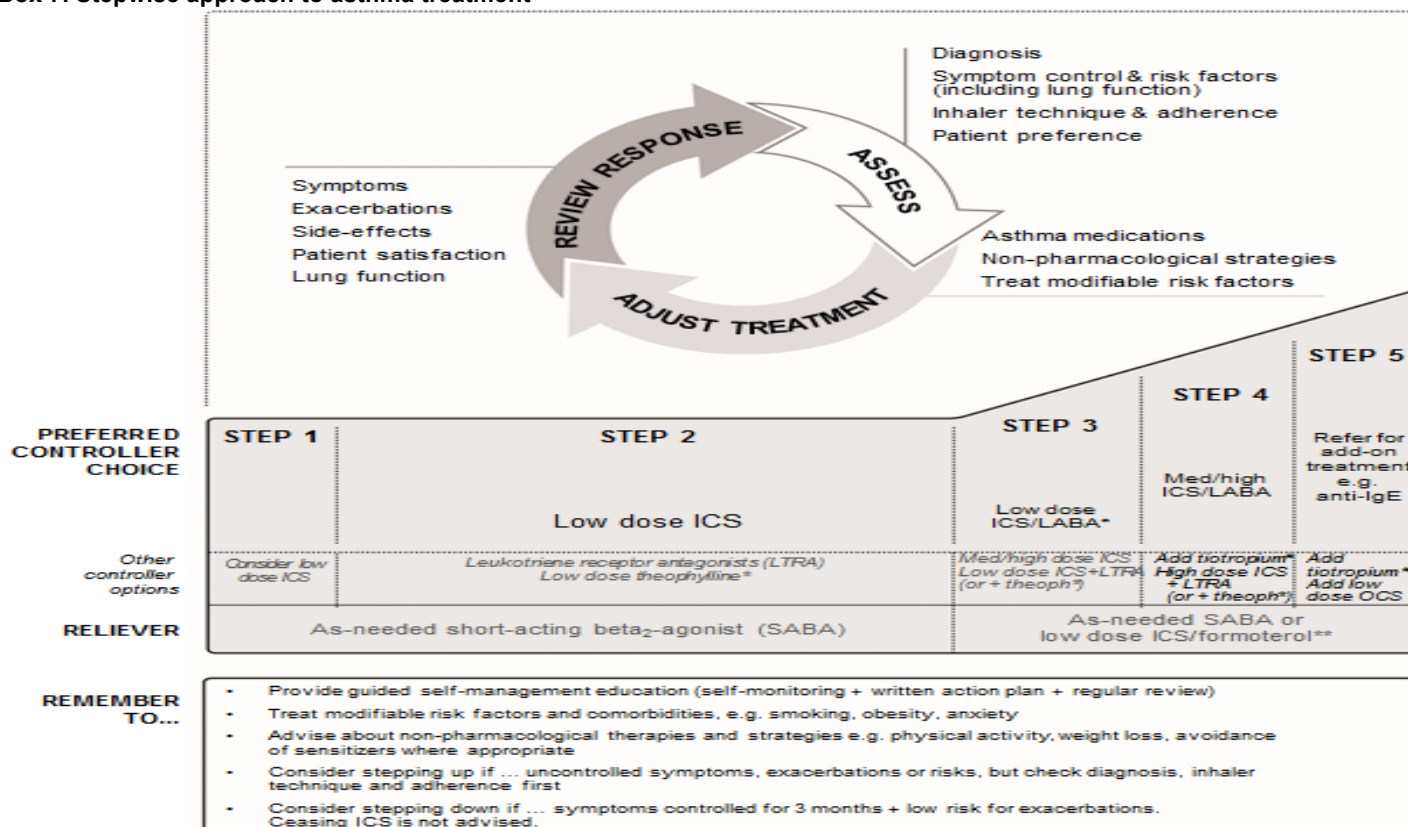
Regular low dose ICS is recommended for patients with any of the following:

- Asthma symptoms more than twice a month
- Waking due to asthma more than once a month
- Any asthma symptoms plus any risk factor(s) for exacerbations

After starting initial controller treatment

- Review response after 2–3 months, or according to clinical urgency
- See Box 7 for ongoing treatment and other key management issues
- Consider **step down** when asthma has been **well-controlled for 3 months**

Box 7. Stepwise approach to asthma treatment



2-TREATING MODIFIABLE RISK FACTORS

- 1- Guided self-management: self-monitoring of symptoms and/or PEF, a written asthma action plan
- 2- Use of a regimen that minimizes exacerbations: prescribe an ICS-containing controller
- 3- Avoidance of exposure to tobacco smoke
- 4- Confirmed food allergy

3-NON-PHARMACOLOGICAL STRATEGIES AND INTERVENTIONS

- 1/ Smoking cessation advice
- 2/ Physical activity
- 3/ Occupational asthma: ask all patients with adult-onset asthma about their work history. Identify and remove occupational sensitizers as soon as possible
- 4/ NSAIDs including aspirin: always ask about asthma before prescribing

Review response

How often should patients with asthma be reviewed?

Patients should preferably be seen 1–3 months after starting treatment and every 3–12 months after that, except in pregnancy when they should be reviewed every 4–6 weeks. After an exacerbation, a review visit within 1 week should be scheduled

Stepping up asthma treatment

Sustained step-up (for at least 2–3 months): if symptoms and/or exacerbations persist despite 2–3 months of controller treatment, assess the following common issues before considering a step-up

- o Incorrect inhaler technique
- o Poor adherence
- o Modifiable risk factors, e.g. smoking
- o Are symptoms due to comorbid conditions, e.g. allergic rhinitis

Stepping down treatment

when asthma is well-controlled
Consider stepping down treatment once good asthma control has been achieved and maintained for 3 months, to find the lowest treatment that controls both symptoms and exacerbations, and minimizes side-effects.

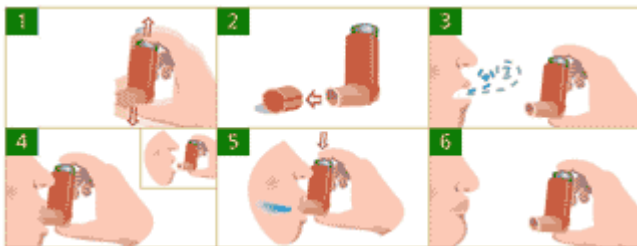
Types Of Asthma Inhalers:

- “ Metered dose inhalers (with or without spacer).
- “ Metered dose inhaler with a face mask.
- “ Dry powder inhaler.
- “ Nebulizer.

How to use Metered Dose Inhaler?

1. Shake the inhaler well before use (3 or 4 shakes).
2. Remove the cap.
3. Breathe out, away from your inhaler.
4. Bring the inhaler to your mouth. Place it in your mouth between your teeth and close your mouth around it.
5. Start to breathe in slowly. Press the top of you inhaler once and keep breathing in slowly until you have taken a full breath.
6. Remove the inhaler from your mouth, and hold your breath for about 10 seconds, then breathe out.

If you need a second puff, wait 30 seconds, shake your inhaler again, and repeat steps 3-6. After you've used your MDI, rinse out your mouth and record the number of doses taken.



How to use Dry Powder Inhaler?

1. Remove all candy, food or gum from your mouth.
2. Stand up straight.
3. Hold the inhaler level to the floor.
4. Open the inhaler with the mouthpiece facing you.
5. Slide the lever away from you until you hear it click. This means the medicine has been released. Be careful not to tip the inhaler or slide the lever again; the medicine will fall out and it will be wasted.
6. Take a deep breath in and breathe out.
7. Place the inhaler in your mouth, seal your lips tightly around it and take a quick, deep breath in.
8. Hold your breath for 10 seconds, and then breathe out.
9. Rinse your mouth with water and spit water out.

Patient education:

1/ Patient education is an important step in any management plan.

You need to explain to the patient:

- What is asthma?
- What are triggers? How to avoid them?
- How to use inhalers? When to use them?
- What are Side effects of medications?
- What are the benefit from the medications?

What's the difference between controller and reliever?

- **Controller** : They are medications taken daily on a long-term basis to keep asthma under clinical control mainly through their anti-inflammatory effects.
- **Reliever** : They are medications used on an “as-needed basis” that act quickly to reverse bronchoconstriction and relieve symptoms.

2/Provide skills training for effective use of inhaler devices

Most patients (up to 80%) cannot use their inhaler correctly. This contributes to poor symptom control and exacerbations.

3/To ensure effective inhaler use:

- Choose the most appropriate device for the patient before prescribing: consider medication, physical problems e.g. arthritis, patient skills, and cost; for ICS by pressurized metered dose inhaler, prescribe a spacer.
- Check inhaler technique

4/Correct using

5/Confirm that you have checklists for each of the inhalers you prescribe, and can demonstrate correct technique on them

COPD:

Chronic obstructive pulmonary disease represents a spectrum of abnormalities from emphysema to chronic bronchitis.

COPD affects both the airways and the parenchyma, whilst asthma affects only the airways.

How to diagnose a COPD patient and differentiate them from a bronchial asthma patient?

1- **history** of heavy smoking and a chronic productive cough and elderly.

2- Physical examination

a- Inspection (barrel-shaped chest; with increased antero-posterior diameter)

b- Palpation (reduced expansion with the hyper-inflated chest)

c- Breath sounds (decreased with early inspiratory crackles)

d- Wheeze is often absent.

3- **PFT (spirometry)**: it is a definitive diagnostic method.

*decreased FEV1 and FEV1/FVC ratio ;

if **FEV1** is reduced to **70%**, **mild** disease is suggested ,

if **FEV1** is reduced to **50%**, **severe** disease is suggested.

*increase TLC and residual volume (indicating air trapping)

Management of COPD:

COPD therapy is directed primarily to the relief of symptoms and the prevention of disease progression.

1-Smoking cessation.

2-Oxygen therapy

3-Inhaled B2 agonists (like Salmeterol).

4-Inhaled anti-cholinergic (like ipratropium bromide)

5- A combination of B2-agonist and anti-cholinergic

6-Inhaled corticosteroid (fluticasone)

Practical video

<https://www.youtube.com/watch?v=GmLvehqi6Yo>

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