

Management of Asthma

in Adults



Ministry of Health Malaysia



Malaysian Thoracic Society



Academy of Medicine Malaysia

KEY MESSAGES

1. Asthma is an inflammatory airway disease triggered by external stimuli in genetically-predisposed individuals.
2. Diagnosis of asthma should be made based on typical clinical history & supported by positive obstructive airflow reversibility with spirometry. Spirometry is the investigation of choice & more reliable than peak expiratory flow (PEF).
3. Asthma patients should be regularly followed-up to assess asthma control & adjust treatment accordingly.
4. All asthma patients should be offered self-management education [written asthma action plan (WAAP)].
5. All asthma patients should be advised to quit smoking & offered smoking cessation programme.
6. Inhaler technique & adherence to treatment should be assessed at every asthma clinic visit.
7. Inhaled short-acting β_2 -agonists (SABA) are the reliever of choice in stable asthma. Low to moderate dose of inhaled corticosteroids (ICS) are the preferred maintenance therapy in asthma.
8. Rapid clinical assessment of severity should be performed in all acute asthma (acute exacerbation of asthma). Early referral for critical care should be considered for asthma patients who respond poorly to optimal treatment & at-risk of respiratory failure.
9. In acute asthma, inhaled β_2 -agonists is the first-line treatment & systemic corticosteroids should be given to all patients.
10. Monitoring & evaluation of asthma severity should include PEF & oxygen saturation. In life-threatening asthma or oxygen saturation on pulse oximetry (SpO_2) <92%, arterial blood gases (ABG) should be done if readily available.

This Quick Reference provides key messages & a summary of the main recommendations in the Clinical Practice Guidelines (CPG) Management of Asthma in Adults.

Details of the evidence supporting these recommendations can be found in the above CPG, available on the following websites:

Ministry of Health Malaysia : www.moh.gov.my

Academy of Medicine Malaysia : www.acadmed.org.my

Malaysian Thoracic Society : <http://mts.org.my>

CLINICAL PRACTICE GUIDELINES SECRETARIAT

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ASSESSMENT OF ASTHMA SYMPTOM CONTROL

Asthma symptom control			Level of asthma symptom control		
In the past four weeks, has the patient had:			Well controlled	Partly controlled	Uncontrolled
• Daytime asthma 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"/>			
• Reliever needed for symptoms 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"/>			

ASSESSMENT OF RISK FACTORS FOR POOR ASTHMA OUTCOMES

Risk factors for poor asthma outcomes	
<ul style="list-style-type: none"> • Assess risk factors at diagnosis & periodically, at least every 1 - 2 years, particularly for patients experiencing exacerbations. • Measure forced expiratory volume in 1 second (FEV1) at start of treatment, after 3 - 6 months of controller treatment to record patient's personal best lung function, then periodically for ongoing risk assessment. 	
<ul style="list-style-type: none"> • Potentially modifiable independent risk factors for exacerbations include: <ul style="list-style-type: none"> ○ Uncontrolled asthma symptoms ○ ICS not prescribed, poor ICS adherence, incorrect inhaler technique ○ High SABA use ○ Low FEV1, especially if <60% predicted ○ Major psychological or socioeconomic problems ○ Exposures: smoking; allergen exposure if sensitised ○ Co-morbidities: obesity, rhinosinusitis, confirmed food allergy ○ Sputum or blood eosinophilia, elevated fractional exhaled nitric oxide in allergic adults ○ Pregnancy • Other major independent risk factors for exacerbations include: <ul style="list-style-type: none"> ○ Ever being intubated or in intensive care for asthma ○ Having ≥1 severe exacerbations in the last 12 months 	Having one or more of these risk factors increase the risk of exacerbations even if symptoms are well controlled
<ul style="list-style-type: none"> • Risk factors for developing fixed airflow limitation include lack of ICS treatment, exposure to tobacco smoke, noxious chemicals or occupational exposures, low FEV1. 	
<ul style="list-style-type: none"> • Risk factors for medication side effects include: <ul style="list-style-type: none"> ○ Systemic: frequent oral corticosteroids, long-term high dose ICS, also taking P450 inhibitors ○ Local: high dose or potent ICS, poor inhaler technique 	

<p>Factors considered for admission in acute asthma:</p> <ul style="list-style-type: none"> • persistent symptoms • previous near-fatal asthma attack • living alone/socially isolated • psychological problems • physical disability or learning difficulties • asthma attack despite recent adequate steroid treatment • pregnancy 	<p>Factors considered for critical care in acute asthma:</p> <ul style="list-style-type: none"> • deteriorating PEF • persisting or worsening hypoxia • hypercapnia • ABG analysis with worsening acidosis • exhaustion • drowsiness, confusion or altered conscious state • respiratory arrest
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- Asthma patients with the following conditions should be referred to specialists with experience in asthma management for further evaluation:
 - diagnosis of asthma is not clear
 - suspected occupational asthma
 - poor response to asthma treatment
 - severe/life-threatening asthma exacerbations
 - asthma in pregnancy
 - asthma with multiple co-morbidities

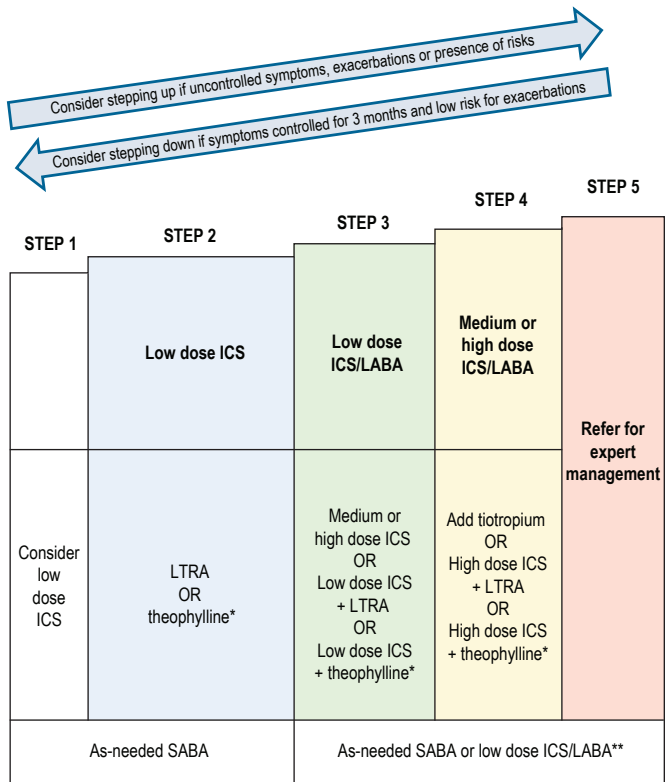
COMMON MEDICATIONS IN ASTHMA

CLASS	DRUG	DOSING
RELIEVER		
SABA	Salbutamol 100 µg/dose inhaler (pMDI)	• 1 - 2 puffs PRN (max. 8 puffs/day)
CONTROLLER		
ICS	Beclometasone dipropionate 50, 100 & 200 µg/dose inhaler (pMDI)	• Extra-fine formulation: 50 - 400 µg BD (max.)
	Budesonide 100 & 200 µg/dose inhaler (pMDI)	• 100 - 800 µg BD (max.)
	Ciclesonide 80 & 160 µg/dose inhaler (pMDI)	• 160 µg OD (max. 320 µg BD)
	Fluticasone propionate 50 & 125 µg/dose inhaler (pMDI)	• 100 - 1000 µg BD (max.)
ICS/LABA Combination	Beclometasone dipropionate 100 µg & formoterol 6 µg inhaler (pMDI)	Maintenance therapy: • 1 - 2 puffs BD (max. 2 puffs BD) Maintenance & reliever therapy: • 1 puff BD • Take additional 1 puff as needed • Total max. dose: 8 puffs/day
	Budesonide 160 µg & formoterol 4.5 µg inhaler (Turbuhaler®)	Maintenance therapy: • 1 - 2 puffs BD (max. 4 puffs BD) Maintenance & reliever therapy: • 1 puff BD (2 puffs BD may be used in some patients) or 2 puffs OD • Take additional 1 puff as needed • Total max. dose: 12 puffs/day
	Fluticasone propionate 125 µg & formoterol 5 µg inhaler (pMDI)	• 2 puffs BD
	Fluticasone propionate 250 µg & formoterol 10 µg inhaler (pMDI)	
	Fluticasone furoate 100 µg & vilanterol 25 µg inhaler (Ellipta®)	• 1 puff OD
	Fluticasone furoate 200 µg & vilanterol 25 µg inhaler (Ellipta®)	
	Salmeterol 25 µg & fluticasone propionate 125 µg inhaler (pMDI)	• 2 puffs BD
	Salmeterol 50 µg & fluticasone propionate 250 µg inhaler (Accuhaler®)	• 1 puff BD
Salmeterol 50 µg & fluticasone propionate 500 µg inhaler (Accuhaler®)		
LAMA	Tiotropium 2.5 µg, solution for inhalation (Soft Mist Inhaler®/RespiMat®)	• 2 puffs OD
LTRA	Montelukast 10 mg tablet	• 10 mg OD (in the evening)
Theophylline	Theophylline SR 250 mg tablet	• 250 mg BD • Suggested starting dose 250 mg OD

#Disclaimer: The information on common asthma medications in this section only serves as a general guide and not all-inclusive. Doses may be different depending on formulation.

SABA=short-acting β_2 -agonists, ICS=inhaled corticosteroids, LABA=long-acting β_2 -agonists, ICS/LABA=combination medication in a single inhaler, LAMA=long-acting muscarinic antagonists, LTRA=leukotriene receptor antagonists, pMDI=pressurised metered-dose inhaler, PRN=when necessary, max=maximum, OD=once daily, BD=twice daily

ALGORITHM 1. STEPWISE TREATMENT LADDER IN STABLE ASTHMA



ICS = inhaled corticosteroids, LABA = long-acting β_2 -agonists, ICS/LABA = combination medication in a single inhaler,

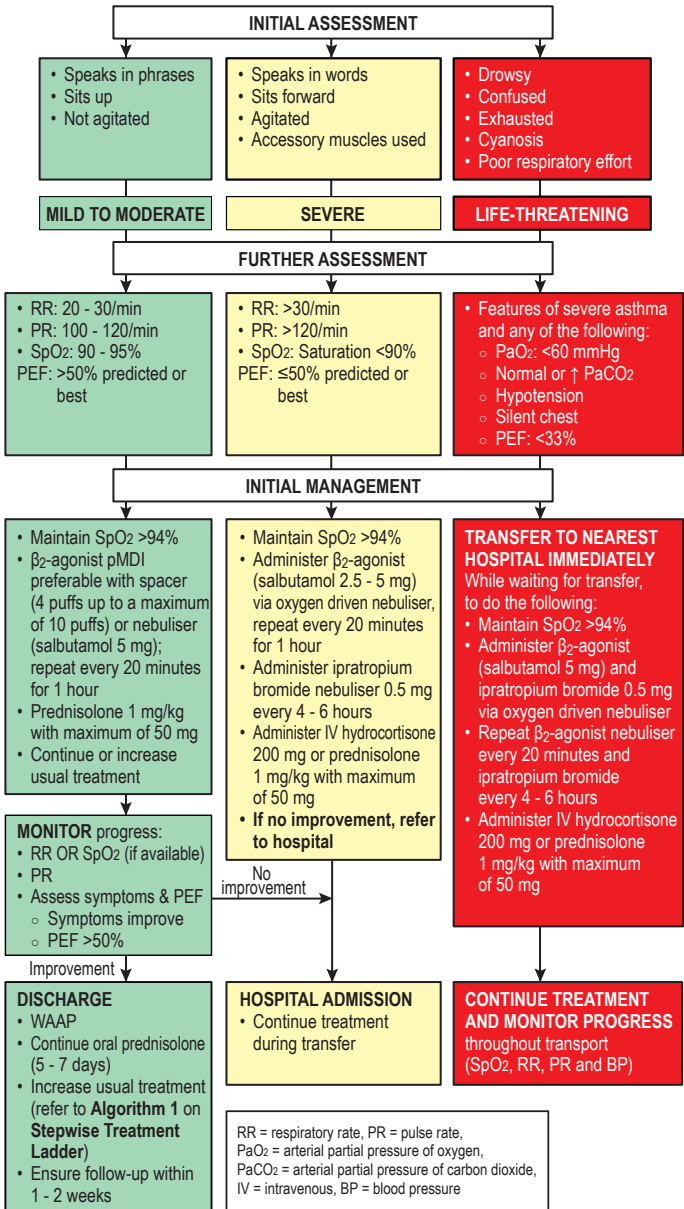
LTRA = leukotriene receptor antagonists, SABA = short-acting β_2 agonists, *theophylline= ≤ 250 mg daily

**Budesonide/formoterol or beclomethasone/formoterol

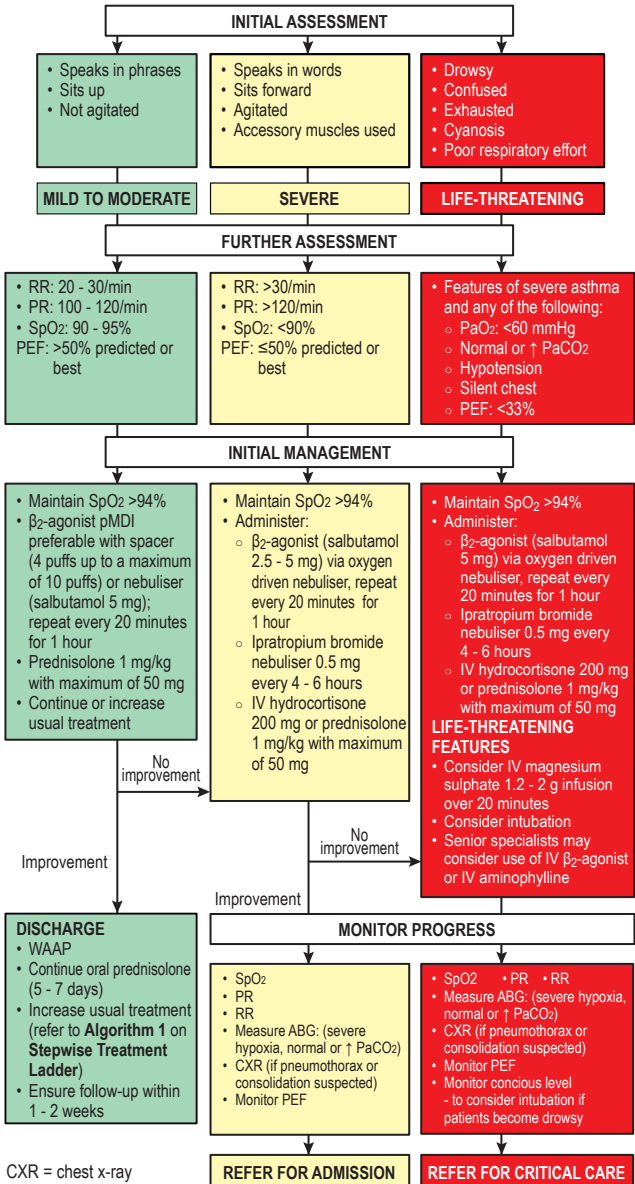
Patients who are steroid-naïve presenting at Step 3 and 4, should be initiated on low dose ICS

BEFORE CONSIDERING STEP UP, CHECK INHALER TECHNIQUE AND TREATMENT ADHERENCE.

ALGORITHM 2. MANAGEMENT OF ACUTE ASTHMA IN PRIMARY CARE




ALGORITHM 3. MANAGEMENT OF ACUTE ASTHMA IN EMERGENCY DEPARTMENT



WRITTEN ASTHMA ACTION PLAN

Name: _____ IC: _____ Personal Best PEF: _____ L/min Date of Plan: _____
 Doctor: _____ Hospital/Clinic: _____ Phone No.: _____



Green: Doing Well

- No cough, wheeze, chest tightness or shortness of breath day/night AND
- Sleep well at night AND
- Can do usual activities


OR

- PEF: _____ to _____ L/min (80% to 100% of personal best)

• Take these controller medications everyday:

Controller medication	How Much	How Often

*Use spacer when possible



Yellow: Getting Worse

- Cough, wheeze, chest tightness or shortness of breath OR
- Wake up at night due to asthma symptoms OR
- Can do some, but not all usual activities OR
- Cold/flu

OR

- PEF: _____ to _____ L/min (50% to 79% of personal best)

• Take your regular medications and step up reliever medication for 1 hour:

Reliever Medication	How Much	How Often
	puffs	Every 20 minutes

• **If your symptoms persist after 1 hour:**

- Start prednisolone (if available): _____ tablets daily for 5 days (maximum dose 50 mg/day)
- Continue using your reliever medication and **go to the nearest hospital or clinic**

*Use spacer when possible



Red: Alert

- Symptoms are worsening (cough, wheeze, chest tightness, shortness of breath, cannot do usual activities) OR
- You are using your reliever frequently:
 - every 2 to 3 hours OR
 - more than 8 puffs a day

OR

- PEF: Below _____ L/min (Less than 50% of personal best)

• Continue using your reliever medication:

Reliever Medication	How Much	How Often
	puffs	

- Start prednisolone **NOW** (if have not started); maximum dose 50 mg/day
- **Go to the nearest hospital or clinic IMMEDIATELY/dial 999**

*Use spacer when possible