Asthma Model of Care: Supporting Guidelines

Respiratory Health Network

August 2012
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## Asthma Action Plan for Children

### When Well
- No wheeze, cough or chest tightness
- Can play and exercise without wheeze, cough or chest tightness
- Need reliever puffer less than 3 times a week (not including before exercise)
- Not waking at night due to asthma

### When Unwell
- Starting to get a tight cough, wheeze or chest tightness
- Increased asthma with a cold
- Waking at night with asthma

### Severe
- Needing reliever every 3 hours or more often for one or more of the following:
  - Wheeze
  - Chest tightness
  - Sucking in around tummy, ribs or neck with breathing

### Danger Signs
- Needing reliever more than every ½ hour, OR
- Blue lips, OR
- Difficulty speaking or feeding due to breathlessness OR
- Frightened OR
- Exhausted

### What should I do?

**Preventer/Combined Medication:**
- ................. puffs/tablets
- .... times a day **everyday**

**Reliever:**
- ................. ..... puffs when needed

**Give:**
- (reliever)
- **Up to 3 - 4 hourly as needed:**
  - 2 - 6 puffs via spacer (under 6 years old)
  - 2 - 12 puffs via spacer (6 years or older)

If on daily preventer medication, continue same dose as usual, OR follow your doctors’ advice.

**Keep giving:**
- (reliever) as needed.

**Start Oral Steroid if prescribed:**
- ......... mg (......ml)

**And see a doctor or come into hospital AS SOON AS POSSIBLE**

**What should I do?**
- CALL AN AMBULANCE on 000
- While waiting stay calm and give:
  - (reliever)
  - 4 puffs every 4 minutes

**Use a Spacer if available**

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**Take your plan when you next visit a doctor**

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# Asthma discharge plan for children

**Extra medicine to take after going home:**

<table>
<thead>
<tr>
<th>Date:</th>
<th>…………………………</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisolone:</td>
<td>……………….mg (………..ml) once a day for ……………days</td>
</tr>
<tr>
<td>Reliever:</td>
<td>………………………..  ……..puffs …………………… times a day ……………..days</td>
</tr>
<tr>
<td>Other:</td>
<td>…………………………………………………………………………….....................</td>
</tr>
</tbody>
</table>

**Follow –up (please tick which)**

<table>
<thead>
<tr>
<th>GP follow up in</th>
<th>………………………………. days/weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient clinic</td>
<td>………………………………. weeks</td>
</tr>
<tr>
<td>Consultant rooms</td>
<td>………………………………. weeks</td>
</tr>
</tbody>
</table>

**RETURN to hospital or see a doctor as soon as possible if your child:**

- Starts **working harder to breath** (sucking in around tummy, ribs or neck with breathing)  **OR**
- Starts needing their reliever puffer **more than every 3 hours**

**Call an AMBULANCE if your child has any one of the following:**

- Needs their reliever puffer more than every ½ hour, **OR**
- Is blue at the lips, **OR**
  - Has difficulty speaking or feeding due to breathlessness, **OR**
  - Is frightened or exhausted

  While waiting for the ambulance give your child their **Reliever puffer 4 puffs every 4 minutes** (use spacer if available)

**Is your child’s asthma under control?**

Does your child have any of the following symptoms when they seem well?

- **NIGHT TIME** or **EARLY MORNING** wheeze, chest tightness or cough?
- Wheeze, chest tightness or cough with **EXERCISE**?
- Using their **RELIEVER** 3 times a week, or more, to relieve asthma symptoms (not including before sport)?
- **MISSING SCHOOL** because of their asthma?

Answer yes, to any one of these? Then your child should see their family doctor, to look at ways to get their asthma under control

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Developed by the Acute Respiratory ( paediatric) Working Group of the WA Child and Youth Health Network and Respiratory Health Network.
Spacers

Why use a spacer
It is better for children to use a spacer with their puffer, no matter what their age!
By using a spacer:
- more medicine gets down into the lungs
- less medicine gets caught in the mouth and throat

Spacers work as well as nebulisers to relieve asthma symptoms and are cheap, simple to care for and easy to carry around.

How to use a spacer
Children under 5 years should use a small spacer (if under 3 years of age a mask should be used with the spacer).
Children 5 years and older can use a large spacer.

1. Shake puffer well for 5 seconds.
2. Place teeth and lips around the mouthpiece with lips sealed (for children using a mask, place mask firmly over mouth and nose, leaving no gaps).
3. For older children:
   - Ask your child to breathe out into the spacer, then press down on the puffer once and ask them to take 1 slow deep breath in. They should then hold their breath for 5-10 seconds.
   - For younger children (or if unable to take and hold a deep breath):
     - Ask them to just take 4 normal breaths in and out after pressing down on puffer.

   Only 1 puff should be put into the spacer at a time

4. For each puff given, follow steps 1-3.

Cleaning spacers
If spacers are cleaned incorrectly, this can result in static, which makes the medicine stick to the insides of a spacer. To avoid generating static, wash your child’s spacer like this:
- Wash in warm soapy water (use dish washing liquid) once a month
- Do not rinse the soap off
- Leave to drip dry (do not rub dry)

By avoiding static, you will help to get more medicine down into your child’s lungs

Is Your Child’s Asthma Under Control?

Does your child have any of the following symptoms when they seem well?
- NIGHT TIME or EARLY MORNING wheeze, chest tightness or cough?
- Wheeze, cough or chest tightness with EXERCISE?
- Using their RELIEVER 3 times a week, or more, to relieve asthma symptoms? (not including before sport)
- MISSING SCHOOL because of their asthma?

Answer yes, to any one of these? Then your child should see their doctor, to look at ways to get their asthma under better control.

## Management of Acute Asthma in Children and Adolescents in the Emergency Department

### 2. Guidelines for children in ED, General Practice and Interval Management

<table>
<thead>
<tr>
<th>MILD ASTHMA</th>
<th>MODERATE ASTHMA</th>
<th>SEVERE ASTHMA</th>
<th>CRITICAL ASTHMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal mental state</td>
<td>Normal mental state</td>
<td>Agitated Moderate-marked accessory muscle use</td>
<td>Confused/Drowsy Maximal accessory muscle use Exhaustion ± central cyanosis</td>
</tr>
<tr>
<td>Subtle or no accessory muscle use</td>
<td>Some accessory muscle use</td>
<td>Tachycardia</td>
<td>Initial SpO₂ &lt; 85%</td>
</tr>
<tr>
<td>Initial SpO₂ &gt;94%</td>
<td>Initial SpO₂ 91-94%</td>
<td>Talks in phrases</td>
<td>Marked tachycardia</td>
</tr>
<tr>
<td>Talks in sentences</td>
<td>Tachycardia</td>
<td>Wheeze ± reduced breath sounds</td>
<td>Unable to talk</td>
</tr>
<tr>
<td>Wheeze + normal breath sounds</td>
<td>Talks in single words</td>
<td></td>
<td>Quiet chest</td>
</tr>
</tbody>
</table>

Note: If a patient has signs and symptoms that cross categories always treat according to their most severe features

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**Administer oxygen (5-15 L/min) via face mask if SpO₂ are < 92%**

<table>
<thead>
<tr>
<th>Bronchodilator</th>
<th>&lt;6 years</th>
<th>&gt;6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>via MDI and Spacer (may only be needed once):</td>
<td>6 puffs</td>
<td>12 puffs</td>
</tr>
<tr>
<td>salbutamol (Ventolin)</td>
<td>6 puffs</td>
<td>12 puffs</td>
</tr>
</tbody>
</table>

**Consider oral corticosteroid**

- oral prednisolone 1 mg/kg/day (max. 50mg)

**Response after 20 minutes?**

- **GOOD**
  - 1. Discharge on prn salbutamol 2-4 puffs, up to 3-4 hourly
  - 2. Continue oral prednisolone up to 3 days if needed
- **POOR**
  - Treat as for Moderate Asthma

**Response after 1st hour of treatment?**

- **GOOD**
  - 1. Observe for a further hour
  - 2. Discharge on prn salbutamol, up to 3-4 hourly
  - 3. Continue oral prednisolone up to 3 days
- **POOR**
  - Admit

**Response during 1st hr of treatment?**

- **GOOD**
  - 1. Consult senior staff
  - 2. Admit to hospital
- **POOR**
  - Consult senior staff
  - Treat as for Critical Asthma

**ARRANGE TRANSFER TO INTENSIVE CARE**

**Prior to discharge:**

- Arrange follow up appointment
- Review prophylaxis
- Give and explain a written Asthma Action Plan with clear instructions on when to return if asthma worsens

## Management of Acute Asthma in Children and Adolescents in General Practice

### MILD ASTHMA
- **Normal mental state**
- **Subtle or no accessory muscle use**
- **Initial \(\text{SpO}_2\) >94%**
  - Talks in sentences
  - Wheeze + normal breath sounds

### MODERATE ASTHMA
- **Normal mental state**
- **Some accessory muscle use**
- **Initial \(\text{SpO}_2\) 91-94%**
  - Tachycardia
  - Talks in phrases
  - Wheeze ± reduced breath sounds

### SEVERE ASTHMA
- **Agitated**
- **Moderate-marked accessory muscle use**
- **Initial \(\text{SpO}_2\) 85-90%**
  - Tachycardia
  - Talks in words
  - Wheeze ± reduced breath sounds

### CRITICAL ASTHMA
- **Confused/Drowsy**
- **Maximal accessory muscle use**
- **Initial \(\text{SpO}_2\) < 85%**
  - Exhaustion ± central cyanosis
  - Unable to talk
  - Quiet chest

Note: If a patient has signs and symptoms that cross categories always treat according to their most severe features.

<table>
<thead>
<tr>
<th>MILD ASTHMA</th>
<th>MODERATE ASTHMA</th>
<th>SEVERE ASTHMA</th>
<th>CRITICAL ASTHMA</th>
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<tr>
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<td>Some accessory muscle use</td>
<td>Exhaustion ± central cyanosis</td>
<td>Exhaustion ± central cyanosis</td>
</tr>
<tr>
<td><strong>Initial (\text{SpO}_2) &gt;94%</strong></td>
<td><strong>Initial (\text{SpO}_2) 91-94%</strong></td>
<td><strong>Initial (\text{SpO}_2) 85-90%</strong></td>
<td><strong>Initial (\text{SpO}_2) &lt; 85%</strong></td>
</tr>
<tr>
<td>Talks in sentences</td>
<td>Tachycardia</td>
<td>Tachycardia</td>
<td>Unable to talk</td>
</tr>
<tr>
<td>Wheeze + normal breath sounds</td>
<td>Talks in phrases</td>
<td>Talks in words</td>
<td>Quiet chest</td>
</tr>
</tbody>
</table>

**Administer oxygen (5-15 L/min) via face mask If \(\text{SpO}_2\) are < 92%**  
(Use Non-Rebreathing Reservoir Mask if giving \(\text{O}_2\) 8 L/min)

###Bronchodilator via MDI and Spacer (may only be needed once):

<table>
<thead>
<tr>
<th>&lt;6 years</th>
<th>≥6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>salbutamol (Ventolin)</td>
<td>6 puffs</td>
</tr>
</tbody>
</table>

Consider oral corticosteroid  
oral prednisolone 1mg/kg/day (max. 50 mg)

###Response after 20 minutes?

**GOOD**  
1. Home on prn salbutamol 2 – 6 puffs, up to 3-4 hourly  
2. Continue oral prednisolone up to 3 days if needed

**POOR**  
Treat as for Moderate Asthma

###Response after 1st hr of treatment?

**GOOD**  
1. Observe for a further hour  
2. Home on prn salbutamol, up to 3-4 hourly  
3. Continue oral prednisolone up to 3 days

**POOR**  
1. Repeat salbutamol 1-4 hourly  
   Arrange transfer to Hospital

###Arrange Admission to Hospital

**Response during 1st hr of treatment?**

**GOOD**  
1. Consult senior staff  
2. Repeat salbutamol 1/2 - 4hourly treatment

**POOR**  
1. Consult senior staff  
2. Treat as for Critical Asthma

**ARRANGE IMMEDIATE ADMISSION**

**CALL AMBULANCE 000**

Stay with patient until ambulance arrives

###For patients sent home, all should receive a written Asthma Action Plan, which should be explained, with clear instructions on when to return if asthma worsens

Arranged follow up appointment of all patients presenting with acute asthma

### INTERVAL MANAGEMENT OF ASTHMA IN CHILDREN AND ADOLESCENTS

- There is no single test to diagnose all cases of asthma
- Expiratory wheeze ± cough is suggestive of, but not specific to asthma. Wheeze in infants < 12 months of age is often a result of conditions other than asthma
- Diagnosis is made on history, examination and when appropriate (> 5 years) supportive pulmonary function tests (spirometry) and/or allergy testing
- Asthma is more likely if symptoms are: recurrent or seasonal; worse at night or early morning; triggered by viral infections, exercise, irritants or allergens; rapidly relieved by short-acting bronchodilator
- The absence of physical signs does **not** exclude asthma

#### ASSESS PATTERN OF ASTHMA

<table>
<thead>
<tr>
<th>INFREQUENT INTERMITTENT</th>
<th>FREQUENT INTERMITTENT</th>
<th>MILD PERSISTENT</th>
<th>MODERATE PERSISTENT</th>
<th>SEVERE PERSISTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil daytime or nocturnal symptoms</td>
<td>Minimal daytime or nocturnal symptoms</td>
<td>Day-time symptoms: 1x/week but not every day</td>
<td>Day-time symptoms: most days</td>
<td>Day-time symptoms: continual</td>
</tr>
<tr>
<td>Exacerbations: Are brief + mild. Usually viral or allergen trigger Episodes &gt; 6-8 weeks apart FEV₁ ≥80% predicted</td>
<td>Exacerbations &lt; 6-8 weeks apart</td>
<td>Nocturnal symptoms: &gt;2x/month &amp; less than weekly</td>
<td>Nocturnal symptoms: &gt;1x/week</td>
<td>Nocturnal symptoms: frequent</td>
</tr>
<tr>
<td>Reliever PRN Short acting β₂agonist (SABA)</td>
<td>Reliever PRN SABA</td>
<td>Exacerbations: May affect activity and sleep FEV₁ ≥80% predicted</td>
<td>Exacerbations: At least 2x/week Restrict activity ± affect sleep FEV₁60-80% predicted</td>
<td>Exacerbations: Frequent Restrict activity ± affect sleep FEV₁ ≤60% predicted</td>
</tr>
<tr>
<td>Preventer Low dose Inhaled corticosteroids (ICS) OR Leukotriene receptor antagonist</td>
<td>Reliever PRN SABA Preventer ICS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### MANAGEMENT

Give and explain a written Asthma Action Plan and provide asthma management education (this should include device instruction and care)

#### ONGOING REVIEW AND MANAGEMENT ACCORDING TO LEVEL OF CONTROL

<table>
<thead>
<tr>
<th>Well controlled?</th>
<th>Well controlled?</th>
<th>Well controlled?</th>
<th>Well controlled?</th>
<th>Well controlled?</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES No change</td>
<td>YES Consider a trial of ceasing preventer</td>
<td>YES Consider trial of ceasing preventer</td>
<td>YES Consider back titrating preventer treatment</td>
<td>YES Consider back titrating preventer treatment</td>
</tr>
<tr>
<td>NO Try preventer</td>
<td>NO Consider escalating treatment</td>
<td>NO Consider escalating treatment</td>
<td>Consider moderate ICS dose OR add Long acting β₂agonist (LABA)</td>
<td>Consider moderate to high dose ICS AND add LABA</td>
</tr>
</tbody>
</table>

Signs of Well controlled Asthma: Asymptomatic for ≥ 3 months
Signs of Poor control: SABA use >3 times/week (not including pre–exercise) **AND/OR** ongoing day-time symptoms >1/week **AND/OR** night-time symptoms >1/week **AND/OR** restricted physical activity **AND/OR** acute exacerbations at least monthly

If not controlled on a total daily dose of fluticasone *(Flixotide)* 250 microgram or equivalent, seek specialist advice

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### 3. Emergency setting – Adult asthma guidelines all health professionals

#### ASSESSMENT OF SEVERITY

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Life threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse</td>
<td>&lt; 100/min</td>
<td>100–120/min</td>
<td>&gt; 120/min</td>
<td>Any of severe +/-</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>10 – 18</td>
<td>18 – 25</td>
<td>&gt; 25</td>
<td>Relative Bradycardia</td>
</tr>
<tr>
<td>FEV1 % predicted best</td>
<td>&gt; 75%</td>
<td>50 – 75%</td>
<td>&lt; 50% / &lt;1litre</td>
<td>SpO2 &lt; 90%</td>
</tr>
<tr>
<td>Speech</td>
<td>Sentences</td>
<td>Phrases</td>
<td>Words</td>
<td>Fatigue. Does not talk</td>
</tr>
<tr>
<td>Wheeze intensity</td>
<td>Variable</td>
<td>Moderate - loud</td>
<td>Often quiet</td>
<td>Altered mentation</td>
</tr>
<tr>
<td>Accessory muscles</td>
<td>Minimal</td>
<td>In use</td>
<td>Marked use</td>
<td>↓ Rate / depth of breathing /</td>
</tr>
<tr>
<td>SpO2</td>
<td>&gt; 95%</td>
<td>90 – 95%</td>
<td>≤ 90%</td>
<td>paradoxical movement</td>
</tr>
</tbody>
</table>

#### TREATMENT GUIDE

### Medical review

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Life threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident on admission</td>
<td>Registrar on admission</td>
<td>Consultant ED, ICU or Medicine</td>
<td></td>
</tr>
</tbody>
</table>

#### Oxygen

O2 to achieve sats > 94%
Monitor arterial blood gases in severe, life threatening and those not responding

#### IV Access

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Life threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV cannula if deteriorating</td>
<td>IVI 0.9% NaCl</td>
<td>IVI 0.9% NaCl</td>
<td></td>
</tr>
</tbody>
</table>

#### BRONCHODILATORS

1. **Salbutamol**

   - **Inhaler/ spacer (IV not recommended)**
   - **Nebuliser**

   Give up to 16 puffs, one puff at a time, with breath-hold or tidal breathing. Give in lots of 4, allowing for brief pauses. Repeat as required

   - **Up to 16 puffs stat then 3 – 4 hourly**
   - **Up to 16 puffs stat then up to 1/4 hourly PRN**
   - **Up to 16 puffs stat then up to 1/4 hourly PRN**

#### STEROIDS

Oral

- Short term prednisolone oral 0.5 – 1.0 mg/kg up to 50 mg
- *Tapering is not recommended*

IV

- Hydrocortisone: Consider IV 200 mg 6 hourly until improved/able to absorb oral dexamethasone, methylprednisolone, other IV acceptable

#### Investigations

- CXR if deteriorating
- ABG, FBP, U&E, BSL, CXR

#### Observations

- ½ hourly SpO2, respiratory and vital signs until stable Spironetry
- ¼ hourly SpO2, respiratory and vital signs until stable Spironetry
- Continuous ECG, SpO2, respiratory and vital signs until stable

#### Comfort

- Nurse in upright position of comfort. Provide pillows over bedside table

#### Education

- Commences from admission

#### Discharge management

- Home if FEV1 > 75% of Personal Best
- Consider admission if FEV1 < 75% of PB with risk factors or not responding
- Admit under Physician. Consider ICU/ nurse special
- Stabilise & transfer to ICU/ nurse special

#### Referral

- GP appointment made for within 5 days of discharge.
- Consider Respiratory Physician and Respiratory CNC or Asthma Educator

#### Discharge medication

- **Beta2 Agonists** Use on an as required basis
- **Steroids** Inhaled
  - Consider prednisolone 0.5 -1.0 mg/kg up to 50mg daily 7 – 10 days & GP review within 5 days
- Consider need for Long Acting Beta2 Agonist
  - Consider combination therapy ie. steroid/ LABA prednisolone 0.5 – 1.0 mg/kg up to 50 mg daily for 7 – 10 days and review by GP within 5 days
4. Asthma Action Plan for Adults

For more information or instructions on ordering the cards view the fact sheet.