DoH Guidelines for the Initial Diagnosis and Management of Asthma in adults (≥18yrs) by Primary Healthcare Providers

April 2018
<table>
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<tr>
<th><strong>Document Title:</strong></th>
<th>DoH Guidelines for the Initial Diagnosis and Management of Asthma in Adults (≥18yrs) by Primary Healthcare Providers</th>
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<td>DOH/Guidelines/ Initial Diagnosis and Management of Asthma in Adults (≥18yrs)</td>
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<td><strong>For Further Advice Contact:</strong></td>
<td>Public Health Division</td>
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<tr>
<td><strong>Applies To</strong></td>
<td>All primary Healthcare Providers licensed by DoH engaged in the management of Asthma Adults (≥18yrs) in the Emirate of Abu Dhabi</td>
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<td><strong>Classification</strong></td>
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1. INTRODUCTION
Asthma is one of the top public health priorities at Department of Health (DoH). The goal of DoH’s Asthma program is to reduce the emergency department visits, hospitalization absenteeism from school and work and death of patients due to asthma. This can be achieved by improving the diagnosis and management of asthma at primary care settings. The goals of asthma treatment for asthma control includes the following:
• Prevent symptoms.
• Maintain normal daily living activities.
• Maintain normal lung function.
• Prevent disease complications and medication side effects.

2. ABOUT THESE GUIDELINES
These Guidelines have been developed based on review of evidence from the Global Initiative for Asthma (GINA) and the National Asthma Education and Prevention (NAEPP) and the Canadian Thoracic Society Guidelines. In addition, they take into account Abu Dhabi’s healthcare delivery system, the local cultural and social aspects and context of the Emirate.

3. PURPOSE
The purpose of these guidelines is to improve the diagnosis and management of adult asthma ≥18yrs by primary health care physicians. In doing so, the Guidelines will contribute toward the following:
3.1. Avoidance of premature deaths related to asthma.
3.2. Provision of an evidence base rational for the referral of asthma patients.
3.3. Provision of quality and safe care to asthma patients in primary healthcare settings.
3.4. Enhancing the quality of life for people with asthma.
3.5. Embedding ongoing education on asthma management.
3.6. Promote efficient use of resources for managing and treating asthma patients.

4. SCOPE
These Guidelines apply to:
4.1. All primary Healthcare Providers who are engaged in the diagnosis and management of adult asthma in the Emirate of Abu Dhabi.
4.2. All adults ≥ 18 years with asthma.
5. ABBREVIATIONS

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
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<tbody>
<tr>
<td>CFC</td>
<td>Chlorofluorocarbon</td>
</tr>
<tr>
<td>CME</td>
<td>Continuing medical education</td>
</tr>
<tr>
<td>CPD</td>
<td>Continuing professional development</td>
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<tr>
<td>DOH</td>
<td>Department of Health</td>
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<tr>
<td>DPI</td>
<td>Dry powder inhaler</td>
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<tr>
<td>GINA</td>
<td>Global Initiative for Asthma</td>
</tr>
<tr>
<td>HFA</td>
<td>Hydrofluoralkane</td>
</tr>
<tr>
<td>ICS¹</td>
<td>Inhaled corticosteroids</td>
</tr>
<tr>
<td>LABA</td>
<td>Long Acting Beta2 Agonist</td>
</tr>
<tr>
<td>LTR</td>
<td>leukotriene receptor antagonist</td>
</tr>
<tr>
<td>MDT</td>
<td>Multi-disciplinary team</td>
</tr>
<tr>
<td>mmHg</td>
<td>Millimeter(s) of mercury</td>
</tr>
<tr>
<td>NAEPP</td>
<td>National Asthma Education and Prevention Program</td>
</tr>
<tr>
<td>OCS</td>
<td>Oral Corticosteroid</td>
</tr>
<tr>
<td>pMDI</td>
<td>Pressurized Metered Dose Inhaler</td>
</tr>
<tr>
<td>PRN</td>
<td>Patient Reader Necessary &quot;as necessary&quot;</td>
</tr>
<tr>
<td>SABA</td>
<td>Short Acting Beta2 Agonist</td>
</tr>
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</table>

¹ Are considered the most potent and consistent anti-inflammatory agents for long-term asthma management therapy.
6. RECOMMENDATIONS FOR THE DIAGNOSIS AND MANAGEMENT OF ADULT ASTHMA PATIENTS

The following recommendations have been set out to assist primary healthcare practitioners, patients and/or their guardians to make decisions about the appropriate healthcare for adult asthma management. They are designed to support the decision-making processes in adult asthma patient care. However, these Guidelines are not and cannot be exhaustive, they are not intended to override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian. Therefore, primary healthcare providers should use their own clinical judgement to address specific case scenarios.

6.1. Recommendation 1: Diagnosis of adult asthma

The following may be considered in the diagnosis of adult asthma:

6.1.1. Detailed clinical history and assessment physical findings that increase the probability of a diagnosis of asthma:

6.1.1.1. Frequent wheeze, breathlessness, chest tightness and cough, particularly if:
6.1.1.1.1. Symptoms worse at night and in the early morning.
6.1.1.1.2. Symptoms in response to exercise, allergen exposure, cold air, respiratory viral infection and strong emotional expression.
6.1.1.1.3. Symptoms after taking aspirin or beta blockers.

6.1.1.2. History of atopy.
6.1.1.3. Family history of asthma, hay fever or atopy.
6.1.1.4. Widespread wheeze heard on auscultation of the chest (a normal chest examination does not exclude asthma).
6.1.1.5. Otherwise unexplained low FEV₁ or PEF (historical or serial readings).
6.1.1.6. Otherwise unexplained peripheral blood eosinophilia.

6.1.2. Observation of clinical findings that lower the probability of a diagnosis of asthma:

6.1.2.1. Prominent dizziness, light-headedness, peripheral tingling.
6.1.2.2. Chronic productive cough in the absence of wheeze or breathlessness.
6.1.2.3. Repeatedly normal physical examination of chest when symptomatic.
6.1.2.4. Voice disturbance.
6.1.2.5. Symptoms with colds only.
6.1.2.6. Significant smoking history (i.e. >20pack- years).
6.1.2.7. Cardiac disease.
6.1.2.8. Normal PEF or spirometry when symptomatic (A normal spirogram/spirometry when not symptomatic does not exclude the diagnosis of asthma. Repeated longitudinal measurement of the lung function or PEF are often more informative than a single assessment).

6.1.3. Spirometry (pre & post-bronchodilator assessment) is the preferred initial test to diagnose and to detect the presence and the severity of airflow obstruction.
6.1.4. Clinical diagnosis (without spirometric testing) can be sufficient for diagnosis of asthma in patients who cannot perform spirometry. For example, in a severe exacerbation, elderly or patient with disabilities.

6.1.5. Patients with inconclusive spirometric test but with a clinical probability of asthma may be offered a reversibility challenge test and/or a trial of treatment in accordance with the GINA guidelines.

6.1.6. Patients presenting atypically or with additional symptoms or signs can be offered further evaluations in accordance with the clinical probability of other or coexisting conditions and may be referred to specialized services.

6.1.7. Patients whose diagnosis is uncertain and no evidence of airflow obstruction is identified on initial assessment should be referred to a specialist or consultant for further diagnostic testing.

6.2. **Recommendation 2: Initial treatment and referral**

6.2.1. Initial treatment Guidelines for adults is reported in Appendix 1.

6.2.2. Patients’ Referral Guidelines to appropriately qualified and trained Healthcare Professionals are reported in Appendices 1 & 2.

6.2.3. If occupational asthma is suspected consideration should be given to patient referral to asthma/pulmonary specialist or consultant.

6.2.4. Comorbid and associated conditions are best managed by appropriately qualified, trained and privileged licensed Healthcare Professionals.

6.2.5. Detection of individual asthma triggers (this may require referral to allergy immunology specialist to perform sensitivity testing) and appropriate management of triggers.

6.3. **Recommendation 3: Assessment and monitoring**

6.3.1. The initial assessment of patients with asthma may identify:

6.3.1.1. Possible precipitating factor(s) of asthma exacerbation.

6.3.1.2. Existing conditions that may contribute to asthma (for example allergic rhinitis).

6.3.1.3. Classification of asthma severity by reference to criteria (Appendix 3 and Appendix 4) and an action plan designed for the patient, including but not limited to plan elements (Appendix 5).

6.3.2. Patients with asthma or suspected asthma need to be reviewed regularly.

6.3.3. Factors to be reviewed and monitored may include, but are not limited to:

6.3.3.1. Symptomatic asthma control measures (e.g. ACT) or similar questionnaire (i.e. Asthma Control Questionnaire (ACQ)).

6.3.3.2. Lung function, assessed by spirometry or by Peak Expiratory Flow (PEF).

---

2 The goals of asthma assessment are to determine the severity of the disease, its impact on patient health and the risk of future exacerbation, hospital admissions or death.

3 The goal of asthma self-management plan is to enable patient with asthma to gain knowledge, confidence and skills to assume a major role in the management of their asthma. This will help to achieve good control of symptoms, maintain normal activity levels and minimize future exacerbations.
6.3.3.3. Exacerbations, oral corticosteroid use and any sick leave since last assessment.
6.3.3.4. Inhaler technique.
6.3.3.5. Compliance with treatment.
6.3.3.6. Patient awareness on when to use or restart medication (for exacerbation or increase in symptoms).
6.3.3.7. Bronchodilator reliance. and
6.3.3.8. Use and value of self-management /personal action plan (Appendix 5).
6.4. Recommendation 4: Pharmacological management:

6.4.1. The pharmacological management includes the following elements:
   6.4.1.1. Relief therapy: defined as therapy taken by the patient for immediate relief of symptoms.
   6.4.1.2. Control therapy: defined as therapy that has the potential to control the disease.

6.4.2. All medications should be explained to the patient by a licensed Healthcare Professional (pharmacist and physician), including through providing information on:
   6.4.2.1. The name(s) of the medication.
   6.4.2.2. The method of action of the medication.
   6.4.2.3. The route of delivery.
   6.4.2.4. The frequency of administration.
   6.4.2.5. The technique to administer the medication (including the need to use any specific devices for its administration).
   6.4.2.6. The possible side effects or interaction with other medication or substances.
   6.4.2.7. Other signs and symptoms that may coincide with medication administration.

6.4.3. Information is best given in writing and verbally to the patient in clear and understandable language.

6.4.4. Current level of asthma control and current treatment should ideally determine the selection of pharmacologic treatment.

6.4.5. If asthma is not controlled by the current treatment regime, treatment may be stepped up until control is achieved. If control has been maintained for at least three months, treatment may be stepped down (Appendix 1).

6.4.6. Inhaled medications are the preferred treatment. They deliver drugs directly to the airways, resulting in potent therapeutic effect with fewer side effects.

6.5. Recommendation 5: Asthma Education for patients/caregivers:

6.5.1. Education and guidance should be ideally available and accessible for all patients with asthma.

6.5.2. The essential elements of asthma education to be delivered to all patients ideally include:
   6.5.2.1. Basic facts about asthma.
   6.5.2.2. Environmental control measures (such as that described at (Appendix 6).
   6.5.2.3. Home peak flow rate monitoring.
   6.5.2.4. Recording symptoms in diary or similar document.
   6.5.2.5. How to follow an action plan including at least, but not limited to information in (Appendix 5).
   6.5.2.6. The importance of compliance with treatment and follow-up visits.

6.5.3. Asthma education is best provided by appropriately trained personnel with asthma specific expertise (nurse, asthma educator, respiratory therapist).
6.6. **Recommendation 6: Management of asthma exacerbations**

6.6.1. Severe exacerbation is considered life-threatening emergency. GINA provides Guidelines for Management of Asthma Exacerbations in the acute care setting that can be applied in primary care settings too *(Appendix 7).*

6.6.2. It is necessary to promptly and thoroughly assess the severity of the acute attack to determine the required type of treatment *(Appendices 1 & 7).*

6.6.3. Treatment is best administered concurrently to achieve the most rapid relief of the exacerbation in accordance with guidance for initial treatment.

6.6.4. Response to the treatment requires ongoing assessment.

6.6.5. If the exacerbation is not resolved within 1-2 hours of repeated administration of quick-acting inhaled β₂-agonists (with or without the addition of oral glucocorticosteroid) professionals must consider patient referral to the hospital emergency department (if not already in situ).

6.6.6. Follow up visits may be in accordance with the specified content and frequency detailed in these guidelines.

6.6.7. LABA monotherapy is not advisable in an acute asthma exacerbation.

6.7. **Recommendation 7: Management of asthma in special circumstances**

6.7.1. Pregnancy

   Treatment should ideally follow the same standards and approach as for adults >18 yrs with the following exceptions:

   6.7.1.1. When indicated, for the management of asthma, risks of treatment versus the potential risks of severe uncontrolled asthma should ideally be decided by the treating physician based on a full assessment.

   6.7.1.2. It is important to treat pregnant women promptly and aggressively to minimize the potential harm to mother and child, including premature birth, low birth weight and maternal blood pressure problems.

   6.7.1.3. Acute asthma exacerbation during labor or delivery, bronchoconstriction may be induced by hyperventilation and is best managed with short acting β₂ agonist (SABA). If high doses of SABA have been given during labor and delivery, blood glucose levels should ideally be monitored in the baby for the first 24 hours.

6.7.2. Asthma patients who are difficult to treat

   6.7.2.1. Patients who have difficulty treating their symptoms despite taking high dose of ICS as a minimum requirement, should ideally be referred to an asthma specialist or consultant with appropriate training, experience and privileges to ensure best management of the patient.

6.7.3. Elderly

   6.7.3.1. For older patients (over the age of 65) with respiratory symptoms, spirometry is an effective tool for detecting Chronic Obstructive Pulmonary Disease (COPD), but has limited effectiveness in identifying asthma.
6.7.3.2. A treatment trial attempting to reduce airflow limitation and symptoms can be considered as it can provide valuable diagnostic information.

6.7.3.3. Comorbidities should be carefully considered in older patients when choosing care and treatment as well as the choice of delivery devices.

6.7.3.4. Careful prescribing of asthma medications, close monitoring of the effects and improvements, including close monitoring and reporting of adverse effects.

6.7.4. Before and after surgery

6.7.4.1. Asthma should ideally be fully controlled or, if required a referral made to an Asthma Specialist or Consultant prior to elective surgery.

6.7.4.2. Patients should ideally be evaluated clinically and physiologically (Lung function tests) to define current status of asthma control prior to elective surgery.

6.7.4.3. Elective surgery should ideally not be considered until asthma is controlled.

6.7.4.4. For emergency surgical interventions, all treatment and medication should ideally be adapted to control asthma, including oral/intravenous corticosteroid.

6.7.4.5. Asthmatic patients should ideally be closely monitored during hospitalization after surgery.

6.7.5. Occupational asthma

6.7.5.1. In new cases of adult-onset asthma, if occupational asthma is suspected, cases should ideally follow the diagnostic pathway in accordance with Recommendation 2. an assessment should ideally be carried out based on job risk profiles.

6.7.5.2. Lung function tests and additional tests including lung function test in the work environment and immunoglobulin testing for chemical or dust exposures may help to establish the diagnosis of occupational asthma.

6.7.5.3. Diagnosis of occupational asthma should ideally be made by asthma pulmonary specialist or consultant (Appendix 2).

6.7.6. Asthma and Fasting (Ramadan)

6.7.6.1. The responsible treating physician should ideally advise the patient to manage their asthma normally during Ramadan.

6.7.6.2. If adjustment of the timing of the medication is determined to be necessary a full assessment of the patient’s needs should ideally be carried out to ensure asthma control is maintained.

6.7.6.3. If the patient wishes to abstain from taking asthma treatment or adjust the timing against advice of the treating physician, the physician should ideally:
6.7.6.3.1. Inform the patient of the potential risks associated with this action.
6.7.6.3.2. Educate the patient on how to manage their condition and minimize the risks whilst abstaining from treatment, including avoiding known triggers. and
6.7.6.3.3. Document in the patient record the patient’s decision to abstain from treatment.

6.7.7. Asthma in Al Omra / Al Haj / Travel
6.7.7.1. Patients should be encouraged to ensure that their Asthma is under control before travelling.
6.7.7.2. The patient should ideally be prescribed sufficient medication to cover the travel period and should have an action plan to ensure appropriate and timely treatment is delivered.
6.7.7.3. Patients should ideally be encouraged to use medication such as bronchodilators before and after holy physical activities like Tawaf in addition to use as normally required.
6.7.7.4. Physicians should advise the patient to seek medical attention if needed during his/her travel, and not wait until he/she returns home.
7. Appendices

7.1. Appendix 1: Recommended management of asthma in adults 18≥yrs

**Step 1**
*For patient with < 2 daytime symptoms /month*
SABA PRN

**Step 2**
*For patient with more frequent symptoms*

*Preferred:*
SABA PRN + Low-daily dose ICS

*Alternative:*
SABA PRN + Leukotriene receptor antagonist (LTRA)

**Step 3**

*Preferred:*
SABA PRN + Low dose ICS/LABA
OR
Low dose ICS/formoterol (as maintenance and reliever) *with no SABA*

*Alternative:*
Medium dose of ICS
OR
Low dose ICS + Leukotriene receptor antagonist (LTRA)
OR
Low dose of ICS + theophylline

**Step 4**

*Preferred:*
Low dose ICS/formoterol (as maintenance and reliever) *with no SABA*
OR
SABA PRN +
Medium daily dose ICS/LABA

*Alternative:*
Add Tiotropium
OR
High dose of ICS/LABA and (LTRA or theophylline)

**Step 5**
*Preferred:*
Refer for expert consultation

At each step, consider checking for inhaler technique, adherence, triggers and comorbidities.

- Confirm the symptoms are due to asthma and refer for expert consultation if diagnosis is in doubt.
- Consider short course of oral systemic corticosteroids if exacerbation is severe or patient has history of previous severe exacerbations.
- Caution: Frequent use of SABA may indicate the need to step up treatment.
### 7.2. Appendix 2: Pulmonary specialist referral

<table>
<thead>
<tr>
<th>Consider pulmonary specialist referral</th>
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<tbody>
<tr>
<td>• Patient with life-threatening asthma exacerbation.</td>
</tr>
<tr>
<td>• Patient with uncontrolled asthma or unresponsiveness to therapy after 3–6 months of treatment.</td>
</tr>
<tr>
<td>• Patient who had exacerbation required hospitalization or who required two courses of systemic steroid therapy in the last one year.</td>
</tr>
<tr>
<td>• Atypical patient presentation.</td>
</tr>
<tr>
<td>• Occupational asthma is suspected.</td>
</tr>
<tr>
<td>• Assessment of respiratory disability required.</td>
</tr>
<tr>
<td>• Additional diagnostic testing is required (e.g., allergy skin testing, bronchoscopy).</td>
</tr>
<tr>
<td>• Patient requires additional educational or social support.</td>
</tr>
<tr>
<td>• Patient is being considered for advance therapy (anti IgE, anti IL-5, Bronchial thermoplasty etc....).</td>
</tr>
</tbody>
</table>
### 7.3. Appendix 3: Assessment of asthma severity in exacerbation

<table>
<thead>
<tr>
<th>Asthma Severity</th>
<th>Mild or Moderate</th>
<th>Severe</th>
<th>Life threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Rate per min &gt;18 years</td>
<td>increased</td>
<td>&gt;30/min</td>
<td>Drowsy, confused, silent chest, arrhythmia &amp; cyanosis</td>
</tr>
<tr>
<td>Oxygen Saturation (SpO2)</td>
<td>90% - 95% on room air</td>
<td>&lt;90% (on air)</td>
<td>Near-fatal: Raised PaCO₂ and/or requiring mechanical ventilation with raised inflation pressure</td>
</tr>
<tr>
<td>Pulse rate</td>
<td>100-120 bpm</td>
<td>&gt;120 bpm</td>
<td></td>
</tr>
<tr>
<td>Retractions</td>
<td>Accessory muscles not used</td>
<td>Accessory muscles in use</td>
<td></td>
</tr>
<tr>
<td>Dyspnea</td>
<td>Speaks in short sentences, prefers sitting to lying, not agitated</td>
<td>Speaks in words, sits hunched forwards, agitated</td>
<td></td>
</tr>
<tr>
<td>Expiratory Limitation Airflow</td>
<td>&gt;50% of the best recorded</td>
<td>≤50% of the best recorded</td>
<td></td>
</tr>
</tbody>
</table>
7.4. Appendix 4: Assessment of Asthma Control

### Asthma Control Test (for 12 years or older)

**Question 1:** During the past 4 weeks, how often did your asthma prevent you from getting as much done at work, school, or home?

- All of the time
- Most of the time
- Some of the time
- A little of the time
- None of the time

**Score:**

- 5: None of the time
- 4: A little of the time
- 3: Some of the time
- 2: Most of the time
- 1: All of the time

---

**Question 2:** During the past 4 weeks, how often have you had shortness of breath?

- More than once a day
- Once a day
- 3 to 6 times a week
- Once or twice a week
- Not at all

**Score:**

- 5: Not at all
- 4: Once or twice a week
- 3: 3 to 6 times a week
- 2: Once a day
- 1: More than once a day

---

**Question 3:** During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

- 5 or more times a week
- 3 to 6 times a week
- Once a week
- Once or twice a week
- Not at all

**Score:**

- 1: Not at all
- 2: Once or twice a week
- 3: Once a week
- 4: 3 to 6 times a week
- 5: 5 or more times a week

---

**Question 4:** During the past 4 weeks, how often have you used your rescue inhaler Bronchodilator or nebuliser?

- More than once a day
- 1 or 2 times a day
- 2 or 3 times a week
- Once a week or less
- Not at all

**Score:**

- 1: Not at all
- 2: Once a week or less
- 3: 2 or 3 times a week
- 4: 1 or 2 times a day
- 5: More than once a day

---

**Question 5:** How would you rate your asthma control?

- Not controlled
- Poorly controlled
- Somewhat controlled
- Well controlled
- Completely controlled

**Score:**

- 1: Completely controlled
- 2: Well controlled
- 3: Somewhat controlled
- 4: Poorly controlled
- 5: Not controlled

---

**Total Score:**

- 25: Simply turn over and find out what it means
- 24: Mostly under control
- 23: Will need more review
- 22: Not doing as well as you want
- 21: Under control

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<table>
<thead>
<tr>
<th>Question</th>
<th>Score</th>
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<tbody>
<tr>
<td>Q1</td>
<td></td>
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<tr>
<td>Q2</td>
<td></td>
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<tr>
<td>Q3</td>
<td></td>
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<td>Q4</td>
<td></td>
</tr>
<tr>
<td>Q5</td>
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**Instructions:**

1. Add your 5 scores to get the total.
2. Your total score will help you and your doctor to discuss your treatment plan.
Cont. Results analyses for the Assessment of Asthma Control

**Score 19 or less**
asthma is uncontrolled or poorly controlled. Discuss your result with your doctor. There are other treatments that can control your asthma.

**Score 24-20**
You have some Control over your asthma. You can do better. Ask your doctor if you should change your treatment plan.

**Score 25**
You have control over your asthma, good work. Keep it up.

**النتيجة 19 أو أقل**
حالة الربو لديك غير مسيطر عليها. اطلع طبيبك على النتيجة. يوجد علاجات للسيطرة على الربو بشكل أفضل.

**النتيجة 24-20**
حالة الربو غير مسيطر عليها كما يجب. إسأل طبيبك. فيما إذا كان عليك تغيير الخطة العلاجية.

**النتيجة 25**
حالة الربو مسيطر عليها وحافظ عليها بالمباعدة مع الطبيب.
7.5. Appendix 5: A. Asthma self-management plan for adults/guardians (EN)

Your asthma plan needs to be reviewed and updated at least once every year.

**ADULT ASTHMA ACTION PLAN**

<table>
<thead>
<tr>
<th>Name</th>
<th>Date of Birth</th>
<th>Contact number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emergency contact person</th>
<th>Name</th>
<th>Relation</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Doctor / Asthma nurse contact details</th>
<th>Name</th>
<th>Contact number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GREEN ZONE DOING GREAT**

- Breathing is easy
- No cough
- No wheeze
- Can do regular activities
- Sleeps through the night
- Using quick relief medicine no more than 2 times a week

**PREVENTIVE MEDICINE**

<table>
<thead>
<tr>
<th>Dose</th>
<th>When</th>
<th>Device</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**YELLOW ZONE CAUTION**

- Short of breath
- Cough
- Wheeze
- Can’t do usual activities
- Sleep disturbance due to breathing difficulties, cough, or wheeze
- Using quick relief medicine more than 2 times a week

**GIVE QUICK RELIEF MEDICINE AND KEEP TAKING YOUR GREEN ZONE MEDICINE**

1. Take:
   - (short-acting β-agonist)
   - 2 puffs OR 4 puffs

2. If your symptoms return to **GREEN ZONE** after 1 hour of above treatment: Continue monitoring to be sure you stay in the **GREEN ZONE** OR if your symptoms do not return to **GREEN ZONE** after 1 hour of above treatment:
   - Take:
     - (short-acting β-agonist)
     - 2 puffs OR 4 puffs OR Nebulizer, dose ______ mg per day for ______ Days

3. If you get worse, call your doctor or asthma nurse, to make appointment within 24 hours and go to **RED ZONE**

**RED ZONE DANGER**

- Very short breath
- Breathing very fast
- Can not do usual activities
- Lips or finger nails look blue
- Quick relief medicine not helping

**TAKE THIS MEDICINE**

Take:
- (short-acting β-agonist)
- 4 puffs OR 8 puffs OR Nebulizer, dose ______ mg per day for ______ Days

**DON’T WAIT, CALL 998 OR go to the nearest hospital immediately.**

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Cont. B. Asthma self-management plan for adults/guardians (AR)
### 7.6. Appendix 6: Environmental control measure

<table>
<thead>
<tr>
<th>Strategies for avoiding common allergens and pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreasing environmental exposure to the following can enhance asthma control:</td>
</tr>
<tr>
<td>• Smoking or exposure to all tobacco types (cigarettes, shisha, medwakh, etc..) should be avoided. Patients should be encouraged to quit smoking and advised about the available support for that.</td>
</tr>
<tr>
<td>• Perfumes and burning fragrances such as bakhour.</td>
</tr>
<tr>
<td>• Drugs, food and preservatives that cause symptoms.</td>
</tr>
<tr>
<td>Other interventions have shown to decrease the exposure to indoor allergens, but clinically controversial:</td>
</tr>
<tr>
<td>• Outdoor pollens including date palm pollen, sand storms and mold: Close windows and doors and remain indoors when pollen, sand storm and mold counts are highest.</td>
</tr>
<tr>
<td>• House dust mites: wash bed linens and blankets weekly in hot water and dry in the sun. Use anti-allergic bedding if possible. Replace carpets with hard flooring, especially in sleeping rooms. Use vacuum cleaner with filters.</td>
</tr>
<tr>
<td>• Pets with fur: Use air filters. Remove the pet from the home, or at least from the sleeping area.</td>
</tr>
<tr>
<td>• Consider referral for sublingual immunotherapy against house dust mites appropriately.</td>
</tr>
<tr>
<td>• Cockroaches: Clean the home thoroughly. Use pesticide spray, but make sure the patient is not at home when spraying occurs.</td>
</tr>
<tr>
<td>• Indoor mold: Reduce humidity in the house. clean damp areas frequently.</td>
</tr>
</tbody>
</table>
## Appendix 7: Management of asthma exacerbation

<table>
<thead>
<tr>
<th>Setting</th>
<th>Features mild to moderate</th>
<th>Features severe to life threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care</td>
<td>SABA 4-10 puffs by pMDI + spacer repeat every 20min. For 1hr. Give prednisolone 1mg/kg/day max. 50mg. Controlled oxygen to maintain saturation 93%-95%</td>
<td>Transfer to acute care facility while waiting: Give inhaled SABA &amp; anticholinergic, Controlled oxygen to maintain saturation 93%-95%, Systemic corticosteroid</td>
</tr>
</tbody>
</table>

## Appendix 8: Reviewers

<table>
<thead>
<tr>
<th>Name of Stakeholder</th>
<th>Profession</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Amr Elekiaby</td>
<td>Consultant Pulmonologist</td>
<td>NMC Royal Hospital</td>
</tr>
<tr>
<td>Dr. Arun Arya</td>
<td>Consultant Pulmonologist</td>
<td>Nation Hospital</td>
</tr>
<tr>
<td>Dr. Hassan Al Hariri</td>
<td>Consultant Pulmonologist</td>
<td>Dubai Health Authority</td>
</tr>
<tr>
<td>Dr. Mohammed Al Houqani</td>
<td>Consultant Pulmonologist</td>
<td>United Arab Emirates University</td>
</tr>
<tr>
<td>Dr. Mohammed Harris</td>
<td>Pulmonologist</td>
<td>Al Zahra Hospital</td>
</tr>
<tr>
<td>Dr. Mohamed Rafique. P</td>
<td>Pulmonologist</td>
<td>Al Ain Hospital</td>
</tr>
<tr>
<td>Dr. Saber Mashaal</td>
<td>Consultant Pulmonologist</td>
<td>Al Ain Hospital</td>
</tr>
<tr>
<td>Dr. Saicharan G Bodi</td>
<td>Pulmonologist</td>
<td>Cleveland Clinic Abu-Dhabi</td>
</tr>
<tr>
<td>Dr. Yaser Abu El Sameed</td>
<td>Consultant Pulmonologist</td>
<td>Cleveland Clinic Abu-Dhabi</td>
</tr>
<tr>
<td>Dr. Zaid Zoumout</td>
<td>Consultant Pulmonologist</td>
<td>Cleveland Clinic Abu-Dhabi</td>
</tr>
<tr>
<td>Dr. Zouhair Harb</td>
<td>Consultant Pulmonary, Critical Care And Sleep Medicine</td>
<td>Advanced Cure Diagnostic Center</td>
</tr>
</tbody>
</table>
7.9. Appendix 9: Bibliography