QUICK REFERENCE FOR HEALTHCARE PROVIDERS

Management of Asthma in Adults

Name: ___________________________   IC: _______________________  Personal Best PEF: __________ L/min    Date of Plan: __________

Doctor: _________________________   Hospital/Clinic: ___________________________   Phone No.: ________________________

• Take these controller medications everyday:

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

  * Use spacer when possible

<table>
<thead>
<tr>
<th>Controller medication</th>
<th>How Much</th>
<th>How Often</th>
</tr>
</thead>
</table>

• Continue using your reliever medication:

• Start prednisolone NOW (if have not started); maximum dose 50 mg/day

  * Use spacer when possible

<table>
<thead>
<tr>
<th>Reliever Medication</th>
<th>How Much</th>
<th>How Often</th>
</tr>
</thead>
</table>

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

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

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

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

If your symptoms persist after 1 hour:
- Start prednisolone (if available): _______ tablets daily for 5 days (maximum dose 50 mg/day)
  * Use spacer when possible

<table>
<thead>
<tr>
<th>Reliever Medication</th>
<th>How Much</th>
<th>How Often</th>
</tr>
</thead>
</table>

Red: Alert
- Symptoms are worsening (cough, wheeze, chest tightness, shortness of breath, cannot do usual activities)
- You are using your reliever frequently:
  - every 2 to 3 hours
- more than 8 puffs a day
- PEF: Below _____ L/min (Less than 50% of personal best)
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 β₂-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 β₂-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 (SpO₂) <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
Malaysian Health Technology Assessment Section (MaHTAS)
Medical Development Division, Ministry of Health Malaysia
Level 4, Block E1, Precint 1,
Federal Government Administrative Centre 62590
Putrajaya, Malaysia
Tel: 603-88831229
E-mail: htamalaysia@moh.gov.my
### ASSESSMENT OF ASTHMA SYMPTOM CONTROL

<table>
<thead>
<tr>
<th>Asthma symptom control</th>
<th>Level of asthma symptom control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Well controlled</td>
</tr>
<tr>
<td>In the past four weeks, has the patient had:</td>
<td></td>
</tr>
<tr>
<td>• Daytime asthma symptoms more than twice/week?</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>• Any night waking due to asthma?</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>• Reliever needed for symptoms more than twice/week?</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>• Any activity limitation due to asthma?</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

### ASSESSMENT OF RISK FACTORS FOR POOR ASTHMA OUTCOMES

<table>
<thead>
<tr>
<th>Risk factors for poor asthma outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess risk factors at diagnosis &amp; periodically, at least every 1 - 2 years, particularly for patients experiencing exacerbations.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Potentially modifiable independent risk factors for exacerbations include:</td>
</tr>
<tr>
<td>• Uncontrolled asthma symptoms</td>
</tr>
<tr>
<td>• ICS not prescribed, poor ICS adherence, incorrect inhaler technique</td>
</tr>
<tr>
<td>• High SABA use</td>
</tr>
<tr>
<td>• Low FEV1, especially if &lt;60% predicted</td>
</tr>
<tr>
<td>• Major psychological or socioeconomic problems</td>
</tr>
<tr>
<td>• Exposures: smoking; allergen exposure if sensitised</td>
</tr>
<tr>
<td>• Co-morbidities: obesity, rhinosinusitis, confirmed food allergy</td>
</tr>
<tr>
<td>• Sputum or blood eosinophilia, elevated fractional exhaled nitric oxide in allergic adults</td>
</tr>
<tr>
<td>• Pregnancy</td>
</tr>
<tr>
<td>• Other major independent risk factors for exacerbations include:</td>
</tr>
<tr>
<td>• Ever being intubated or in intensive care for asthma</td>
</tr>
<tr>
<td>• Having ≥1 severe exacerbations in the last 12 months</td>
</tr>
<tr>
<td>Risk factors for developing fixed airflow limitation include lack of ICS treatment, exposure to tobacco smoke, noxious chemicals or occupational exposures, low FEV1.</td>
</tr>
<tr>
<td>Risk factors for medication side effects include:</td>
</tr>
<tr>
<td>• Systemic: frequent oral corticosteroids, long-term high dose ICS, also taking P450 inhibitors</td>
</tr>
<tr>
<td>• Local: high dose or potent ICS, poor inhaler technique</td>
</tr>
</tbody>
</table>

### Factors considered for admission in acute asthma:
- 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

### Factors considered for critical care in acute asthma:
- deteriorating PEF
- persisting or worsening hypoxia
- hypercapnia
- ABG analysis with worsening acidosis
- exhaustion
- drowsiness, confusion or altered conscious state
- respiratory arrest
• 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
  - severe/life-threatening asthma exacerbations
  - suspected occupational asthma
  - asthma in pregnancy
  - poor response to asthma treatment
  - asthma with multiple co-morbidities

### COMMON MEDICATIONS IN ASTHMA

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

#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 β2-agonists, ICS=inhaled corticosteroids, LABA=long-acting β2-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

**Consider stepping up if uncontrolled symptoms, exacerbations or presence of risks**

**Consider stepping down if symptoms controlled for 3 months and low risk for exacerbations**

<table>
<thead>
<tr>
<th>STEP 1</th>
<th>STEP 2</th>
<th>STEP 3</th>
<th>STEP 4</th>
<th>STEP 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred Controller</td>
<td>Low dose ICS</td>
<td>Low dose ICS/LABA</td>
<td>Medium or high dose ICS/LABA</td>
<td>Refer for expert management</td>
</tr>
<tr>
<td>Other Controllers</td>
<td>Consider low dose ICS</td>
<td>LTRA OR theophylline*</td>
<td>Medium or high dose ICS OR Low dose ICS + LTRA OR Low dose ICS + theophylline*</td>
<td>Add tiotropium OR High dose ICS + LTRA OR High dose ICS + theophylline*</td>
</tr>
<tr>
<td>Reliever</td>
<td>As-needed SABA</td>
<td>As-needed SABA or low dose ICS/LABA**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**ICS** = inhaled corticosteroids, **LABA** = long-acting β₂-agonists, **ICS/LABA** = combination medication in a single inhaler, **LTRA** = leukotriene receptor antagonists, **SABA** = short-acting β₂ agonists, **theophylline** = ≤250 mg daily

**Budesonide/formoterol or beclometasone/formoterol**

Patients who are steroid-naive 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

INITIAL ASSESSMENT

MILD TO MODERATE

- Speaks in phrases
- Sits up
- Not agitated

SEVERE

- Drowsy
- Confused
- Exhausted
- Cyanosis
- Poor respiratory effort

LIFE-THREATENING

FURTHER ASSESSMENT

INITIAL MANAGEMENT

TRANSFER TO NEAREST HOSPITAL IMMEDIATELY

While waiting for transfer, do the following:

- Maintain SpO₂ >94%
- Administer β₂-agonist (salbutamol 2.5 - 5 mg) via oxygen driven nebuliser, repeat every 20 minutes for 1 hour
- Administer ipratropium bromide nebuliser 0.5 mg every 4 - 6 hours
- Administer IV hydrocortisone 200 mg or prednisolone 1 mg/kg with maximum of 50 mg
- If no improvement, refer to hospital

CONTINUE TREATMENT AND MONITOR PROGRESS

throughout transport (SpO₂, RR, PR and BP)

DISCHARGE

- WAAP
- Continue oral prednisolone (5 - 7 days)
- Increase usual treatment (refer to Algorithm 1 on Stepwise Treatment Ladder)
- Ensure follow-up within 1 - 2 weeks

HOSPITAL ADMISSION

- Continue treatment during transfer

RR = respiratory rate, PR = pulse rate,
PaO₂ = arterial partial pressure of oxygen,
PaCO₂ = arterial partial pressure of carbon dioxide,
IV = intravenous, BP = blood pressure

INITIAL ASSESSMENT

• RR: 20 - 30/min
• PR: 100 - 120/min
• SpO₂: 90 - 95%
PEF: >50% predicted or best

MILD TO MODERATE

• Maintain SpO₂ >94%
• β₂-agonist pMDI preferable with spacer (4 puffs up to a maximum of 10 puffs) or nebuliser (salbutamol 5 mg); repeat every 20 minutes for 1 hour
• Prednisolone 1 mg/kg with maximum of 50 mg
• Continue or increase usual treatment

SEVERE

• RR: >30/min
• PR: >120/min
• SpO₂: Saturation <90%
PEF: ≤50% predicted or best

FURTHER ASSESSMENT

INITIAL MANAGEMENT

MONITOR progress:

- RR OR SpO₂ (if available)
- PR
- Assess symptoms & PEF
  - Symptoms improve
  - PEF >50%

No improvement

Improvement

HOSPITAL ADMISSION

• Continue treatment during transfer

No improvement

Improvement

TRANSFER TO NEAREST HOSPITAL IMMEDIATELY

While waiting for transfer, do the following:

- Maintain SpO₂ >94%
- Administer β₂-agonist (salbutamol 5 mg) and ipratropium bromide 0.5 mg via oxygen driven nebuliser
- Repeat β₂-agonist nebuliser every 20 minutes and ipratropium bromide every 4 - 6 hours
- Administer IV hydrocortisone 200 mg or prednisolone 1 mg/kg with maximum of 50 mg

CONTINUE TREATMENT AND MONITOR PROGRESS

throughout transport (SpO₂, RR, PR and BP)

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PaO₂ = arterial partial pressure of oxygen,
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• Prednisolone 1 mg/kg with maximum of 50 mg
• Continue or increase usual treatment

SEVERE

• RR: >30/min
• PR: >120/min
• SpO₂: Saturation <90%
PEF: ≤50% predicted or best

FURTHER ASSESSMENT

INITIAL MANAGEMENT

MONITOR progress:

- RR OR SpO₂ (if available)
- PR
- Assess symptoms & PEF
  - Symptoms improve
  - PEF >50%

No improvement

Improvement

HOSPITAL ADMISSION

• Continue treatment during transfer

No improvement

Improvement

TRANSFER TO NEAREST HOSPITAL IMMEDIATELY

While waiting for transfer, do the following:

- Maintain SpO₂ >94%
- Administer β₂-agonist (salbutamol 5 mg) and ipratropium bromide 0.5 mg via oxygen driven nebuliser
- Repeat β₂-agonist nebuliser every 20 minutes and ipratropium bromide every 4 - 6 hours
- Administer IV hydrocortisone 200 mg or prednisolone 1 mg/kg with maximum of 50 mg

CONTINUE TREATMENT AND MONITOR PROGRESS

throughout transport (SpO₂, RR, PR and BP)

RR = respiratory rate, PR = pulse rate,
PaO₂ = arterial partial pressure of oxygen,
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• PR: 100 - 120/min
• SpO₂: 90 - 95%
PEF: >50% predicted or best

MILD TO MODERATE

• Maintain SpO₂ >94%
• β₂-agonist pMDI preferable with spacer (4 puffs up to a maximum of 10 puffs) or nebuliser (salbutamol 5 mg); repeat every 20 minutes for 1 hour
• Prednisolone 1 mg/kg with maximum of 50 mg
• Continue or increase usual treatment

SEVERE

• RR: >30/min
• PR: >120/min
• SpO₂: Saturation <90%
PEF: ≤50% predicted or best

FURTHER ASSESSMENT

INITIAL MANAGEMENT

MONITOR progress:

- RR OR SpO₂ (if available)
- PR
- Assess symptoms & PEF
  - Symptoms improve
  - PEF >50%

No improvement

Improvement

HOSPITAL ADMISSION

• Continue treatment during transfer

No improvement

Improvement

TRANSFER TO NEAREST HOSPITAL IMMEDIATELY

While waiting for transfer, do the following:

- Maintain SpO₂ >94%
- Administer β₂-agonist (salbutamol 5 mg) and ipratropium bromide 0.5 mg via oxygen driven nebuliser
- Repeat β₂-agonist nebuliser every 20 minutes and ipratropium bromide every 4 - 6 hours
- Administer IV hydrocortisone 200 mg or prednisolone 1 mg/kg with maximum of 50 mg

CONTINUE TREATMENT AND MONITOR PROGRESS

throughout transport (SpO₂, RR, PR and BP)

RR = respiratory rate, PR = pulse rate,
PaO₂ = arterial partial pressure of oxygen,
PaCO₂ = arterial partial pressure of carbon dioxide,
IV = intravenous, BP = blood pressure
Asthma is an inflammatory airway disease triggered by external stimuli in genetically-predisposed individuals. In acute asthma, inhaled β₂-agonists is the first-line treatment & systemic short-acting β₂-agonists (SABA) are the reliever of choice in stable asthma. Low to moderate dose of inhaled corticosteroids (ICS) are the preferred clinic visit. Inhaler technique & adherence to treatment should be assessed at every asthma failure. Asthma patients should be regularly followed-up to assess asthma control & cessation programme.

QUICK REFERENCE FOR HEALTHCARE PROVIDERS MANAGEMENT OF ASTHMA IN ADULTS

Malaysian Thoracic Society: http://mts.org.my
Academy of Medicine Malaysia: www.acadmed.org.my

Details of the evidence supporting these recommendations can be found in the Asthma in Adults. This Quick Reference provides key messages & a summary of the main progress:

- PR: 100 - 120/min
- RR: >120/min
- SpO₂: <90%
- PEF: ≤50% predicted or best

In the event of severe asthma, low to moderate dose of inhaled corticosteroids (ICS) are the preferred treatment. The following features are considered for critical care in these patients:

- Features of severe asthma and any of the following:
  - PaO₂ <60 mmHg
  - Normal or ↑ PaCO₂
  - Hypotension
  - Silent chest
  - PEF: <33%

LIFE-THREATENING FEATURES

- Consider IV magnesium sulphate 1.2 - 2 g infusion over 20 minutes
- Consider intubation
- Senior specialists may consider use of IV β₂-agonist or IV aminophylline

INITIAL ASSESSMENT

- Speaks in phrases
- Sits up
- Not agitated

MILD TO MODERATE

- RR: 20 - 30/min
- PR: 100 - 120/min
- SpO₂: 90 - 95%
- PEF: >50% predicted or best

SEVERE

- RR: >30/min
- PR: >120/min
- SpO₂: <90%
- PEF: ≤50% predicted or best

LIFE-THREATENING

- Features of severe asthma and any of the following:
  - PaO₂ <60 mmHg
  - Normal or ↑ PaCO₂
  - Hypotension
  - Silent chest
  - PEF: <33%

INITIAL MANAGEMENT

- Maintain SpO₂ >94%
- β₂-agonist pMDI preferable with spacer (4 puffs up to a maximum of 10 puffs) or nebuliser (salbutamol 5 mg); repeat every 20 minutes for 1 hour
- Prednisolone 1 mg/kg with maximum of 50 mg
- Continue or increase usual treatment

FURTHER ASSESSMENT

- Maintain SpO₂ >94%
- Administer:
  - β₂-agonist (salbutamol 2.5 - 5 mg) via oxygen driven nebuliser, repeat every 20 minutes for 1 hour
  - Ipratropium bromide nebuliser 0.5 mg every 4 - 6 hours
  - IV hydrocortisone 200 mg or prednisolone 1 mg/kg with maximum of 50 mg

IMPROVEMENT

- Monitor SpO₂
- PR
- RR
- Measure ABG: (severe hypoxia, normal or ↑ PaCO₂)
- CXR (if pneumothorax or consolidation suspected)
- Monitor PEF

No improvement

No improvement

DISCHARGE

- WAAP
- Continue oral prednisolone (5 - 7 days)
- Increase usual treatment (refer to Algorithm 1 on Stepwise Treatment Ladder)
- Ensure follow-up within 1 - 2 weeks

CXR = chest x-ray

REFER FOR ADMISSION

REFER FOR CRITICAL CARE

MONITOR PROGRESS

- SpO₂
- PR
- RR

No improvement

Improvement
QUICK REFERENCE FOR HEALTHCARE PROVIDERS

MANAGEMENT OF ASTHMA IN ADULTS

**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
- Sleep well at night AND
- Can do usual activities
- PEF: _____ to _____ L/min (80% to 100% of personal best)

---

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

---

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

---

**Controller Medication**

<table>
<thead>
<tr>
<th>Controller Medication</th>
<th>How Much</th>
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</thead>
<tbody>
<tr>
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*Use spacer when possible

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**Reliever Medication**

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<tr>
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</tbody>
</table>

- 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

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**Reliever Medication**

<table>
<thead>
<tr>
<th>Reliever Medication</th>
<th>How Much</th>
<th>How Often</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

- 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

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Located in Malaysia

Academy of Medicine
Malaysian Thoracic Society
Ministry of Health Malaysia