

## **Definition of asthma exacerbations:**

Exacerbations of asthma are episodes characterized by a progressive increase in symptoms of shortness of breath, cough, wheezing or chest tightness and progressive decrease in lung function.

## **Common exacerbation triggers include:**

- ❖ Viral respiratory infections
- ❖ Allergen exposure eg: grass pollen, soy bean dust, fungal spores
- ❖ Food allergy
- ❖ Outdoor air pollution.

## **Identifying patients at risk of asthma-related death:**

In addition to factors known to increase the risk of asthma exacerbations , some features are specifically associated with an increase in the risk of asthma-related death . The presence of one or more of these risk factors should be quickly identifiable in the clinical notes, and these patients should be encouraged to seek urgent medical care early in the course of an exacerbation.

## **Factors that increase the risk of asthma-related death:**

- ❖ A history of near-fatal asthma.
- ❖ Hospitalization or emergency care visit for asthma in the past year.
- ❖ Currently using or having recently stopped using oral corticosteroids.
- ❖ Not currently using inhaled corticosteroids.
- ❖ Over-use of SABAs.
- ❖ A history of psychiatric disease or psychosocial problems.
- ❖ Food allergy in a patient with asthma.
- ❖ Several comorbidities including pneumonia, diabetes and arrhythmias.

## **DIAGNOSIS OF EXACERBATIONS:**

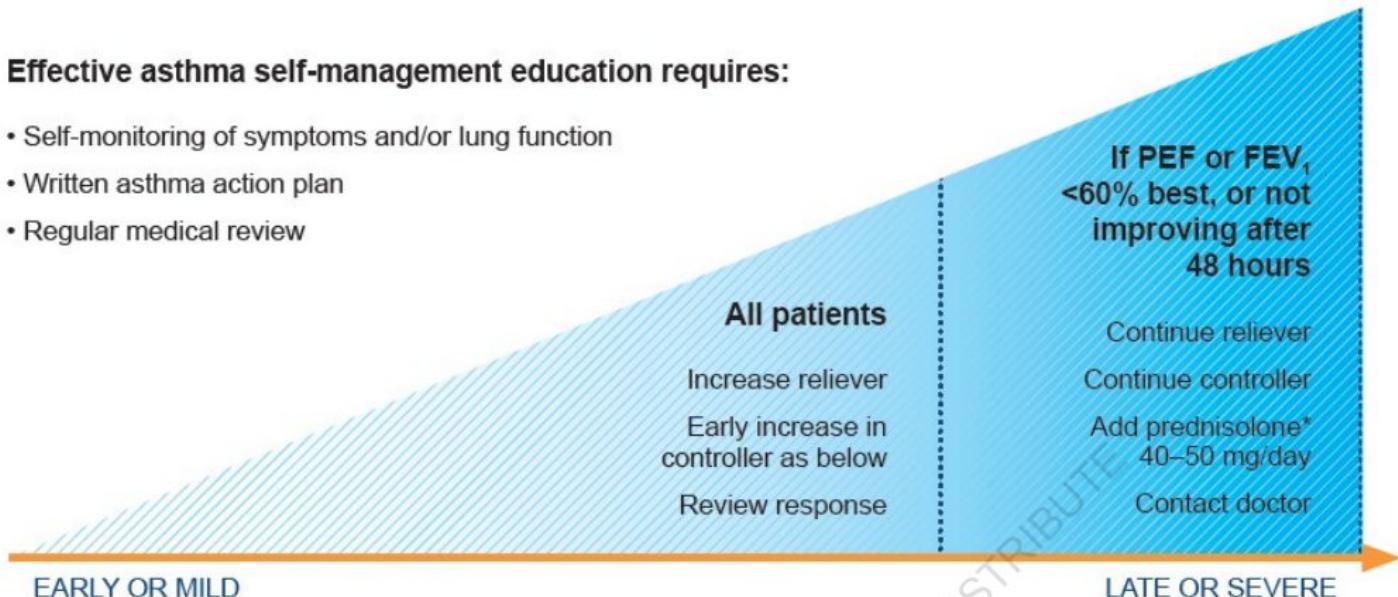
Exacerbations represent a change in symptoms and lung function from the patient's usual status. The decrease in expiratory airflow can be quantified by lung function measurements such as peak expiratory flow (PEF) or forced expiratory volume in 1 second (FEV1), compared with the patient's previous lung function or predicted values.

In the acute setting, these measurements are more reliable indicators of the severity of the exacerbation than symptoms. The frequency of symptoms may, however, be a more sensitive measure of the onset of an exacerbation than PEF.

**Box 4-2. Self-management of worsening asthma in adults and adolescents with a written asthma action plan**

**Effective asthma self-management education requires:**

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



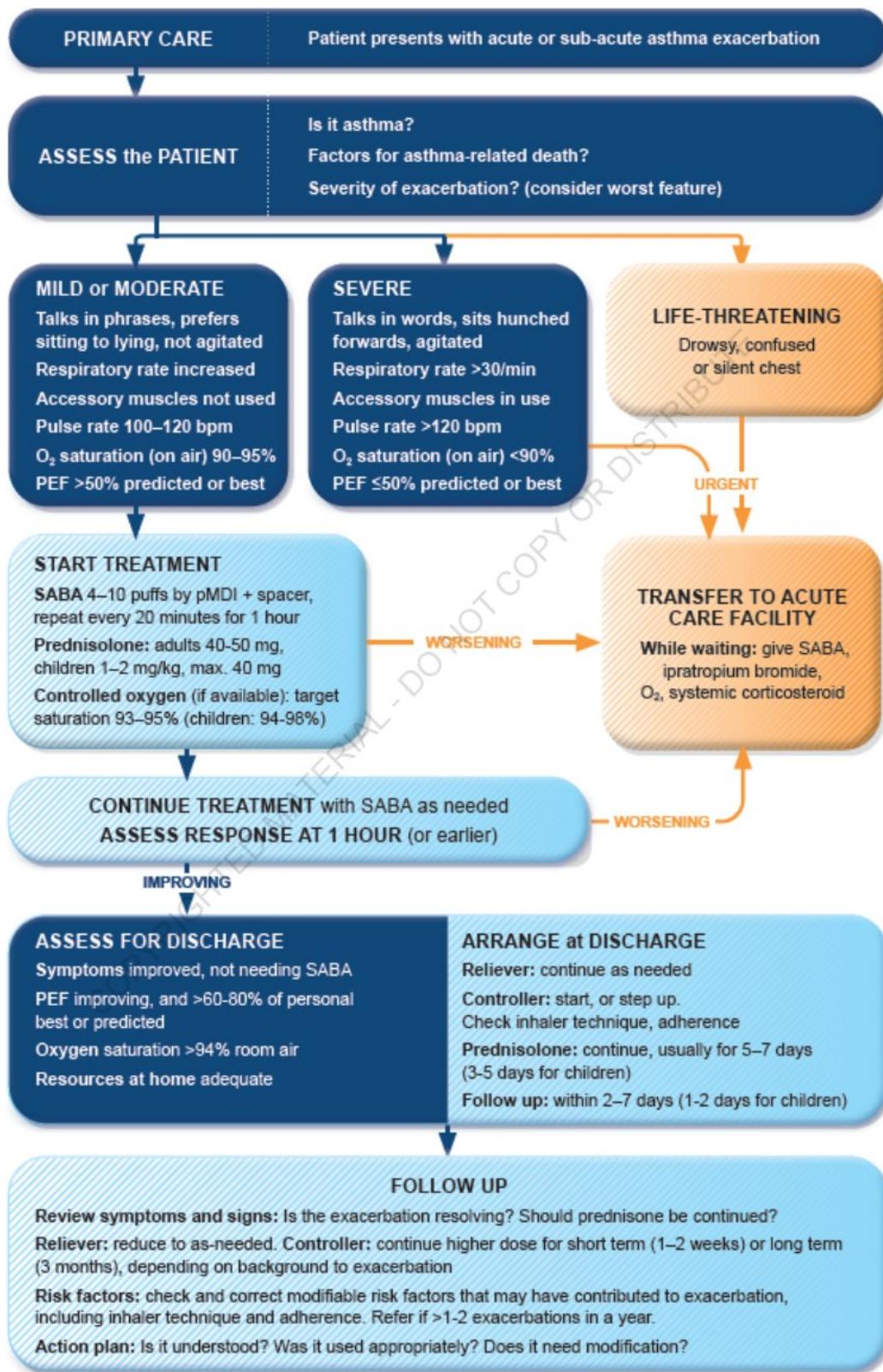
Medication	Short-term change (1–2 weeks) for worsening asthma	Evidence level
<b>Increase usual reliever:</b>		
Low dose ICS-formoterol †	Increase frequency of as-needed ICS-formoterol †	A
Short-acting beta <sub>2</sub> -agonist (SABA)	Increase frequency of SABA use For pMDI, add spacer	A A
<b>Increase usual controller:</b>		
Maintenance and reliever ICS-formoterol †	Continue maintenance ICS-formoterol and increase reliever ICS-formoterol as needed. †	A
Maintenance ICS with SABA as reliever	In adults and adolescents, quadruple ICS dose. In children with high adherence, 5x increase in ICS dose is not effective.	B
Maintenance ICS-formoterol with SABA as reliever †	Quadruple maintenance ICS-formoterol. †	B
Maintenance ICS plus other LABA with SABA as reliever	Step up to higher dose formulation of ICS plus other LABA In adults, consider adding a separate ICS inhaler to quadruple ICS dose.	B D
<b>Add oral corticosteroids (OCS) and contact doctor; review before ceasing</b>		
OCS (prednisone or prednisolone)	Add OCS for severe exacerbations (e.g. PEF or FEV <sub>1</sub> <60% personal best or predicted), or patient not responding to treatment over 48 hours. Once started, morning dosing is preferable.  <i>Adults: prednisolone 40–50 mg/day, usually for 5–7 days. Children 6–11 years: 1–2 mg/kg/day (maximum 40 mg) usually for 3–5 days.</i>  Tapering is not needed if OCS are prescribed for <2 weeks.	A D B

BDP: beclometasone dipropionate; FEV<sub>1</sub>: forced expiratory volume in 1 second; ICS: inhaled corticosteroid; PEF: peak expiratory flow; SABA: short-acting beta<sub>2</sub>-agonist. Options in each section are listed in order of evidence.

\* or equivalent dose of prednisone.

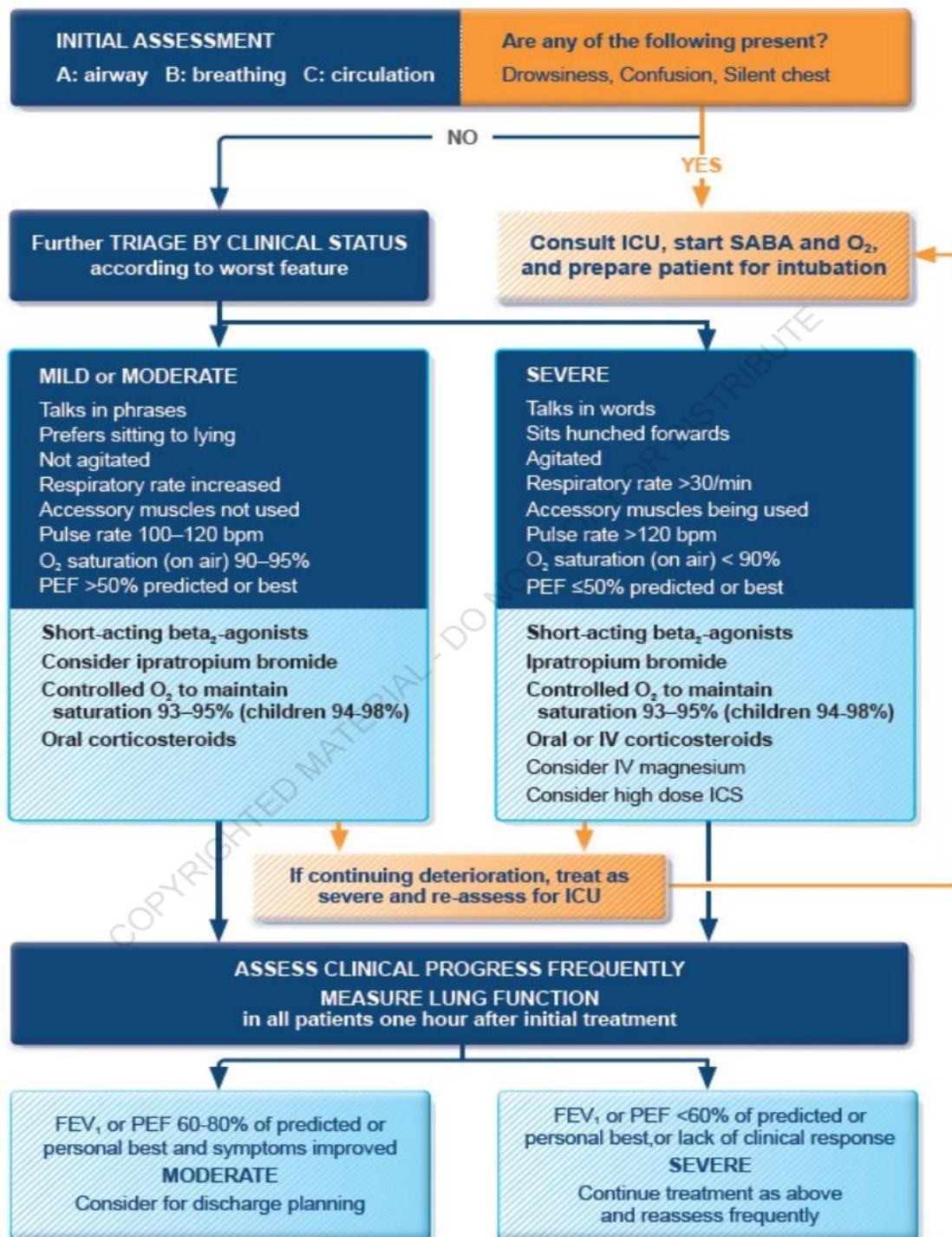
† ICS-formoterol as-needed for relief of symptoms in mild asthma, or as part of maintenance and reliever regimen with low dose budesonide or beclometasone with formoterol. Based on product information, the maximum recommended dose of ICS-formoterol in a single day is a total of 48 mcg formoterol for beclometasone-formoterol (36 mcg delivered dose), and 72 mcg formoterol for budesonide-formoterol (54 mcg delivered dose).

**Box 4-3. Management of asthma exacerbations in primary care (adults, adolescents, children 6–11 years)**



O<sub>2</sub>: oxygen; PEF: peak expiratory flow; SABA: short-acting beta<sub>2</sub>-agonist (doses are for salbutamol).

**Box 4-4. Management of asthma exacerbations in acute care facility, e.g. emergency department**



ICS: inhaled corticosteroids; ICU: intensive care unit; IV: intravenous; O<sub>2</sub>: oxygen; PEF: peak expiratory flow; FEV<sub>1</sub>: forced expiratory volume in 1 sec

