# Acute Management of Infants and Children with Asthma – Emergency Departments

<table>
<thead>
<tr>
<th>Sites where PCP applies</th>
<th>All HNELHD Emergency Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>This PCP applies to:</td>
<td></td>
</tr>
<tr>
<td>1. Adults</td>
<td>No</td>
</tr>
<tr>
<td>2. Children up to 16 years</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Neonates – less than 29 days</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Target audience**
Clinicians in ED where Children present with shortness of breath.

**Description**
Acute management of asthma in infants and children

**Keywords**
Acute, management, asthma, children, infants.

**This PCP relates to NSW Ministry of Health Policy Directive**

**PCP number**
PD2012_056:PCP 1

**Replaces existing PCP?**
Yes

**Document number, name and dates of superseded document/s**

**Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:**
- NSW Health Paediatric Clinical Practice Guidelines

**Tier 2 Director responsible for Policy**
Professor Trish Davidson, Director, Children Young People and Families

**PCP Contact Position and Network or Service etc. responsible for the PCP**
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**Authorised by**
Professor Trish Davidson, Director, Children Young People and Families

**Date authorised**
9 July 2014

**This PCP contains advice on therapeutics**
Yes, as per PD2012_056

**Issue date**
27 August 2014

**Review date**
27 August 2017

**TRIM number**
14/37-2-68
Summary

This PCP is a guideline in the assessment of the severity and management of asthma in infants and children:

- provides guidelines on appropriate transfer/retrieval based on clinical assessment and response to treatment or discharge planning
- promotes evidence based practice in the use of bronchodilators via Metered Dose Inhaler (MDI) and spacer

Risk statement

This PCP has been developed to provide current clinical practice guidelines to clinical staff in the assessment, management and discharge planning for infants and children with asthma. Non-compliance to this PCP may result in paediatric patients with asthma receiving care that is not based on best practice guidelines. **Risk Category:** Clinical Care & Patient Safety.

Compliance, Implementation and Monitoring

This PCP establishes evidenced based best practice for HNELHD based on the policy PD2012_056 which requires mandatory compliance. The document will be implemented in all HNE Health EDs and compliance monitored by IIMS.

Feedback

Any feedback on this document should be sent to the Contact Officer listed on the front page.
## Initial Severity Assessment

Treat in the highest category in which any symptom occurs

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Mild Likely to go home</th>
<th>Moderate Possibly be admitted</th>
<th>Severe and Life Threatening Will be admitted or transferred</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oximetry in Air</strong></td>
<td>&gt;94%</td>
<td>90-94%</td>
<td>&lt;90% Marked Tachycardia - beware relative Bradycardia for age</td>
</tr>
<tr>
<td><strong>Heart rate</strong></td>
<td>Within normal range for age</td>
<td>Mild-Moderate Tachycardia for age</td>
<td>Words / Weak Cry or Unable to Speak / Cry Moderate to Severe</td>
</tr>
<tr>
<td><strong>Ability to talk in:</strong> (age appropriate)</td>
<td>Sentences or Long vigorous Cry</td>
<td>Phrases or Shortened Cry</td>
<td>Agitated, Drowsy, Confused Any Cyanosis</td>
</tr>
<tr>
<td><strong>Accessory Muscle use</strong></td>
<td>None</td>
<td>Mild to Moderate</td>
<td>Get consultant help and/or Call NETS 1300 36 2500</td>
</tr>
<tr>
<td><strong>Altered Consciousness</strong></td>
<td>Alert Age Appropriate</td>
<td>Easily Engaged Age Appropriate</td>
<td>Severe – see page 10</td>
</tr>
<tr>
<td><strong>Cyanosis in air</strong></td>
<td>None</td>
<td>None</td>
<td>Life Threatening - Continuous nebulised Salbutamol (using 2x 5mg/2.5mL nebules undiluted) with Ipratropium (3 doses as below) until improvement Reassess</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
<td>OR Life Threatening - Continuous nebulised Salbutamol (using 2x 5mg/2.5mL nebules undiluted) with Ipratropium (3 doses as below) until improvement Reassess</td>
</tr>
<tr>
<td><strong>Oxygen</strong></td>
<td>No</td>
<td>To maintain SaO₂ &gt;94%</td>
<td>Yes - 20 minutely x 3</td>
</tr>
<tr>
<td><strong>Salbutamol 100 micrograms Metered Dose Inhaler(MDI) &amp; Spacer</strong></td>
<td>&lt;6 years 6 x puffs stat ≥6 years 12 x puffs stat review frequently and repeat when required</td>
<td>&lt;6 years 6 x puffs ≥6 years 12 x puffs Give 20 minutely x 3 then repeat as required Re-asses the need for further Salbutamol doses every 15 minutes during the subsequent hour</td>
<td></td>
</tr>
<tr>
<td><strong>Ipratropium (Atrovent) 20 micrograms (3 doses always together with Salbutamol)</strong></td>
<td>No</td>
<td>Consider 20 minutely x 3 &lt;6 years 4 puffs MDI &gt;6 years 8 puffs MDI</td>
<td>Immediate Senior Review -Consult PICU (via NETS if outside a children’s hospital retrieval</td>
</tr>
<tr>
<td><strong>No or Poor response to Treatment</strong></td>
<td>Check diagnosis and treat as per Moderate</td>
<td>Check diagnosis and treat as per Severe and Life Threatening</td>
<td>If no or poor response to Nebulised Salbutamol, contact senior help or PICU via (NETS 1300 36 2500) for discussion regarding retrieval</td>
</tr>
<tr>
<td><strong>If contemplating giving any of IV Salbutamol, IV Aminophylline or IV Magnesium Sulphate</strong></td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Hydrocortisone IV 4mg/kg or Methylprednisone IV 1mg/kg</td>
</tr>
<tr>
<td><strong>Systemic corticosteroids</strong></td>
<td>Consider Oral Prednisone 1-2mg/kg depending on history and response to treatment</td>
<td>Oral Prednisone 1-2mg/kg</td>
<td>Measure Blood Gases, Chest X-Ray, UEC &amp; Lactate</td>
</tr>
<tr>
<td><strong>Investigations</strong></td>
<td>Nil (routine) required</td>
<td>Nil routine required Consider Chest X-ray if focal signs</td>
<td>Continuous cardiorespiratory monitoring (HR, RR and O2 Sats) Regular medical review</td>
</tr>
<tr>
<td><strong>Observation &amp; Review</strong></td>
<td>Observations (HR, RR and O2 Sats) pre and post treatment – minimum hourly for 3 hours. MO review prior to discharge Home if Salbutamol requirement &gt;3hourly See ‘Discharge Criteria’</td>
<td>Continuous observations (HR, RR and O2 Sats). Observations pre and post treatment –initially Q 30min then MO review within 1 hour</td>
<td>Admit to Level 4 facility or above if improving or retrieve to Paediatric ICU (call NETS)</td>
</tr>
<tr>
<td><strong>Disposition</strong></td>
<td>Observe for 3 hours after last dose. If not suitable for discharge then – Admit or Transfer. Otherwise home.</td>
<td></td>
<td></td>
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</tbody>
</table>
1. Instructions for the administration of Salbutamol Nebule 5mg/2.5mL, for continuous Nebulised Salbutamol.

Product Name: Salbutamol Nebule 5mg/2.5mL
Single patient use only.
FOR USE IN NEBULISER ONLY

Indications: For severe or life threatening Asthma in infants and children in accordance with NSW Health PD2012_056 ‘Infants and children: Acute Management of Asthma third edition.’

Administration: Empty two (2) Salbutamol Nebules 5mg/2.5mL strength undiluted into the nebuliser bowl and run continuously with oxygen at a minimum flow rate of 6-8 litres/minute. This will require regular (at least 10-15 minutely) ‘top ups’ into the nebuliser bowl with more undiluted Salbutamol Nebule 5mg/2.5mL solution.

2. Instructions for the administration of Intravenous Salbutamol using Salbutamol Obstetric Injection.

Product Name: Salbutamol Intravenous for Injection 5mg/5mL
FOR INTRAVENOUS USE ONLY

Indications: For persistently severe or life threatening Asthma in infants and children in accordance with NSW Health PD2012_030 ‘Infants and children: Acute Management of Asthma second edition.’

Administration: 1. Draw up 50mls of Salbutamol Intravenous 5mg/5mL [this is 10 vials] for injection undiluted strength.
2. Weight [kg] x 0.06mL/hr = 1 microgram/kg/minute
3. Infusion: 5micrograms/kg/minute for 1 hour.
4. After 1 hour turn down the infusion to 1microgram/kg/minute continue this as necessary.
5. Deliver IV infusion via a syringe pump.

For patients 40kg and over the maximum dose of 5micrograms/kg/minute is 200micrograms which = 12mLs/hr.

Measure BSL and Serum Potassium regularly

Principles of Oxygen Therapy:

1. All patients receiving oxygen therapy require continuous oxygen saturation monitoring.
2. For initial resuscitation and stabilization use high flow oxygen.
3. Oxygen therapy should be back titrated after initial resuscitation and stabilization to maintain oxygen saturations within the range of 93% - 98% in the acute phase. Oxygen delivery methods:
   • Standard Nasal Prongs provide the lowest % of supplemental oxygen maximum oxygen flow rates are:
     ➢ Under 12months of age 2L/min, delivers maximum FiO₂ 28%
     ➢ Greater that 12months (including adolescents) 3L/min, delivers maximum FiO₂ 32%.
   • Use a partial non-rebreather mask with reservoir (rather than a Hudson mask) when nasal prongs are insufficient or not tolerated.
     ➢ Minimum flow of 6L/min delivers FiO₂ 35%
     ➢ Flow of 10L/min delivers Fi O₂ 65%
   • Units currently using Humidified High Flow Nasal Cannula Oxygen Therapy follow local Protocols.

Asthma Parent Information Pack must be given to parent/carer upon discharge