

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# Follow Up of Asthma Patient

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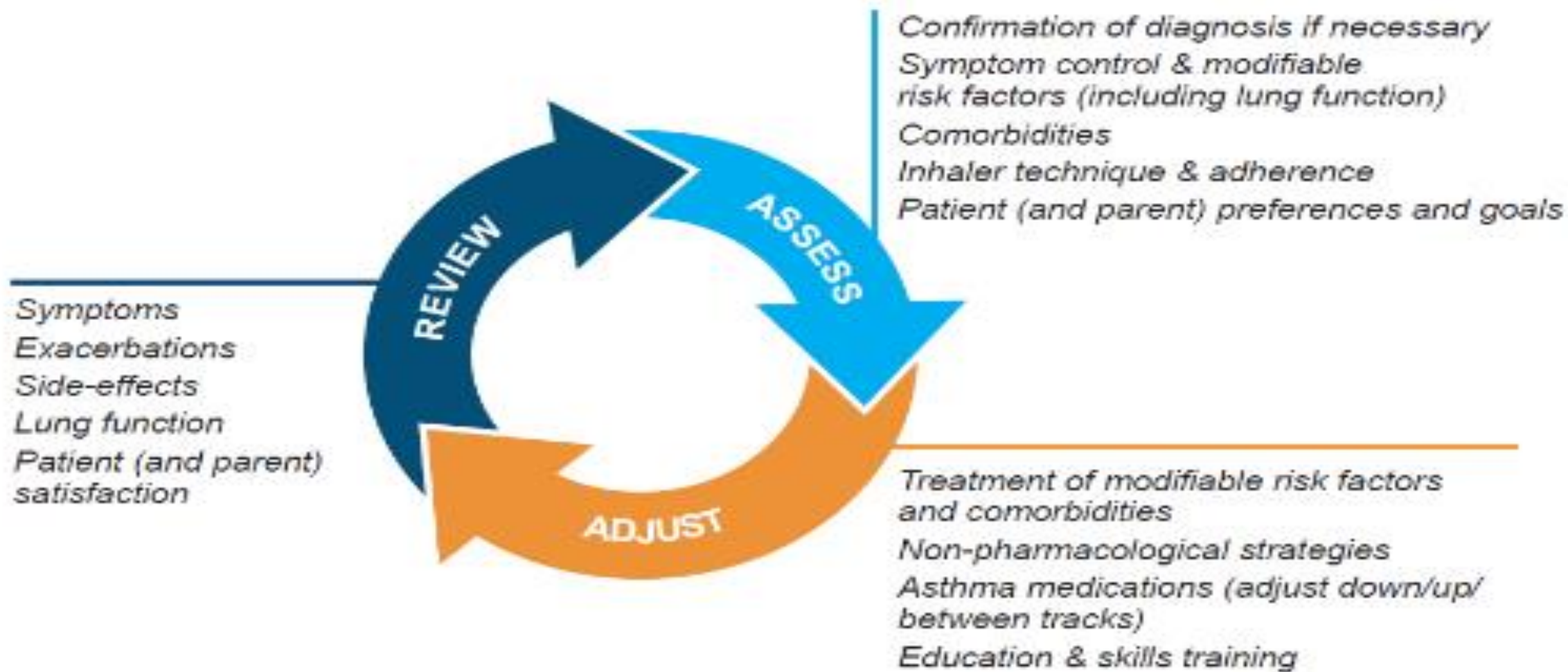
# Assesment of asthmatic patient

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- ▶ By physician ( History taking, physical examination, questionnaire and symptom based, PFT, telemedicine)
- ▶ By patient, self monitoring and management (questionnaire and symptom based, PEF meter, action plan, telemedicine)

## Box 6. The asthma management cycle of shared decision-making

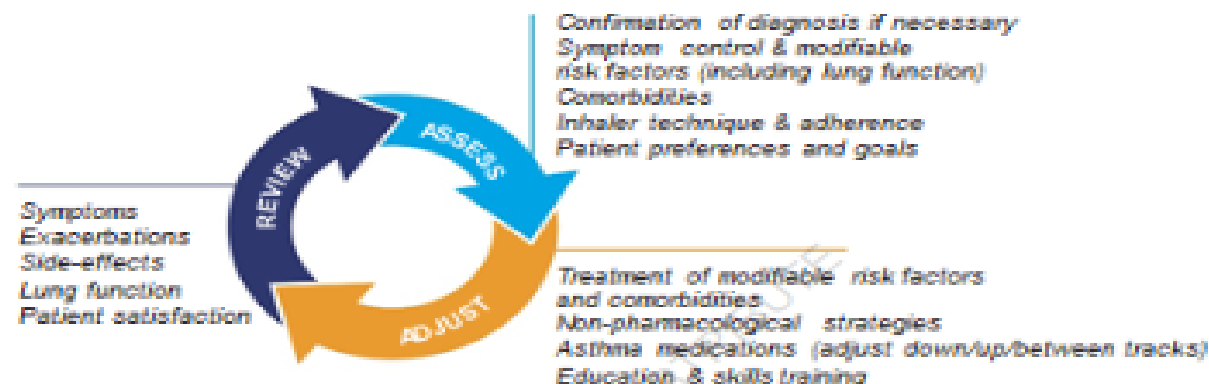
The aim of asthma management is to prevent exacerbations and asthma deaths, and to relieve and control symptoms



## 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

#### STEPS 1 – 2

As-needed low dose ICS-formoterol

#### STEP 3

Low dose maintenance ICS-formoterol

#### STEP 4

Medium dose maintenance ICS-formoterol

#### STEP 5

Add-on LAMA. Refer for phenotypic assessment ± anti-IgE, anti-IL5/5R, anti-IL4R. Consider high dose ICS-formoterol

RELIEVER: As-needed low-dose ICS-formoterol

**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

Take ICS whenever SABA taken

#### STEP 2

Low dose maintenance ICS

#### STEP 3

Low dose maintenance ICS-LABA

#### STEP 4

Medium/high dose maintenance ICS-LABA

#### STEP 5

Add-on LAMA. Refer for phenotypic assessment ± anti-IgE, anti-IL5/5R, anti-IL4R. Consider high dose ICS-LABA

RELIEVER: As-needed short-acting  $\beta_2$ -agonist

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

ICS: inhaled corticosteroid; LABA: long-acting  $\beta_2$ -agonist; LAMA: long-acting muscarinic antagonist; LTRA: leukotriene receptor antagonist; OCS: oral corticosteroid; SABA: short-acting  $\beta_2$ -agonist

See Box 8A (p.26) for children 6–11 years. For more details about treatment recommendations, and for supporting evidence, and clinical advice about implementation in different populations see the full GINA 2021 report ([www.ginasthma.org](http://www.ginasthma.org)). For more details about Step 5 add-on therapies, see Chapter 3E of the GINA report or the GINA 2021 Pocket Guide on Difficult to Treat and Severe Asthma, and check eligibility criteria with local payers.

# How often should patients with asthma be reviewed by the physician?

- ▶ 1–3 months after starting treatment and every 3–12 months after that
- ▶ Every 4–6 weeks in pregnancy
- ▶ Within 2 – 7 days after an exacerbation



## Box 5. How to investigate uncontrolled asthma in primary care

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**Watch patient using their inhaler. Discuss adherence and barriers to use**

Compare inhaler technique with a device-specific checklist, and correct errors; recheck frequently. Have an empathic discussion about barriers to adherence.

**Confirm the diagnosis of asthma**

If lung function normal during symptoms, consider halving ICS dose and repeating lung function after 2–3 weeks.

**Remove potential risk factors. Assess and manage comorbidities**

Check for risk factors or inducers such as smoking, beta-blockers, NSAIDs, allergen exposure. Check for comorbidities such as rhinitis, obesity, GERD, depression/anxiety.

**Consider treatment step-up**

Consider step up to next treatment level. Use shared decision-making, and balance potential benefits and risks.

**Refer to a specialist or severe asthma clinic**

If asthma still uncontrolled after 3–6 months on Step 4 treatment, refer for expert advice. Refer earlier if asthma symptoms severe, or doubts about diagnosis.

## **Box 3. How to assess a patient with asthma**

### **1. Asthma control – assess both symptom control and risk factors**

- Assess symptom control over the last 4 weeks (Box 4, p.14).
- Identify any modifiable risk factors for poor outcomes (Box 4, p.14).
- Measure lung function before starting treatment, 3–6 months later, and then periodically, e.g. at least yearly in most patients.

### **2. Are there any comorbidities?**

- These include rhinitis, chronic rhinosinusitis, gastroesophageal reflux (GERD), obesity, obstructive sleep apnea, depression and anxiety.
- Comorbidities should be identified as they may contribute to respiratory symptoms, flare-ups and poor quality of life. Their treatment may complicate asthma management.

### **3. Treatment issues**

- Record the patient's treatment. Ask about side-effects.
- Watch the patient using their inhaler, to check their technique (p.38).
- Have an open empathic discussion about adherence (p.38).
- Check that the patient has a written asthma action plan (p.42).
- Ask the patient about their goals and preferences for asthma treatment.



## 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"/>			
B. Risk factors for poor asthma outcomes				
Assess risk factors at diagnosis and periodically, at least every 1-2 years, particularly for patients experiencing exacerbations. Measure FEV <sub>1</sub> at start of treatment, after 3–6 months for personal best lung function, then periodically for ongoing risk assessment.				
Having uncontrolled asthma symptoms is an important risk factor for exacerbations				Having any of these risk factors increases the patient's risk of exacerbations <b>even if they have few asthma symptoms</b>
Additional potentially modifiable risk factors for exacerbations, even in patients with few asthma symptoms, include:				
<ul style="list-style-type: none"><li>• <i>Medications</i>: ICS not prescribed; poor adherence; incorrect inhaler technique; high SABA use (associated with increased exacerbations if <math>\geq 3 \times 200</math>-dose canisters/year and increased mortality if <math>\geq 1</math> canister/month)</li><li>• <i>Comorbidities</i>: obesity; chronic rhinosinusitis; GERD; confirmed food allergy; anxiety; depression; pregnancy</li><li>• <i>Exposures</i>: smoking; allergen exposure if sensitized; air pollution</li><li>• <i>Setting</i>: major socioeconomic problems</li><li>• <i>Lung function</i>: low FEV<sub>1</sub>, especially if <math>&lt; 60\%</math> predicted; higher reversibility</li><li>• <i>Other tests</i>: sputum/blood eosinophilia; elevated FeNO in allergic adults taking ICS</li></ul>				
Other major independent risk factors for flare-ups (exacerbations) include:				
<ul style="list-style-type: none"><li>• Ever being intubated or in intensive care for asthma; having <math>\geq 1</math> severe exacerbations in the last 12 months.</li></ul>				

## Box 4. Assessment of symptom control and future risk (continued)

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### B. Risk factors for poor asthma outcomes (continued)

Risk factors for developing fixed airflow limitation include:

- Preterm birth, low birth weight, greater infant weight gain
- Lack of ICS treatment
- Exposures: tobacco smoke, noxious chemicals, occupational exposures
- Low FEV<sub>1</sub>
- Chronic mucus hypersecretion
- Sputum or blood eosinophilia

Risk factors for medication side-effects include:

- *Systemic*: frequent OCS; long-term, high dose and/or potent ICS; also taking P450 inhibitors
- *Local*: high dose or potent ICS; poor inhaler technique

# REVIEWING RESPONSE AND ADJUSTING TREATMENT

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- ▶ **How often should patients with asthma be reviewed by the physician?**
- ▶ 1–3 months after starting treatment and every 3–12 months after that
- ▶ Every 4–6 weeks in pregnancy
- ▶ Within 2 – 7 days after an exacerbation
- ▶ **Stepping up asthma treatment**
- ▶ **Stepping down treatment when asthma is well-controlled**

# Stepping up asthma treatment

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- ▶ • **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
  - *incorrect inhaler technique*
  - *poor adherence*
  - *modifiable risk factors, e.g. smoking*
  - *are symptoms due to comorbid conditions, e.g. allergic rhinitis*
- **Short-term step-up (for 1–2 weeks)** by clinician or by patient with written asthma action plan (p.42), e.g. during viral infection or allergen exposure
- **Day-to-day adjustment** by patient with as-needed low dose ICS-formoterol for mild asthma, or ICS-formoterol as maintenance and reliever therapy. This is particularly effective in reducing severe exacerbations

# Stepping down treatment when asthma is well-controlled

- ▶ Once good asthma control has been achieved and maintained for 3 months
- ▶ Choose an appropriate time for step-down (no respiratory infection, patient not travelling, not pregnant)
- ▶ Assess risk factors, including history of previous exacerbations or emergency department visit, and low lung function
- ▶ Document baseline status (symptom control and lung function), provide a written asthma action plan, monitor closely, and book a follow-up visit
- ▶ Step down through available formulations to reduce the ICS dose by 25–50% at 2–3 month intervals
- ▶ If asthma is well-controlled on low dose ICS or LTRA, as-needed low dose ICS-formoterol is a step-down option
- ▶ **Do not completely stop ICS in adults or adolescents with asthma**



# INHALER SKILLS AND ADHERENCE

- ▶ Most patients (up to 80%) cannot use their inhaler correctly
- ▶ Provide skills training for effective use of inhaler devices
- ▶ Choose
- ▶ Check
- ▶ Correct
- ▶ Confirm

# Check and improve adherence with asthma medications

- ▶ At least 50% of adults and children do not take controller medications as prescribed

# TREATING MODIFIABLE RISKFACTORS

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- ▶ **Guided self-management:** self-monitoring of symptoms and/or PEF, a written asthma action plan (p.42), and regular medical review
- ▶ **Use of a regimen that minimizes exacerbations**
- ▶ **Avoidance of exposure to tobacco smoke**
- ▶ **Confirmed food allergy:** appropriate food avoidance; ensure availability of injectable epinephrine for anaphylaxis
- ▶ **School-based programs** that include asthma self-management skills
- ▶ **Referral to a specialist center**

# NON-PHARMACOLOGICAL STRATEGIES AND INTERVENTIONS

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- Smoking cessation advice
- Physical activity
- Investigation for occupational asthma
- Identify aspirin-exacerbated respiratory disease, and before prescribing NSAIDs including aspirin, always ask about previous reactions

# WRITTEN ASTHMA ACTION PLANS

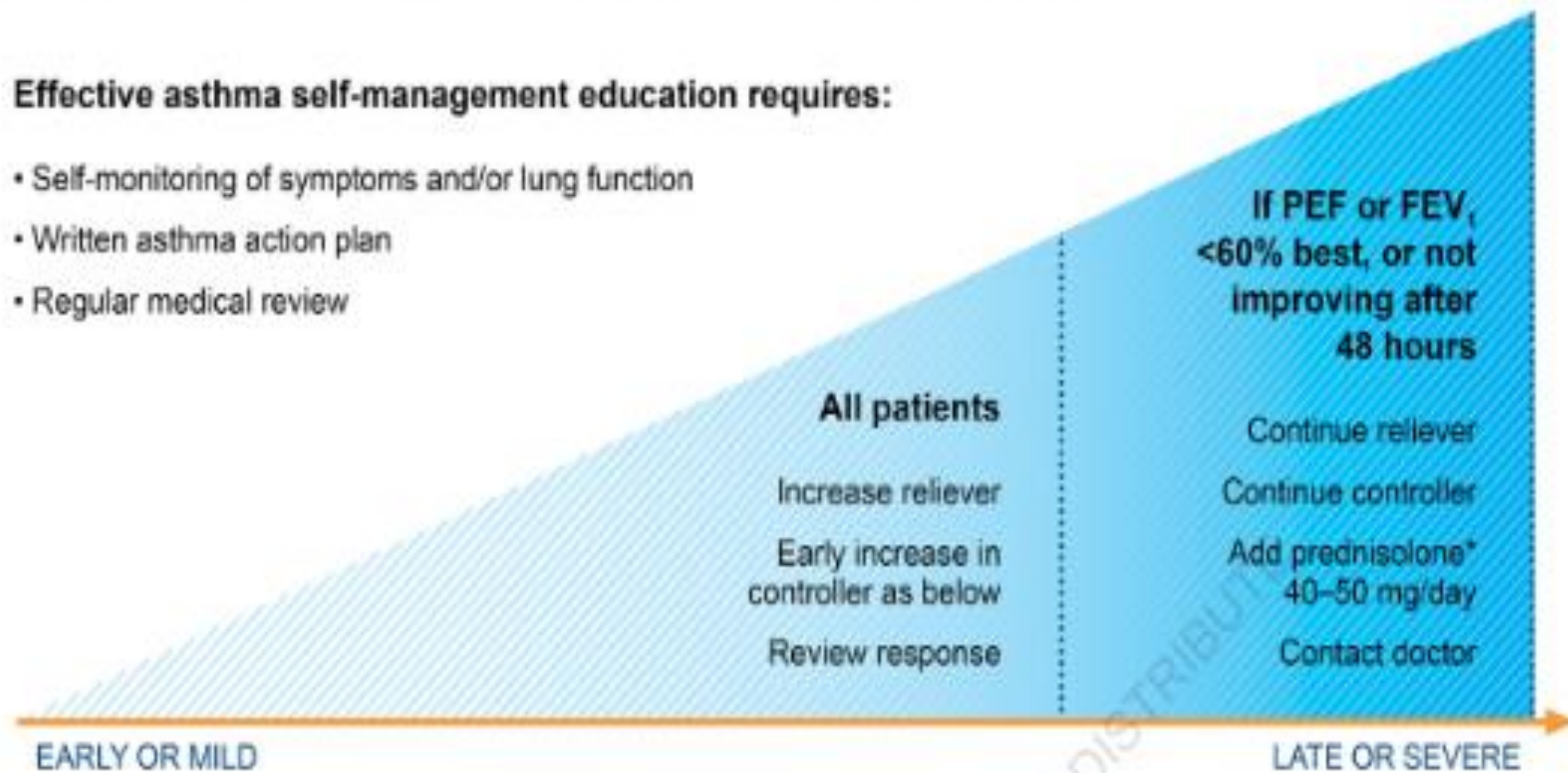
- ▶ Based on symptoms and/or (in adults) PEF
- ▶ Patients who deteriorate quickly should be advised to seek urgent care immediately
- ▶ The written asthma action plan should include:
  - the patient's usual asthma medications
  - when and how to increase medications, and start OCS
  - how to access medical care if symptoms fail to respond



## Box 10. Self-management with a written action plan

Effective asthma self-management education requires:

- Self-monitoring of symptoms and/or lung function
- Written asthma action plan
- Regular medical review







**This is what I need to do to stay on top of my asthma:**

My personal best peak flow is:

My **preventer** inhaler

(insert name/colour):

I need to take my preventer inhaler every day even when I feel well

I take  puff(s) in the morning and  puff(s) at night.

My **reliever** inhaler

(insert name/colour):

I take my reliever inhaler only if I need to

I take  puff(s) of my reliever inhaler if any of these things happen:

- I'm wheezing
- My chest feels tight
- I'm finding it hard to breathe
- I'm coughing.

Other medicines I take for my asthma every day:

With this daily routine I should expect/aim to have **no symptoms**. If I haven't had any symptoms or needed my reliever inhaler for at least 12 weeks, ask my GP or asthma nurse to review my medicines in case they can reduce the dose.



People with allergies need to be extra careful as attacks can be more severe.



**My asthma is getting worse if I notice any of these:**

- My symptoms are coming back (wheeze, tightness in my chest, feeling breathless, cough)
- I am waking up at night
- My symptoms are interfering with my usual day-to-day activities (eg at work, exercising)
- I am using my reliever inhaler  times a week or more
- My peak flow drops to below

**This is what I can do straight away to get on top of my asthma:**

**1** If I haven't been using my preventer inhaler, start using it regularly again or:

Increase my preventer inhaler dose to  puffs  times a day until my symptoms have gone and my peak flow is back to normal

Take my reliever inhaler as needed (up to  puffs every four hours)

If I don't improve within 48 hours make an urgent appointment to see my GP or asthma nurse.

**2** If I have been given prednisolone tablets (steroid tablets) to keep at home:

Take  mg of prednisolone tablets (which is  x 5mg) **immediately** and again every morning for  days or until I am fully better.

**URGENT!** Call my GP or asthma nurse today and let them know I have started taking steroids and make an **appointment to be seen within 24 hours**.



**I'm having an asthma attack if any of these happen:**

- My reliever inhaler is **not** helping or I need it more than every  hours
- I find it difficult to walk or talk
- I find it difficult to breathe
- I'm wheezing a lot or I have a very tight chest or I'm coughing a lot
- My peak flow is below



**THIS IS AN EMERGENCY TAKE ACTION NOW**

**1** Sit up straight – don't lie down. Try to keep calm

**2** Take one puff of my reliever inhaler every 30 to 60 seconds up to a maximum of 10 puffs

**3** A) If I feel worse at any point while I'm using my inhaler

B) If I don't feel any better after 10 puffs

C) If I feel better: make an urgent same-day appointment with my GP or asthma nurse to get advice

**CALL 999**

**Ambulance taking longer than 15 minutes?**

**Repeat step 2**

If I feel better, and have made my urgent same-day appointment:

- Check if I've been given rescue prednisolone tablets
- If I have these I should take them as prescribed by my doctor or asthma nurse

**IMPORTANT!** This asthma attack information is not designed for people who use the Symbicort® SMART regime OR Fostair® MART regime. If you use one of these speak to your GP or asthma nurse to get the correct asthma attack information.



# Increase frequency of inhaled reliever (low dose ICS-formoterol, or SABA)

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- ▶ Add spacer for pMDI.
- ▶ Advise patients to seek medical care if they are rapidly deteriorating, need SABA reliever again within 3 hours, or need more than 8 BDP-formoterol inhalations or more than 12 budesonide-formoterol inhalations in a day (total 48 mcg and 72 mcg formoterol metered dose respectively)
- ▶ Check local labelling as the maximum dose may vary
- ▶ Increase controller

# Rapid increase in controller, depending on usual controller medication and regimen, as follows:

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- ▶ • ICS: In adults and adolescents, consider quadrupling dose. However, in children with good adherence, a 5x increase is not effective.
- Maintenance ICS-formoterol: Consider quadrupling maintenance ICS-formoterol dose (note maximum formoterol dose above).
- Maintenance ICS-other LABA: Step up to higher dose formulation, or consider adding separate ICS inhaler to achieve quadruple ICS dose.
- Maintenance and reliever ICS-formoterol: Continue maintenance dose; increase reliever doses as needed (note maximum dose above)

# Oral corticosteroids (preferably morning dosing; review before ceasing)

- For adults, prednisolone 40–50mg, usually for 5–7 days.
- For children, 1–2 mg/kg/day up to 40mg, usually for 3–5 days.
- Tapering not needed if OCS has been given for less than 2 weeks.



# Peak Expiratory Flowmetry

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- ▶ Peak expiratory flow rate (PEFR) is the maximum flow rate generated during a forceful exhalation, starting from full inspiration
- ▶ Although PEFR usually correlates well with  $FEV_1$ , this correlation decreases in patients with asthma as airflow diminishes
- ▶ PEFR monitoring can be accurately performed by most patients older than 5 years
- ▶ The most frequent use of PEFR measurement is in home monitoring of asthma, where it can be beneficial in patients for both short- and long-term monitoring. When properly performed and interpreted, PEFR measurement can provide the patient and the clinician with objective data on which to base therapeutic decisions

# Indications for PEFr measurement

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- ▶ Monitoring of asthma [4]
- ▶ Monitoring effects of ozone and other air pollutants on respiratory function [5]
- ▶ Monitoring of chronic obstructive pulmonary disease (COPD)
- ▶ If PEFr monitoring is performed, a written asthma action plan should use the patient's personal best peak flow, rather than published norms, as a reference value
- ▶ Moderate or severe persistent asthma
- ▶ History of severe exacerbations
- ▶ Poor perception of airflow obstruction and worsening asthma

# Indications for PEFr measurement (continued)

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- ▶ Preference for peak flow rate monitoring rather than the use of a symptom based asthma action plan
- ▶ Detecting early changes in asthma that may require therapy
- ▶ Evaluating responsiveness to changes in therapy
- ▶ Giving a quantitative measurement of improvement
- ▶ Identifying temporal relations between environmental and occupational exposures and bronchospasm

# PEFR measurement

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- ▶ PEFR measurement may be of lower utility in younger children <sup>[15]</sup> and elderly patients
- ▶ PEFR is measured at least twice a day for 2-3 weeks
- ▶ PEFR should be measured upon awakening and in the late afternoon or early evening
- ▶ PEFR should be measured 15-20 minutes after use of an inhaled short-acting beta2 agonist

# PEFR measurement (continued)

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- ▶ After the personal best PEFR is obtained, the patient's healthcare provider may include this information in an asthma action plan to direct the patient's self-management.
- ▶ In general, a PEFR that is less than 80% of the patient's personal best should trigger the administration of an inhaled short-acting beta<sub>2</sub> agonist
- ▶ A PEFR that is less than 50% of the patient's personal best should trigger both administration of an inhaled short-acting beta<sub>2</sub> agonist and immediate medical attention





peak expiratory flow meter ...

## How to Take a Peak Flow Measurement



1 Purchase a peak flow meter (from \$50)



2 Place marker at 0 (or lowest number)



3 Stand up, breathe deeply



4 While holding breath, place mouthpiece between teeth with lips sealed



5 Blow out as hard and fast as possible



6 Write down number shown on meter

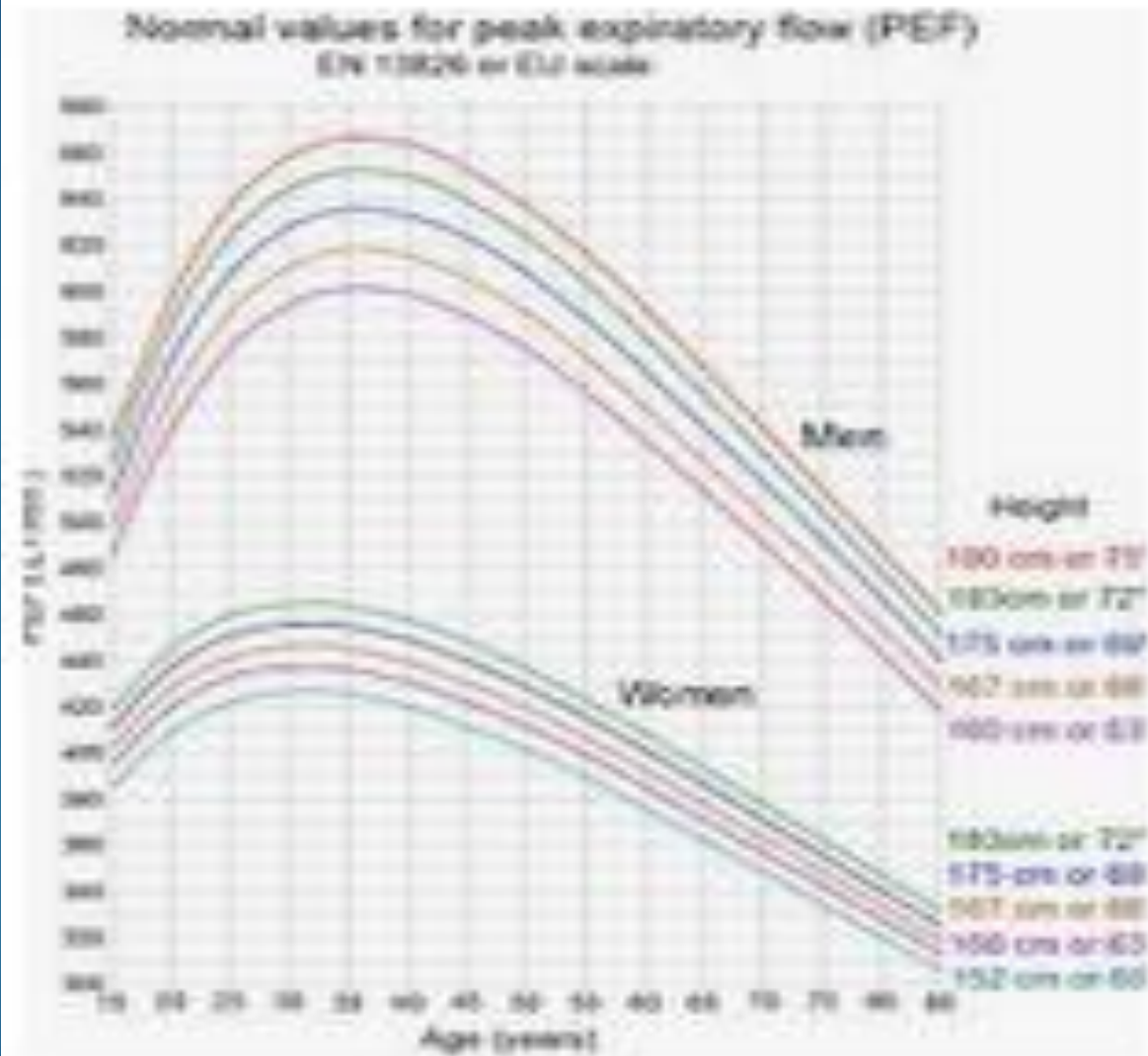


7 Repeat twice



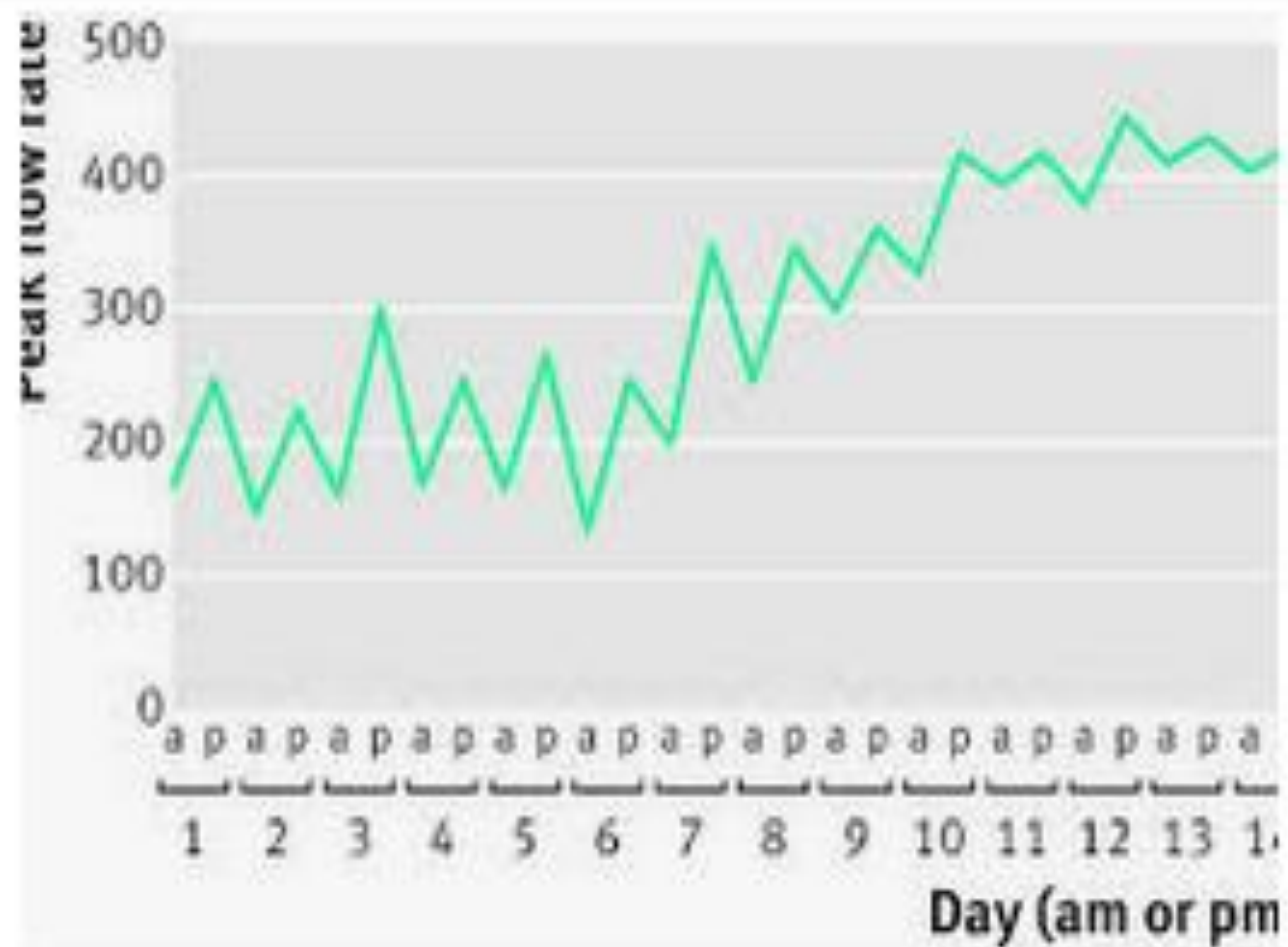
Peak Expiratory Flow Rate: Purpose ...





Normal Peak Expiratory ...







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