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

MILD ASTHMA	MODERATE ASTHMA	SEVERE ASTHMA	CRITICAL ASTHMA
Normal mental state **Subtle or no accessory muscle use** **Initial SpO_2 >94%** Talks in sentences Wheeze + normal breath sounds	**Normal mental state** **Some accessory muscle use** **Initial SpO_2 91-94%** Tachycardia Talks in phrases Wheeze ± reduced breath sounds	**Agitated** **Moderate-marked accessory muscle use** **Initial SpO_2 85-90%** Tachycardia Talks in single words Wheeze ± reduced breath sounds	**Confused/Drowsy** **Maximal accessory muscle use** **Exhaustion ± central cyanosis** **Initial SpO_2 < 85%** Marked tachycardia Unable to talk Quiet chest
Note: If a patient has signs and symptoms that cross categories always treat according to their most severe features			
Administer oxygen (5-15 L/min) via face mask If SpO_2 are < 92% (Use Non-Rebreathing Reservoir Mask if giving O_2 8L/min)			
Bronchodilator via MDI and Spacer (may only be needed once): **<6 years** / **³6 years** Salbutamol (*Ventolin*): 6 puffs / 12 puffs **Consider Oral Corticosteroid** Oral prednisolone 1mg/kg/day (max. 50mg)	**Bronchodilator** via MDI and spacer every 20 minutes for the first hour: **<6 years** / **³6 years** Salbutamol (*Ventolin*): 6 puffs / 12 puffs ± Ipratropium20μg (*Atrovent*): 4 puffs / 8 puffs **Oral Corticosteroids** Prednisolone 1mg/kg/day (max. 50mg)	**Oxygen** 8L/min via face mask **Bronchodilator** via MDI and spacer every 20 minutes for the first hour: **<6 years** / **³6 years** Salbutamol (*Ventolin*): 6 puffs / 12 puffs Ipratropium20μg (*Atrovent*): 4 puffs / 8 puffs **Oral/IV corticosteroids** Prednisolone 1mg/kg/day (max. 50mg) OR Hydrocortisone 4mg/kg IV 6 hourly OR Methylprednisolone 1mg/kg 6 hourly	Bronchodilator via Nebuliser driven by O_2 at **8L/min:** Continuous nebulised Salbutamol (*Ventolin)* 5mg Nebulised Ipratropium (*Atrovent*) 250μg added to salbutamol nebs every 20 minutes for first hour **IV Corticosteroids** Hydrocortisone 4mg/kg IV 6 hourly OR Methylprednisolone 1mg/kg 6 hourly **If no response, consider IV agents:** **1ST** IV Salbutamol (*Ventolin*) 15mcg/kg over 10 minutes. If needed, 1mcg/kg/min infusion **2ND** IV Magnesium Sulphate 50% 0.1 mL/kg (50mg/kg) over 20 min **3RD** IV Aminophylline loading dose 10mg/kg over 1 hour IF NOT **ALREADY ON THEOPHYLLINE** Then 1.1 mg/kg/hour if < 9 years OR 0.7mg/kg/hour if ³ 9 years **SEEK ADVICE FROM PMH ED OR ICU CONSULTANT**
Response after 20 minutes? **GOOD** 1. Discharge on prn salbutamol 2-6 puffs, up to 3-4 hourly 2. Continue oral prednisolone up to 3 days if needed	**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	**Response during 1st hr of treatment?** **GOOD** 1. Consult senior staff 2. Admit to hospital	
POOR Treat as for Moderate Asthma	**POOR** Admit	**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

Developed by the Acute Respiratory (paediatric) Working Group of the WA Child and Youth Health Network and Respiratory Health Network. Nov 2007. Revision: Dec 2009, Nov 2011

Management of Acute Asthma in Children and Adolescents in General Practice

MILD ASTHMA	MODERATE ASTHMA	SEVERE ASTHMA	CRITICAL ASTHMA
Normal mental state **Subtle or no accessory muscle use** **Initial SpO_2 >94%** Talks in sentences Wheeze + normal breath sounds	**Normal mental state** **Some accessory muscle use** **Initial SpO_2 91-94%** Tachycardia Talks in phrases Wheeze ± reduced breath sounds	**Agitated** **Moderate-marked accessory muscle use** **Initial SpO_2 85-90%** Tachycardia Talks in words Wheeze ± reduced breath sounds	**Confused/Drowsy** **Maximal accessory muscle use** **Exhaustion** ± central cyanosis **Initial SpO_2 < 85%** Marked tachycardia Unable to talk Quiet chest

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

Administer oxygen (5-15 L/min) via face mask If SpO_2 are < 92% (Use Non-Rebreathing Reservoir Mask if giving O_2 8L/min)

MILD ASTHMA	MODERATE ASTHMA	SEVERE ASTHMA	CRITICAL ASTHMA
Bronchodilator via MDI and Spacer (may only be needed once): **<6 years** / **^{3}6 years** **Salbutamol** (*ventolin*): 6 puffs / 12 puffs **Consider Oral Corticosteroid** Oral prednisolone 1mg/kg/day (max. 50mg)	**Bronchodilator via MDI and spacer every 20 minutes for the first hour:** **<6 years** / **^{3}6 years** **Salbutamol** (*ventolin*): 6 puffs / 12 puffs **± Ipratropium** (*atrovent 20µg*): 4 puffs / 8 puffs **Oral Corticosteroids** Prednisolone 1mg/kg/day (max. 50mg)	**Oxygen** 8L/min via **face mask** **Bronchodilator** via MDI and spacer every 20 minutes for the first hour: **<6 years** / **^{3}6 years** **Salbutamol** (*ventolin*): 6 puffs / 12 puffs **Ipratropium** (*atrovent 20µg*): 4 puffs / 8 puffs **Oral/IV corticosteroids** Prednisolone 1mg/kg/day (max. 50mg) OR Hydrocortisone 4mg/kg IV STAT **OR** Methylprednisolone IV 1mg/kg STAT	**Bronchodilator** via Nebuliser driven by O_2 at 8L/min: Continuous nebulised Salbutamol 5mg (*ventolin*) Nebulised Ipratropium (A*trovent*) 250µg added to salbutamol nebs every 20 minutes for first hour **IV Corticosteroids** Hydrocortisone 4mg/kg IV STAT OR Methylprednisolone IV 1mg/kg STAT **CONSULT SENIOR STAFF**
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 hrly Arrange transfer to Hospital	**Arrange Admission to Hospital** **Response during 1st hr of treatment?** **GOOD** 1. Consult senior staff 2. Repeat Salbutamol ½ - 4hrly after first hour of treatment **POOR** 1. Consult senior staff 2. Treat as for Critical Asthma	**ARRANGE IMMEDIATE ADMISSION** **CALL AMBULANCE 000** Stay with patient until ambulance arrives

Arrange follow up appointment of all patients presenting with acute asthma
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

Developed by the Acute Respiratory (Paediatric) Working Group of the WA Child & Youth Health Network and Respiratory Health Network Aug 2007 Revised: Dec 2009; Nov 2011