1. Purpose
1.1 This standard aims to ensure the delivery of quality and safe clinical care for the initial diagnosis and management of Asthma in children age groups 0-5 years inclusive 6-11 years inclusive and 12-18 years. To do so, it sets the requirements for the:
1.1.1 Clinical care to be provided in accordance with international evidence based guidelines and practices such as Global Initiative for Asthma (GINA); and
1.1.2 Clinical service specifications for children with asthma who are ages 0 - 5 years inclusive and 6 - 11 years inclusive.
1.1.3 Specific care to be provided for young adults 12 to 18 years old.

2. Scope
2.1 This standard applies to all healthcare providers (Facilities and Professionals) licensed by HAAD in the Emirate of Abu Dhabi.
2.2 This standard refers to initial diagnosis and management of asthma in children and young adults up to and including age 18.

3. Duties for Healthcare Providers
3.1 All licensed healthcare providers, including professionals engaging in asthma care for children must:
3.1.1 Provide clinical services and patient care in accordance with this standard and including the care pathway and timeframes, relevant HAAD Policies and Standards and the laws and regulations of the Emirate of Abu Dhabi;
3.1.2 Where appropriate, follow guidance recommended in this standard as necessitated by the patient’s condition and determined by the treating physician;
3.1.3 Employing facilities must ensure that only paediatric specialists or consultants physicians treat or supervise the treatment of children with Asthma in accordance with this standard;
3.1.4 Report and submit data to HAAD via e-claims and in accordance with the HAAD Reporting of Health Statistics Policy and as set out in the HAAD Data Standards and Procedures found online at www.haad.ae/datadictionary;
3.1.5 Comply with HAAD policies and standards on managing patient informed consent, specifically for children; patient medical records, including developing effective recording systems, maintaining patient records, maintaining confidentiality, privacy and security of patient information, educating patients and fulfilling the requirements of patients’ rights and responsibilities charter; and
3.1.6 Comply with HAAD audits, and cooperate with HAAD auditors when requested to do so; and
3.1.7 Make available to HAAD audit team audit records to ensure compliance with the standard.
3.2 All licensed healthcare professionals providing asthma care to children must:
   3.2.1 Provide patient care in accordance with this standard.

4. Enforcements and Sanctions
   4.1 HAAD may impose sanctions in relation to any breach of requirements under this standard in accordance with the [HAAD Policy on Inspections, Complaints, Appeals and Sanctions].

5. Standard 1: Clinical service specifications
   5.1 Health care providers must:
      5.1.1 Be licensed by HAAD;
      5.1.3 Have facility operational policies and standard operating procedures in place for at least the following elements:
         5.1.3.1 Initial treatment and referral of patients requiring further treatment outside the scope of services provided by the provider;
         5.1.3.2 Diagnosis;
         5.1.3.3 Assessment and management; and
         5.1.3.4 Follow up and monitoring;
         5.1.3.5 Patient Education;
      5.1.4 Ensure management of asthma patients by a multi-disciplinary team (MDT) consisting of the healthcare professionals with requisite qualifications, skills and training; and
      5.1.5 be equipped to provide education on asthma for parents/caregivers and/or children in accordance with this standard.
   5.2 All health care professionals involved in asthma diagnosis, management, treatment and follow up must:
      5.2.1 Be licensed by HAAD;
      5.2.2 Limit their practice to the scope of practice to their skills and competencies and privileges granted within the particular facility with which they are associated;
      5.2.3 Demonstrate participation in continuing medical education (CME or CPD) and training with a focus on asthma management.

6. Standard 2: Diagnosis of Asthma in children 11 years old or younger
   6.1 The diagnosis of asthma must be based on:
      6.1.1 Detailed clinical history and assessment, physical findings and the absence of an alternative explanation for them as detailed in Appendix 1;
      6.1.2 Spirometry - For children 6 years and older; however, the use of this tool may be impractical and unreliable in a primary healthcare setting; therefore, it must not be used alone to establish a diagnosis of asthma in children. For children under 6 years of age, spirometry is not suitable for diagnosis;
      6.1.3 For children aged 5 years or less, where lung function tests cannot be effectively carried out, differential diagnoses should be given careful consideration, including but not limited to, assessment of the following:
         6.1.3.1 Allergic rhinitis and allergic sinusitis;
         6.1.3.2 obstructions involving large airways;
         6.1.3.3 obstructions involving small airways;
         6.1.3.4 viral bronchiolitis or obliterative bronchiolitis;
6.1.3.5 cystic fibrosis;
6.1.3.6 bronchopulmonary dysplasia;
6.1.3.7 heart disease; and
6.1.3.8 medication induced.

7. Standard 3 Initial treatment and Referral

7.1 Initial treatment for children 11 years old and younger inclusive must be in accordance with Appendix 2; and

7.2 Children must be referred to appropriately qualified and trained (specialist or consultant) healthcare professionals in accordance with Appendices 2 and 3.

8. Standard 4 Assessment and management

8.1 Assessment must include but is not limited to the following:

8.1.1 Forced peak expiratory flow where possible and in accordance with this standard, (the highest value of three recordings to be used to inform management);
8.1.2 Review of prevention activity and effects including review of triggers and risk factors in accordance with Appendix 4 (including assessment of atopy);
8.1.3 Recognition of level of control over any week (controlled, partially controlled, and uncontrolled asthma); using Appendix 6;
8.1.4 Medication compliance, use and effects including inhaler technique;
8.1.5 Treatment plan and any necessary changes in it to address treatment and management needs.

8.2 Children with suspected asthma must receive assessment and review of their current treatment regime and level of asthma control in accordance with Appendices 6 and 7 in accordance with the following timelines:

8.2.1 After an exacerbation, assessment must be:
8.2.1.1 Within 3 days of the exacerbation;
8.2.1.2 4 weeks after the first post exacerbation assessment;
8.2.2 For all patients:
8.2.2.1 At intervals of 1 – 3 months in the first year following diagnosis;
8.2.2.2 After the first year every 3 months if requiring controller medications;
8.2.2.3 At least annually if not requiring controller medications;
8.2.2.4 More frequently if asthma is poorly controlled.

9. Standard 5 -Asthma education

9.1 The essential elements of asthma management to be delivered parents/caregivers and/or children must include:

9.1.1 Basic facts about asthma;
9.1.2 Environmental control measures such as those described at Appendix 4;
9.1.3 Functions and use of rescue medications;
9.1.4 Functions and use of controlling medications;
9.1.5 Inhaler technique;
9.1.6 Home peak flow rate monitoring;
9.1.7 Recording symptoms in diary or similar document;
9.1.8 Following an action plan including at least, but not limited to information in Appendix 5; and
9.1.9 Importance of compliance with treatment and follow-up visits.
9.3 Asthma education must be provided by appropriately trained personnel with asthma specific expertise (nurse, asthma educator, respiratory therapist).

10.1 Clinical Services and patient care for young adults must be provided in accordance with the HAAD Standard for Initial diagnosis and management of Asthma in adults; however the following further considerations must be taken into account:
   10.1.1 Asthma diagnosis must be based on careful history taking, clinical examination, and objective measures of airway obstruction and airway hyper responsiveness;
   10.1.2 Smoking status;
   10.1.3 Exercise induced asthma can occur due to reduction in physical activity resulting in de-conditioning;
   10.1.4 Low adherence to controller medications due to psycho-social factors; and
   10.1.5 Poor inhalation technique.

11. Pharmacological management
11.1 The pharmacological management includes the following elements:
   11.1.1 Relief therapy: defined as therapy taken by the patient for immediate relief of symptoms; and
   11.1.2 Control therapy: defined as therapy that has the potential to control the disease.
11.2 It is the responsibility of the treating physician to ensure that the prescribed medication is the most suitable for the patient and is on the HAAD List of Approved Medical Products;
11.3 All medications must be prescribed in accordance with HAAD regulations;
11.4 All medications must be explained to the patient by a licensed healthcare professional (pharmacist and physician), including through providing information on:
   11.4.1 The name/s of the medication;
   11.4.2 The method of action of the medication;
   11.4.3 The route of delivery;
   11.4.4 The frequency of administration;
   11.4.5 The technique to administer the medication (including the need to use any specific devices for its administration);
   11.4.6 The possible side effects or interaction with other medication or substances; and
   11.4.7 Other signs and symptoms that may coincide with medication administration;
11.5 Information must be given in writing and orally to the patient in clear and understandable language.
11.6 Current level of asthma control and current treatment must determine the selection of pharmacologic treatment.
11.7 If asthma is not controlled by the current treatment regime, treatment must be stepped up until control is achieved.
11.8 If control has been maintained for at least three months, treatment may be stopped.
11.9 Inhaled medications are the preferred treatment; they deliver drugs directly to the airways, resulting in potent therapeutic effect with fewer side effects.

11.10 The recommended device to deliver inhaled medication is stipulated in Appendix 8.

11.11 A low dose of inhaled glucocorticosteroid is recommended as preferred initial treatment for children.

11. Standard 7 - Management of asthma exacerbations

11.1 Severe exacerbation is considered life-threatening emergency; therefore, treatment must be provided in accordance with the GINA guidelines Management of Asthma Exacerbations in the acute care setting Appendix 9.

11.2 The severity of the acute attack must be promptly and thoroughly assessed; to determine the required type of treatment Appendix 7 & 9.

11.3 Patients must be referred in accordance with need, in accordance with this standard and with the HAAD Policy for patient Referral/transfer;

11.4 Patients must be referred to another healthcare provider based on their identified needs and in accordance with this standard and with the HAAD Policy for Patient Transfer;

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

11.6 Response to the treatment must have ongoing assessment.

11.7 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) refer the patient to the hospital emergency department (if not already in situ).

11.8 Follow up visits must be in accordance with the specified content and frequency detailed in this standard.

11.9 LABA monotherapy must not be used in an acute asthma exacerbation.

12. Standard 9. Payment mechanism under the Health Insurance Scheme

12.1 Treatment of life-threatening emergencies (Severe exacerbation) is mandatory and shall be in accordance with HAAD circular 3 and Chapter IV / Article 11 of Law No. 23 /2005, and the Executive Regulations Regarding the Health Insurance Scheme for the Emirate of Abu Dhabi.

12.2 The payment for non-life-threatening childhood asthma diagnosis, treatment and management (including patient education) is a covered benefit by Basic, Enhanced and Thiqa Health Insurance schemes; Subject to insurance plan limits and other applicable terms and conditions

12.3 Coding for childhood asthma diagnosis, management and related services must be done using the codes classification defined in the Coding Manual published by the Clinical Coding Steering Committee, and in compliance with e-claim requirements.

12.4 Charges for childhood asthma diagnosis, management and related services must be in accordance with the Standard Provider Contract negotiated rates, and in compliance with Mandatory Tariff pricelist and HAAD Claims and Adjudication Rules.
## Appendix 1

Any of the following symptoms must be considered for diagnosis of asthma in children:

- Recurrent breathlessness, chest tightness, wheezing or cough.
- Often worse at night and early morning.
- Signs of airway obstruction.
- Symptoms follow viral RTI, exercise, emotions or exposure to aeroallergens or irritants.
- Improve with bronchodilators and anti-inflammatory therapy.
- Absence of seasonal variation in wheeze.
- Personal history of atopy.
- Wheeze heard on auscultation.
- Improvements of symptoms or lung function in response to adequate therapy.
- Symptoms persist after 3 years of age.

Presence of one major risk factor (parental history of asthma or eczema) or two of three minor risk factors (eosinophilia, wheezing without colds, and allergic rhinitis).
Appendix 2 – Management of Asthma in age 0-11 years inclusive

Step 1
Preferred: SABA PRN

Age 0-11 yrs

Step 2
Preferred:
Low-dose ICS
Alternative:
Leukotriene modifiers (LTR)

Age 0-11 yrs

Consider consultation at step 2

Age 0-5 yrs

Step 3
Preferred:
Medium-dose ICS *
Alternative:
Low-dose ICS + LTRA or Theophylline

Age 0-11 yrs

Consider consultation at step 3

Age 6-11 yrs

Consider referral

Age 0-5 yrs

Step 4
Preferred:
Medium- to high-dose ICS +LABA or /and LTR

OR
Theophylline

Consider referral to asthma specialist if step 4 or higher is required

Age 6-11 yrs

Step 5
Preferred:
High-dose ICS + LABA*

Add

Daily lowest dose of oral corticosteroid providing control

OR
Anti-IgE treatment

Age 6-11 yrs

Intermittent Asthma

Persistent Asthma: Daily Medication

Step up if needed (first, check adherence, inhaler technique, and environmental control)

Step down if possible (and asthma is well controlled at least 3 months)

Patient Education and Environmental Control at Each Step

Quick-relief Medication for all patients

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms.
- With viral respiratory infection: SABA q 4-6 hrs. up to 24 hrs. (longer with physician consult). Consider short course of oral systemic corticosteroids if exacerbation is severe or patient has history of previous severe exacerbations.
- Caution: Frequent use of SABA or use >2 days a week for symptom relief general indicate the need to step up treatment.

* Refer to 2010 Global initiative for asthma page 64
* Canadian Thoracic Society Asthma Management Continuum -2010 Consensus Summary for children six years of age and over, and adults' Asthma management continuum"
Appendix 3

<table>
<thead>
<tr>
<th>Indications for Immediate Referral to Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANY of the following:</td>
</tr>
<tr>
<td>• No response to (3) administrations of an inhaled short-acting $\beta_2$-agonist within 1-2 hours</td>
</tr>
<tr>
<td>• Tachypnea despite 3 administrations of an inhaled short-acting $\beta_2$-agonist (Normal respiratory rate &lt; 60 breaths per minute in children 0-2 months; &lt; 50 in children 2-12 months; &lt; 40 in children 1-5 years)</td>
</tr>
<tr>
<td>• Child is unable to speak or drink or is breathless</td>
</tr>
<tr>
<td>• Cyanosis</td>
</tr>
<tr>
<td>• Subcostal retractions</td>
</tr>
<tr>
<td>• Oxygen saturation when breathing room air &lt; 92%</td>
</tr>
<tr>
<td>• Social environment that impairs delivery of acute treatment; caregivers unable to manage acute asthma at home</td>
</tr>
</tbody>
</table>

Appendix 4:

<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: Exposure to tobacco smoke in utero and after birth can adversely affect the lung development and increase the risk of developing wheeze. Parents 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>
</tbody>
</table>

Other interventions have shown to decrease the exposure to indoor allergens, but clinically controversial:

| • 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. |
| • 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. |
| • Pets with fur: Use air filters. Remove the pet from the home, or at least from the sleeping area. |
| • Cockroaches: Clean the home thoroughly. Use pesticide spray, but make sure the patient is not at home when spraying occurs. |
| • Indoor mold: Reduce humidity in the house; clean damp areas frequently. |
Appendix 5: Action Plan forms

ASTHMA MANAGEMENT PLAN
For children under 5 years

DAILY MEDICATION SCHEDULE

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>Delivery Method</th>
<th>Treatment Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td></td>
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<tr>
<td>**</td>
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</tr>
</tbody>
</table>

* Rescue Medication (may take 10 minutes before exercise)
** Control Medication (wash face or rinse mouth after taking this medication)

ACTION PLAN

No Symptoms  Green Zone
- Asthma under good control.
- Follow daily medication schedule.
- Rescue medication not needed.

Mild Symptoms  Yellow Zone
- Coughing or wheezing
- Tight feeling in chest
- Waking at night
- Feeling short of breath
- Take rescue medicine (____________________)
- Wait 15 minutes and recheck symptoms.
- Use rescue medications every 4-6 hrs, if needed
- If not in green zone after needing rescue medicine for one day, double/start your controller medicine (____________________) for 5 days and continue rescue medication every 4-6 hours.
- Can go to school but should not play hard
- Return to daily medication schedule when symptoms are gone.
- Call office if not in green zone after following action plan for ________ days.

Moderate Symptoms  Orange Zone
- Constant coughing
- Unable to sleep at night
- Symptoms becoming worse
- Unable to do daily activities
- Continue doubling control medicine.
- Continue taking rescue medicines every 2-4 hours, as needed.
- Should not go to school
- Call Dr.’s office @ ____________ before starting oral steroids.

Severe Symptoms  Red Zone
- Difficulty talking, walking
- Lips may appear blue
- Wheezing may be absent
- Take your rescue medicine.
- If still in red zone IMMEDIATELY call 999 or seek emergency care.
ASTHMA MANAGEMENT PLAN
For children > 5 years

DAILY MEDICATION SCHEDULE

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>Delivery Method</th>
<th>Treatment Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
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</tbody>
</table>

* Rescue Medication (may take 10 minutes before exercise)
** Control Medication (wash face or rinse mouth after taking this medication)

ACTION PLAN

<table>
<thead>
<tr>
<th>No Symptoms</th>
<th>Green Zone</th>
<th>Yellow Zone</th>
<th>Orange Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peak flow higher than _____</td>
<td>Peak flow between ____ and ____</td>
<td>Peak flow less than _____</td>
</tr>
<tr>
<td></td>
<td>Asthma under good control.</td>
<td>Take rescue medicine (____________________)</td>
<td>Take your rescue medicine.</td>
</tr>
<tr>
<td></td>
<td>Follow daily medication schedule.</td>
<td>Wait 15 minutes and recheck.</td>
<td>If still in red zone IMMEDIATELY call 999 or seek emergency care.</td>
</tr>
<tr>
<td></td>
<td>Rescue medication not needed.</td>
<td>Use rescue medications every 4-6 hrs, if needed</td>
<td>If in red zone, IMMEDIATELY call 999 or seek emergency care.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If not in green zone after needing rescue medicine for one day, double/start your controller medicine (____________________) for 5 days and continue rescue medication every 4-6 hours.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Can go to school but should not play hard</td>
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<tr>
<td></td>
<td></td>
<td>Return to daily medication schedule when symptoms are gone.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Call office if not in green zone after following action plan for _________ days.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Mild Symptoms</th>
<th>Yellow Zone</th>
<th>Yellow Zone</th>
<th>Orange Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peak flow between ____ and ____</td>
<td>Peak flow between ____ and ____</td>
<td>Peak flow less than _____</td>
</tr>
<tr>
<td></td>
<td>Take rescue medicine (____________________)</td>
<td>Take rescue medicine (____________________)</td>
<td>Take your rescue medicine.</td>
</tr>
<tr>
<td></td>
<td>Wait 15 minutes and recheck.</td>
<td>Wait 15 minutes and recheck.</td>
<td>If still in red zone IMMEDIATELY call 999 or seek emergency care.</td>
</tr>
<tr>
<td></td>
<td>Use rescue medications every 4-6 hrs, if needed</td>
<td>Use rescue medications every 4-6 hrs, if needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If not in green zone after needing rescue medicine for one day, double/start your controller medicine (____________________) for 5 days and continue rescue medication every 4-6 hours.</td>
<td>If not in green zone after needing rescue medicine for one day, double/start your controller medicine (____________________) for 5 days and continue rescue medication every 4-6 hours.</td>
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<tr>
<td></td>
<td>Can go to school but should not play hard</td>
<td>Can go to school but should not play hard</td>
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</tr>
<tr>
<td></td>
<td>Return to daily medication schedule when symptoms are gone.</td>
<td>Return to daily medication schedule when symptoms are gone.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Call office if not in green zone after following action plan for _________ days.</td>
<td>Call office if not in green zone after following action plan for _________ days.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moderate Symptoms</th>
<th>Orange Zone</th>
<th>Orange Zone</th>
<th>Orange Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peak flow between ____ and ____</td>
<td>Peak flow between ____ and ____</td>
<td>Peak flow less than _____</td>
</tr>
<tr>
<td></td>
<td>Continue doubling control medication.</td>
<td>Continue taking rescue medicines every 2-4 hours, as needed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Should not go to school</td>
<td>Should not go to school</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Call Dr.’s office @ _____________ before starting oral steroids.</td>
<td>Call Dr.’s office @ _____________ before starting oral steroids.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Severe Symptoms</th>
<th>Red Zone</th>
<th>Red Zone</th>
<th>Red Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peak flow less than _____</td>
<td>Peak flow less than _____</td>
<td>Peak flow less than _____</td>
</tr>
<tr>
<td></td>
<td>Take your rescue medicine.</td>
<td>Take your rescue medicine.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If still in red zone IMMEDIATELY call 999 or seek emergency care.</td>
<td>If still in red zone IMMEDIATELY call 999 or seek emergency care.</td>
<td></td>
</tr>
</tbody>
</table>
خطة الربو العلاجية
للأطفال الأقل من السنة الخامسة من العمر

الجدول الدواء اليومي

<table>
<thead>
<tr>
<th>الوقت</th>
<th>الجرعة</th>
<th>طريقة إعطاء الدواء</th>
<th>اسم الدواء</th>
</tr>
</thead>
</table>

* دواء الأزمات (يمكن تناوله قبل عشرة دقائق من الرياضة)
** الدواء الوقائي (إغسل الوجه أو نظف الفم بعد استخدام هذا الدواء)

المجال الأخضر
لا شكوى

المجال الأصفر

- سعال (كحة) أو صغير.
- ضيق في الصدر.
- إضافة في النوم.
- صعوبة في التعب.

المجال البرتقالي

- متوسطة الشدة
- سعال (كحة) مستمر.
- عدم إمكانية النوم في الليل.
- إزداد الأعراض سوءاً.
- عدم التمكن من ممارسة الأعمال اليومية.

المجال الأحمر

- شديدة
- صعوبة في الكلام أو المشي.
- إزرقاق الشفاه.
- أuai في هذه المرحلة قد لا تسعب صغير.

المضاعفات:
- استمر في مضاعفة العلاج الدوائي.
- اتبع جدول الدواء اليومي.
- لا حاجة لإستخدام دواء الأزمات.

لا حمية

المضاعفات:
- الربو تحت السيطرة.
- إتبع جدول الدواء اليومي.

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- الربو تحت السيطرة.
- إتبع جدول الدواء اليومي.
- لا حاجة لإستخدام دواء الأزمات.

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- لا حاجة لإستخدام دواء الأزمات.

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خطة الربو العلاجية
للأطفال أكثر من السنة الخامسة من العمر

جدول الدواء اليومي

<table>
<thead>
<tr>
<th>الوقت إعطاء الدواء</th>
<th>الجرعة</th>
<th>طريقة إعطاء الدواء</th>
<th>اسم الدواء</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

لا شكوى

المجال الأخضر

- مقياس شدة جريان الهواء أكثر من ______

المجال الأصفر

- مقياس شدة جريان الهواء من ______ إلى ______

المجال البرتقالي

- مقياس شدة جريان الهواء من ______ إلى ______

المجال الأحمر

- صعوبة في الكلام أو المشي
- إزرقاق الشفاه
- صعوبة في التنفس

أعراض خفيفة

- سعال (كحة) أو صغير.
- ضيق في الصدر.
- استيقاظ في الليل.
- صعوبة في التنفس.

أعراض متوسطة الشدة

- سعال (كحة) مستمر.
- عدم إمكانية التنوم في الليل.
- إزدياد الاعراض سوءاً
- عدم التمكن من ممارسة الأعمال اليومية.

أعراض شديدة

- صعوبة في الكلام أو المشي.
- ارتفاع درجة السعال.
- في هذه المرحلة قد لا تسعم صغير.

دواء الازمات (يمكن تناوله قبل عشرة دقائق من الرياضة)

الدواء الوقائي (إغسل الوجه او نظف الفم بعد استخدام هذا الدواء)
Appendix 6

Assessing Asthma Control in children 0-11 years according to GINA Guidelines

A. Assessing asthma control in adults (preferred over 4 weeks)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Controlled (all of the following)</th>
<th>Partially Controlled (Any measure present)</th>
<th>Uncontrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime symptoms (wheezing, cough, difficult breathing)</td>
<td>None (≤2 days/week)</td>
<td>&gt;2 times /week</td>
<td></td>
</tr>
<tr>
<td>Effect on daily activities</td>
<td>None</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>Night time symptoms (awakening)</td>
<td>None</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>Need for reliever (fast-acting β₂-agonist)</td>
<td>None (≤2 days/week)</td>
<td>&gt;2 days/week</td>
<td></td>
</tr>
<tr>
<td>FEV₁ or peak flow (Lung function)</td>
<td>Normal</td>
<td>&lt;80% predicted or personal best (if known)</td>
<td></td>
</tr>
</tbody>
</table>

B. Assessing asthma future risk

Relative indicators for risk adverse events in the future include:
Poor clinical control, the likelihood of either asthma exacerbations (ever admission to critical care for asthma), progressive decline in lung function, or risk of adverse effects from medication, exposure to cigarette smoke.

Refer to 2011 Global Initiative For Asthma

† An exacerbation in any week makes that an uncontrolled asthma week.
### Appendix 7

#### Assessment of severity of asthma exacerbation

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Respiratory Arrest imminent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breathless</strong></td>
<td>While walking</td>
<td>While at rest (Infant: softer Shorter cry; difficulty feeding)</td>
<td>At rest (infant: stops feeding)</td>
<td>While at rest (infant: stops feeding)</td>
</tr>
<tr>
<td>Can lie down</td>
<td>Prefers sitting</td>
<td>Sits upright</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Talks in</strong></td>
<td>Sentences</td>
<td>Phrases</td>
<td>Words</td>
<td>Cannot talk</td>
</tr>
<tr>
<td><strong>Alertness</strong></td>
<td>Normal or may be agitated</td>
<td>Usually agitated</td>
<td>Usually agitated</td>
<td>Drowsy or confused</td>
</tr>
</tbody>
</table>

#### Signs

<table>
<thead>
<tr>
<th>Respiratory rate</th>
<th>Normal or increased</th>
<th>Increase often &gt;30/min</th>
<th>Normal or decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal rates of breathing in awake children:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong>&lt;br&gt;&lt;2 months&lt;br&gt;2-12 months&lt;br&gt;1-5 years&lt;br&gt;5 years</td>
<td>Normal rate&lt;br&gt;&lt;60/min&lt;br&gt;&lt;50/min&lt;br&gt;&lt;40/min&lt;br&gt;&lt;30/min</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accessory muscles and suprasternal retractions</strong></td>
<td>Usually not&lt;br&gt;Commonly&lt;br&gt;Usually&lt;br&gt;Paradoxical thoracoabdominal movement</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wheeze</strong></td>
<td>Moderate, often only end expiratory&lt;br&gt;Loud; throughout exhalation&lt;br&gt;Loud, throughout inspiration and exhalation or may be absent&lt;br&gt;Minimal or absence of wheeze</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pulse/min. (at initial presentation)</strong></td>
<td>&lt;100&lt;br&gt;100-120&lt;br&gt;120</td>
<td>Bradycardia</td>
<td></td>
</tr>
<tr>
<td>Guide to limits of normal pulse rate in children:&lt;br&gt;Infant&lt;br&gt;Preschool&lt;br&gt;School age</td>
<td>2-12 months&lt;br&gt;1-2 years&lt;br&gt;2-8 years</td>
<td>&lt;160/min&lt;br&gt;&lt;120/min&lt;br&gt;&lt;110/min</td>
<td></td>
</tr>
<tr>
<td><strong>Pulsus paradoxus</strong></td>
<td>Absent&lt;br&gt;May be present&lt;br&gt;Often present&lt;br&gt;Absence suggests respiratory muscle fatigue</td>
<td>10-25 mmHg&lt;br&gt;&gt;25 mmHg (adult)&lt;br&gt;20-40 mmHg (child)</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Assessment</strong></td>
<td>Over 80%&lt;br&gt;Approx. 60-80%</td>
<td>&lt;60% predicted or personal best&lt;br&gt;(&lt;100L/min adults)&lt;br&gt;Response lasts &lt;2hrs</td>
<td></td>
</tr>
<tr>
<td><strong>PaO₂ (on air)†</strong></td>
<td>Normal&lt;br&gt;Test not usually necessary&lt;br&gt;&gt;45 mm Hg &gt;60 mm Hg&lt;br&gt;&gt;45 mmHg&lt;br&gt;&gt;45 mmHg&lt;br&gt;possible cyanosis&lt;br&gt;possible respiratory failure</td>
<td>&lt;60 mmHg&lt;br&gt;&gt;45 mmHg&lt;br&gt;&gt;45 mmHg&lt;br&gt;&gt;45 mmHg</td>
<td></td>
</tr>
<tr>
<td><strong>SaO₂ (on air)†</strong></td>
<td>&gt;95%&lt;br&gt;Hyper apnea (hypventilation) develops more readily in young children than in adults and adolescents.</td>
<td>91-95%</td>
<td>&lt;90%</td>
</tr>
</tbody>
</table>

Note: The presence of several parameters, but not necessarily all, indicates the general classification of the exacerbation. Many of these parameters have not been systematically studied, especially as they correlate with each other and thus serve only as general guides.

## Choosing an Inhaler Device for Children with Asthma

<table>
<thead>
<tr>
<th>Age group</th>
<th>Preferred Device</th>
<th>Alternative Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4 years</td>
<td>pMDI plus a spacer with face mask</td>
<td>nebulizer with face mask</td>
</tr>
<tr>
<td>4-6 years</td>
<td>pMDI plus a spacer with mouthpiece</td>
<td>pMDI plus a spacer with a face mask or, a nebulizer with mouthpiece or face mask</td>
</tr>
<tr>
<td>Older than 6 years</td>
<td>Dry powder inhaler, or breath-actuated pMDI, or pMDI with spacer and mouth pieceS</td>
<td>Nebulizer with mouthpiece</td>
</tr>
</tbody>
</table>
Appendix 9

Management of Asthma exacerbation

Figure 4.4-2: Management of Asthma Exacerbations in Acute Care Setting

Initial Assessment (see Figure 4.4-1)
- History, physical examination (auscultation, use of accessory muscles, heart rate, respiratory rate, PEF or FEV1, oxygen saturation, arterial blood gas if patient in extremis)

Initial Treatment
- Oxygen to achieve O2 saturation ≥ 90% (95% in children)
- Inhaled rapid-acting β2-agonist continuously for one hour.
- Systemic glucocorticosteroids if no immediate response, or if patient recently took oral glucocorticosteroid, or if episode is severe.
- Sedation is contraindicated in the treatment of an exacerbation.

Reassess after 1 Hour
Physical Examination, PEF, O2 saturation and other tests as needed

Criteria for Moderate Episode:
- PEF 60-80% predicted/personal best
- Physical exam: moderate symptoms, accessory muscle use
- Treatment:
  - Oxygen
  - Inhaled β2-agonist and inhaled anticholinergic every 60 min
  - Oral glucocorticosteroids
  - Continue treatment for 1-3 hours, provided there is improvement

Criteria for Severe Episode:
- History of risk factors for near fatal asthma
- PEF < 60% predicted/personal best
- Physical exam: severe symptoms at rest, chest retraction
- No improvement after initial treatment
- Treatment:
  - Oxygen
  - Inhaled β2-agonist and inhaled anticholinergic
  - Systemic glucocorticosteroids
  - Intravenous magnesium

Reassess after 1-2 Hours

Good Response within 1-2 Hours:
- Response sustained 60 min after last treatment
- Physical exam normal: No distress
- PEF > 70%
- O2 saturation > 90% (95% children)

Incomplete Response within 1-2 Hours:
- Risk factors for near fatal asthma
- Physical exam: mild to moderate signs
- PEF < 60%
- O2 saturation not improving

Admit to Acute Care Setting
- Oxygen
- Inhaled β2-agonist + anticholinergic
- Systemic glucocorticosteroids
- Intravenous magnesium
- Monitor PEF, O2 saturation, pulse

Reassess at intervals

Improved: Criteria for Discharge Home
- PEF > 60% predicted/personal best
- Sustained on oral/inhaled medication

Home Treatment:
- Continue inhaled β2-agonist
- Consider, in most cases, oral glucocorticosteroids
- Consider adding a combination inhaler
- Patient education: Take medicine correctly
  - Review action plan
  - Close medical follow-up

Poor Response within 1-2 Hours:
- Risk factors for near fatal asthma
- Physical exam: symptoms severe, drowsiness, confusion
- PEF < 60%
- PCO2 > 45 mm Hg
- P O2 < 60mm Hg

Admit to Intensive Care
- Oxygen
- Inhaled β2-agonist + anticholinergic
- Intravenous glucocorticosteroids
- Consider intravenous β2-agonist
- Consider intravenous theophylline
- Possible intubation and mechanical ventilation

Reassess at intervals

Improved (see opposite)

Poor Response (see above):
- Admit to Intensive Care

Incomplete response in 6-12 hours (see above)
- Consider admission to Intensive Care if no improvement within 6-12 hours

From the Global Strategy for Asthma Management and Prevention 2011 used with permission from the Global Initiative for Asthma (GINA), www.ginasthma.org
**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-claims</td>
<td>Electronic claims</td>
</tr>
<tr>
<td>GINA</td>
<td>Global Initiative for Asthma</td>
</tr>
<tr>
<td>HAAD</td>
<td>Health Authority of Abu Dhabi</td>
</tr>
<tr>
<td>ICS</td>
<td>Inhaled glucocorticosteroids</td>
</tr>
<tr>
<td>ICS</td>
<td>Inhaled corticosteroids</td>
</tr>
<tr>
<td>LABA</td>
<td>Long Acting Beta2 Agonist</td>
</tr>
<tr>
<td>LTR</td>
<td>Leukotriene modifiers</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>NAEP</td>
<td>National Assessment of Educational Progress</td>
</tr>
<tr>
<td>No.</td>
<td>Number</td>
</tr>
<tr>
<td>pMDI</td>
<td>Pressurized Metered Dose Inhaler</td>
</tr>
<tr>
<td>PRN</td>
<td>Pro re nata (Latin) or &quot;as needed&quot;</td>
</tr>
<tr>
<td>SABA</td>
<td>Short Acting Beta2 Agonist</td>
</tr>
</tbody>
</table>