Dear Colleague,

This letter authorises the extended use of the following guideline until 1st June 2018:

**NHS Grampian Staff Guidelines For The In-Patient Hospital Management Of Acute Asthma In Children In Grampian.**

The guideline will be replaced shortly by a North of Scotland policy which is currently in development. This letter provides permission to continue using the current guideline to a new expiry date of 1st June 2018.

If you have any queries regarding this please do not hesitate to contact the Pharmacy and Medicines Directorate.

Yours sincerely,

Caroline Hind
Deputy Director of Pharmacy and Medicines Directorate
Chair Medicines Guidelines and Policies Group
NHS Grampian Staff Guidelines For The In-Patient Hospital Management Of Acute Asthma In Children In Grampian

Co-ordinators:
Richard Leece, Paediatric Respiratory Clinical Nurse Specialist
Paula Thomson, Pharmacist, RACH

Working Group:
See page (i)

Approver:
Medicine Guidelines and Policies Group

Signature: [Signature]

Identifier:
NHSG/Guid/Asth_RACH/MGPG658

Review Date:
September 2016

Date Approved:
September 2014

Uncontrolled when printed

Version 3

Executive Sign-Off

This document has been endorsed by the Director of Pharmacy and Medicines Management

Signature: [Signature]
NHSG Staff Guidelines For The In-Patient Hospital Management Of Acute Asthma In Children In Grampian

Identifier: NHSG/Guid/Asth_RACH/MGPG658
Replaces: NHSG/Guid/Asth_RACH/MGPG489

Across NHS Boards: Yes
Organisation Wide: 
Directorate: 
Clinical Service: 
Sub Department Area: 

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Across NHS Boards: Yes
Organisation Wide: 
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Sub Department Area: 

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Mustafa Osman
Paula Thomson
Steve Turner

Subject: Guideline
Key word(s): Guideline acute asthma child children kids adolescents exacerbation airway obstruction SIGN 101 BTS salbutamol prednisolone hydrocortisone ipratropium aminophylline magnesium sulphate

Policy application: NHS Grampian

Purpose: To give all staff guidance in the hospital management of acute asthma in children in Grampian.

Responsibilities for implementation:

Organisational: Chief Executive and Management Teams
Corporate: Senior Managers
Departmental: Heads of Service/Clinical Leads
Area: Line Managers
Hospital/Interface services: Assistant General Managers and Group Clinical Directors
Operational Management Unit: Unit Operational Managers

Policy statement: It is the responsibility of all clinical staff in hospital settings within Grampian who treat children with acute asthma to ensure they are following these guidelines. By so doing, the quality of the care given will be maintained and standardised to comply with British Guideline on the Management of Asthma – BTS, SIGN Guidelines (revised edition 2012).

Review: This guideline will be reviewed at least every two years or sooner if current treatment recommendations change.
The Asthma Assessment Score (page 13) must be completed at 0 hours, 1 hour, 2 hours and 4 hours, then 4 hourly. Removal of measuring PEV or FEV₁.

Table adapted from SIGN 101 replaces exacerbation categories in previous document. PEF has been removed from table.

**Treatment of Exacerbation Categories:**

**Asthma Assessment Score (AAS)** now included.

**Moderate:**
Repeat dose of 200 micrograms every 2 minutes until signs of clinical improvement up to a maximum of 1000 micrograms. Now directed to complete going home with asthma plan on discharge.

**Severe and Life Threatening:**
IV hydrocortisone now 6 hourly
Now advised to switch to multi-dosing if responding to 3 combi-nebs.
Ipratropium nebulisers now 6-8 hourly.
<table>
<thead>
<tr>
<th>Date</th>
<th>Changes</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2014</td>
<td><strong>Flow Diagram</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Severe Life Threatening:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advised to switch to multi-dosing after 3 combi-nebs unless clinically indicated.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IV hydrocortisone now 6 hourly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IV Aminophylline now moved to next set following poor response to nebulisers and systemic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>steroids.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Order of the ‘consider’ section changed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Discharge:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient now to receive GP review 48 hours post discharge, appointment to be made prior to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>discharge.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All asthma admissions now to receive secondary care review 2-3 months post discharge.</td>
<td></td>
</tr>
<tr>
<td>November 2011</td>
<td>New guidance on review/follow up of asthma admissions.</td>
<td>Page 7</td>
</tr>
<tr>
<td></td>
<td><strong>Asthma Discharge Stamp</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Now replaces discharge checklist in previous version.</td>
<td>Page 7</td>
</tr>
<tr>
<td></td>
<td><strong>On Discharge</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staff directed to complete ‘going home with asthma’ plan.</td>
<td>Page 8</td>
</tr>
<tr>
<td></td>
<td>Pharmacy label statement changed to ‘if well, 2-10 puffs as required for wheeze’.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Drug Dosages Used In Asthma Protocol</strong></td>
<td>Page 8-10</td>
</tr>
<tr>
<td></td>
<td>The reader now directed to pharmacy monographs for information on IV salbutamol bolus,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IV hydrocortisone and IV Aminophylline.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IV salbutamol infusion information now removed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nebulised ipratropium frequency once the patient is stable now 6-8 hourly.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>amendment</td>
<td>changes</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>May 2014</td>
<td>Parental Information Leaflet About Multi-dosing</td>
<td>Multi-dosing: The reader now advised to follow the multi-dosing technique of 2 puffs every 2 minutes or as per their asthma plan. Multi-dosing of reliever on discharge from hospital: Now advised to follow the 'going home with asthma plan'</td>
</tr>
<tr>
<td>May 2014</td>
<td>Care of Spacers</td>
<td>Reworded advice on cleaning spacers</td>
</tr>
<tr>
<td>May 2014</td>
<td>Multi-dosing of Reliever in an Emergency</td>
<td>PEF now removed. Now advised that reliever should last 3-4 hours. <strong>What should I do if my child does not improve or requires more reliever treatment within 4 hours?</strong> This section has now been reworded</td>
</tr>
<tr>
<td>May 2014</td>
<td>Asthma Assessment Score</td>
<td></td>
</tr>
<tr>
<td>May 2014</td>
<td>Child and Teenage Asthma Action Plan</td>
<td>Replaces previous asthma action plan</td>
</tr>
<tr>
<td>May 2014</td>
<td>Going Home with Wheeze or Asthma Plan</td>
<td></td>
</tr>
<tr>
<td>May 2014</td>
<td>IV Salbutamol Monograph</td>
<td></td>
</tr>
<tr>
<td>May 2014</td>
<td>IV Hydrocortisone sodium succinate Monograph</td>
<td></td>
</tr>
<tr>
<td>May 2014</td>
<td>IV Aminophylline Monograph</td>
<td></td>
</tr>
<tr>
<td>May 2014</td>
<td>Example discharge prescription</td>
<td></td>
</tr>
</tbody>
</table>
# NHS Grampian Staff Guidelines For The In-Patient Hospital Management Of Acute Asthma In Children In Grampian

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<td>22</td>
</tr>
<tr>
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<td>24</td>
</tr>
</tbody>
</table>
This guideline covers the management of a child age 0-16 years presenting to hospitals in Grampian with an exacerbation of asthma.

Assessment of Severity of Exacerbation of Asthma

Any child presenting with an exacerbation of asthma must have the following clinical signs assessed and recorded.

- Pulse rate/heart rate (beats/minute).
- Respiratory rate (breaths/minute) and degree of breathlessness (i.e. too breathless to complete sentences or to feed).
- Use of accessory muscles of respiration.
- Amount of wheezing.
- Degree of agitation and conscious level.
- Oxygen Saturation Level (in air).
- Appendix 1 - Asthma Assessment Score (AAS) must be completed at 0 hours, 1 hour, 2 hours and 4 hours, then 4 hourly.
- Assess and document reason for exacerbation.

*Ideally children should have their oxygen saturations measured in air; however for those children who have obvious respiratory difficulty on admission, oxygen therapy should be commenced immediately and not delayed whilst this reading is obtained.

NB. Clinical signs correlate poorly with severity of airway obstruction. Some children with acute severe asthma do not appear distressed.

Table 1: Adapted from SIGN 101, British Guideline on the Management of Asthma, revised January 2012.

NB – If a child has clinical signs and symptoms across categories always treat according to their more severe features.

<table>
<thead>
<tr>
<th>Life Threatening Asthma Exacerbation</th>
<th>Any one of the following in a child with severe asthma:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silent chest</td>
<td></td>
</tr>
<tr>
<td>Cyanosis</td>
<td></td>
</tr>
<tr>
<td>Poor respiratory effort</td>
<td></td>
</tr>
<tr>
<td>Hypotension</td>
<td></td>
</tr>
<tr>
<td>Exhaustion</td>
<td></td>
</tr>
<tr>
<td>Confusion</td>
<td></td>
</tr>
<tr>
<td>SpO₂ &lt; 92%</td>
<td></td>
</tr>
<tr>
<td>Severe Asthma Exacerbation</td>
<td>Can’t complete sentences in one breath or too breathless to talk or feed</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>SpO$_2$ &lt; 92%</td>
</tr>
<tr>
<td></td>
<td>Heart Rate &gt; 140/min in children aged 2-5 years</td>
</tr>
<tr>
<td></td>
<td>&gt; 125/min in children aged &gt; 5 years</td>
</tr>
<tr>
<td></td>
<td>Respiratory Rate &gt; 40/min in children aged 2-5 years</td>
</tr>
<tr>
<td></td>
<td>&gt; 30/min in children aged &gt; 5 years</td>
</tr>
<tr>
<td>Moderate Asthma Exacerbation</td>
<td>Able to talk in sentences</td>
</tr>
<tr>
<td></td>
<td>SpO$_2$ ≥ 92%</td>
</tr>
<tr>
<td></td>
<td>Heart Rate ≤ 140/min in children aged 2-5 years</td>
</tr>
<tr>
<td></td>
<td>≤ 125/min in children aged &gt; 5 years</td>
</tr>
<tr>
<td></td>
<td>Respiratory Rate ≤40/min in children aged 2-5 years</td>
</tr>
<tr>
<td></td>
<td>≤30/min in children aged &gt; 5 years</td>
</tr>
</tbody>
</table>

**Treatment Protocols For Each Level Of Severity**

**Mild**

- Salbutamol 200-400micrograms via spacer +/- facemask 4-6 hourly as required.
- Each puff must be inhaled separately, do not put multiple puffs into a spacer at the same time.
- Oral prednisolone 2mg/kg (max 40mg) once daily.
- Maintenance steroid inhalers to be prescribed on admission and commenced when patient is able to use them.

Reassess within 20 minutes.

Record respiratory rate, heart rate, oxygen saturations, and AAS score.

*If responding*

- Discharge when stable on 4 hourly treatment.
- Continue oral prednisolone daily for 3 days.

*If not responding*

- Transfer to moderate treatment; see flow chart (page 6).

**Moderate**

- Salbutamol 200micrograms via spacer device +/- face mask.
- Repeat dose of 200micrograms every 2 minutes until signs of clinical improvement up to a maximum of 1000micrograms.
- Each puff must be inhaled separately, do not put multiple puffs into a spacer at the same time.
- Oral prednisolone 2mg/kg (max 40mg) once daily.
- Maintenance steroid inhalers to be prescribed on admission and commenced when patient is able to use them.
Reassess within 20 minutes.

Record respiratory rate, heart rate, oxygen saturations and AAS score.

If responding

- Continue 1-4 hourly multi-dosing of salbutamol at whatever dosage achieved response.
- Discharge when stable on 4 hourly treatment.
- Continue multi-dosing for 3 days, complete ‘going home with wheeze or asthma plan’ and then 200micrograms as required.
- Continue oral prednisolone daily for 3 days.

If not responding

- Transfer to severe and life threatening treatment, see flow chart (page 6.)

Severe and Life Threatening

- Oxygen to maintain SpO2 ≥ 92%.
- Nebulised salbutamol (2.5mg<5 years and 5mg≥5 years) plus ipratropium bromide 250micrograms.
- Oral prednisolone 2mg/kg (max 40mg) once daily or IV hydrocortisone 4mg/kg 6 hourly (if unable to tolerate oral prednisolone).
- Maintenance steroid inhalers to be prescribed on admission and commenced when patient is able to use them.

Reassess within 20 minutes.

Record respiratory rate, heart rate, oxygen saturations and AAS.

- Repeat nebulised salbutamol and ipratropium up to every 20-30 minutes according to response. After the administration of 3 combination nebulisers (salbutamol plus ipratropium) revert to pMDI/spacer unless clinically indicated – see AAS (ipratropium should only be given this frequently for the first 2 hours and should then be given every 6-8 hours if needed).

If responding

- Discharge when stable on 4 hourly treatment.
- Continue multi-dosing for 3 days and then give salbutamol 200micrograms as required. See Appendix 5 - Going Home with Wheeze or Asthma Plan.
- Continue oral prednisolone daily for 3 days.

If not responding

- IV aminophylline 5mg/kg over 20 minutes (omit if on oral theophylline) then continuous infusion at 1mg/kg/hour.
- Discuss with senior medical paediatrician.
Consider the following treatments/investigations:

- Magnesium sulphate IV 40mg/kg (max 2g) over 20 minutes.
- Capillary blood gas.
- Chest X-Ray – discuss CXR results with senior medical paediatrician before considering antibiotic therapy, not all changes require antibiotics.
- High Dependency Unit care.
- Bolus IV salbutamol for children over 2 years 15micrograms/kg, children under 2 years 5micrograms/kg (maximum 250micrograms) over 10 minutes.

References

Flow Diagram To Illustrate Management Of A Child With Acute Asthma

Child with Acute Asthma

Assess severity (see page 2)

Mild
Salbutamol MDI 200-400 micrograms via spacer 4-6 hourly
Oral prednisolone 2mg/kg (max40mg) daily

Moderate
Multi dose with spacer Salbutamol MDI 200 -1000 micrograms
Oral prednisolone 2mg/kg (max40mg) daily
1-4 hourly multi doses at dosage of salbutamol which achieved response

Severe or Life Threatening
Oxygen to maintain SpO₂ ≥ 92%
Give nebulised salbutamol (2.5mg<5years, 5mg>5years) plus ipratropium bromide 250micrograms together. Switch to multidosing after 3 combination nebulisers unless clinically indicated.
If not already given, give oral prednisolone 2mg/kg (max 40mg daily) if able to tolerate or hydrocortisone 4mg/kg IV 6hourly if not
Call senior clinician.
IV aminophylline 5mg/kg over 20 minutes (omit if on oral theophyllines) then 1mg/kg/hour infusion Continue salbutamol and ipratropium nebs every 20-30 minutes

Consider
- Magnesium sulphate IV 40mg/kg (max 2g) over 20 minutes
- Capillary blood gas
- CXR
- HDU care
- Bolus IV salbutamol 15micrograms/kg (max 250 micrograms) over 10 minutes

Discharge
- 4-hourly salbutamol at whatever dose achieved response for 3 days
- 3 days oral prednisolone
- Asthma management plan
- GP review 48hrs post discharge, to be arranged prior to patient going home
- Hospital Respiratory Clinic 2-3 months for all asthma admissions

Salbutamol and ipratropium nebulisers every 20minutes – 2 hours plus IV fluids. Monitor U&E’s

If stable for 8 hours move to salbutamol MDI multidosing 1000 micrograms 1- 2hourly for 8 hours then 4hourly for 8hours.

Improving
Worsening
Continue to next stage

Call Anaesthetist
Consider PICU transfer

* Reduce ipratropium nebulisers to 6-8 hourly or as required after the initial 2 hours of treatment
Follow Up

All patients admitted to RACH with an exacerbation of asthma should be reviewed by their local primary care team (either GP or practice asthma nurse) within 48 hours of discharge. If the patient is discharged on a Thursday/Friday then arrange the review for the following Monday.

This follow up should be arranged prior to discharge. The respiratory CNS will arrange this and inform the patient/family. At weekends or when the respiratory CNS is on leave, the ward team will arrange this.

A respiratory clinic appointment for 2-3 months time must be made for:

- All children admitted to RACH with an exacerbation of asthma.
- All children who have attended an emergency department twice in 12 months with an exacerbation of asthma.

Asthma Discharge Stamp

On discharge please use the asthma discharge stamp (see below) in the patient’s records and complete as appropriate. There is a stamp at the nurse’s station on the paediatric assessment unit and the medical ward.

### INPATIENT – RESPIRATORY PATIENT – FOLLOW UP

<table>
<thead>
<tr>
<th>Primary Care: YES/NO</th>
<th>Respiratory Clinic: YES/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review Period:</td>
<td>Review Period:</td>
</tr>
<tr>
<td></td>
<td>Respiratory Consultant:</td>
</tr>
<tr>
<td></td>
<td>RJB/SWT/MO</td>
</tr>
<tr>
<td>Advised GP/asthma nurse review within 48 hours of discharge: YES/NO</td>
<td></td>
</tr>
<tr>
<td>Inhaler technique checked: YES/NO</td>
<td></td>
</tr>
<tr>
<td>Checked by:...............</td>
<td>Device:____________________</td>
</tr>
<tr>
<td>Asthma Advice Sheets Given: YES/NO</td>
<td></td>
</tr>
<tr>
<td>(record which advice sheets given)</td>
<td></td>
</tr>
<tr>
<td>1.__________________________</td>
<td></td>
</tr>
<tr>
<td>2.__________________________</td>
<td></td>
</tr>
<tr>
<td>3.__________________________</td>
<td></td>
</tr>
<tr>
<td>Preventer Medications Reviewed: YES/NO</td>
<td></td>
</tr>
<tr>
<td>Discharged home on:</td>
<td></td>
</tr>
<tr>
<td>1.__________________________</td>
<td></td>
</tr>
<tr>
<td>2.__________________________</td>
<td></td>
</tr>
<tr>
<td>3.__________________________</td>
<td></td>
</tr>
<tr>
<td>Store of oral steroids for future exacerbations given: YES/NO</td>
<td></td>
</tr>
<tr>
<td>Respiratory nurse informed of admission: YES/NO</td>
<td></td>
</tr>
</tbody>
</table>
Prescribing Multi-dose Treatment Via Spacer

There is a significant body of evidence demonstrating that effective doses of salbutamol delivered via a metered dose inhaler (pMDI) and spacer device is equivalent to nebulised therapy. Spacer devices produce fewer side effects and faster rise in oxygen saturation.

How to prescribe on drug kardex/Prescription and Administration Record

<table>
<thead>
<tr>
<th>Drug</th>
<th>Salbutamol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td>200 – 1000micrograms</td>
</tr>
<tr>
<td>Route</td>
<td>INHAL</td>
</tr>
<tr>
<td>Frequency</td>
<td>See flow chart – page 6</td>
</tr>
<tr>
<td>Comments</td>
<td>Spacer multi-dose</td>
</tr>
</tbody>
</table>

It is acceptable to prescribe a range of dose according to the child’s response to treatment.

On Discharge

Children should be prescribed 4-6 hourly multidose bronchodilator for 3 days. The standard medication dose should also be prescribed for them to revert to after 3 days. Appendix 5 - Going Home with Wheeze or Asthma Plan must be completed and discussed with the patient/family prior to discharge. Pharmacy will label the salbutamol inhaler with the following statement:

“Up to 10 puffs to be inhaled every 4-6 hours for 3 days then, if well, 2 puffs when required for wheeze”

See example of discharge prescription in Appendix 9 - Example Discharge Prescription.

Drug Dosages Used In Asthma Protocol

Salbutamol

Inhaled

*Via spacer device*

200 – 1000micrograms up to every 20-30 minutes via a spacer depending on severity of exacerbation of asthma and response to treatment. See flow chart of management of acute asthma (page 6).

Each actuation of the multi dose inhaler (MDI) is 100micrograms. Each actuation should be loaded into the spacer device and the child should take 5 breaths.

*Via nebuliser*

Under 5 years - 2.5mg up to every 20 minutes depending on response.
Over 5 years – 5mg up to every 20 minutes depending on response. Can be mixed with ipratropium bromide in same nebuliser.

**Intra-venous bolus**

See Appendix 6 - IV Salbutamol Monograph - For Asthma Only.

**Ipratropium bromide**

*Via nebuliser*

250micrograms – all ages up to every 20 minutes for first 2 hours, reducing frequency to 6-8 hourly once stability achieved. Can be mixed with salbutamol in same nebuliser.

**Prednisolone**

2mg/kg (max 40mg) daily for 3 days. Course may be prolonged to 5 days if recovery not complete. Soluble or non soluble tablets may be used depending on child’s ability to swallow. Providing oral medication is tolerated there is no advantage to give IV hydrocortisone in place of prednisolone.

Approximate age guide under 2 years 10mg, 2-5 years 20mg and > 5 years 30-40mgs.

If child is on maintenance steroid tablets, top up dose to 2mg/kg up to max of 60mg.

**Hydrocortisone sodium succinate**

See Appendix 7 - IV Hydrocortisone Sodium Succinate Monograph - For Asthma Only.

**Aminophylline**

See Appendix 8 - IV Aminophylline Monograph.

**Magnesium sulphate**

40mg/kg/day (maximum 2g) given over 20 minutes intravenously. Dilute to a maximum concentration of 10% (100mg in 1mL). Suitable diluents are glucose 5% or sodium chloride 0.9%.

**Spacer Devices - Use And Care Of At Home And In Hospital**

Spacer devices are plastic chambers which act as a reservoir for the aerosol cloud of medication. They facilitate administration of inhaled medication without having to co-ordinate breath holding and inhaler activation.
Use the spacer device that is designed to be used with the inhaler prescribed. Clenil modulite® (beclometasone) inhalers are unlicensed for use with AeroChamber® however the authors of this policy believe the benefits of using a spacer device that the child will comply with outweigh the risks of it being unlicensed. Spacers can be used with a face mask until the child is able to form a seal around the mouthpiece and click valve – usually they will require a face mask until at least 3 years of age.

**Volumatic**® (750mL) – (over 2 years) all Allen and Hanbury inhalers and Clenil modulite® (beclomethasone).

**AeroChamber® Plus** – can be used with products from different manufacturers.

Each product is packaged with its own information leaflet. Please read this in addition to these guidelines.

**Technique without mask**

1. Remove mouthpiece cover.
2. Shake multi dose inhaler (MDI).
3. Fit into flat end of chamber.
4. Seal lips and teeth around mouthpiece by gently placing fingers of one hand around child’s lips if necessary.
5. Press down canister.
6. Breathe in and out slowly and deeply for approximately 5 -10 breaths. A click should be heard if using a Volumatic® to illustrate that the technique is good and that the valve is being opened with breaths. There is no click with the AeroChamber® Plus but the valve should be seen to move.
7. If a second dose is required repeat steps 2-6.
8. If it is a steroid inhaler that is being used ensure child rinses mouth or drinks some water to reduce local effects of steroids.

**Technique with mask**

1. Remove mouthpiece cover.
2. Shake MDI.
3. Fit into flat end chamber.
4. Tilt device to 45 so that the valve is opened with Volumatic®.
5. Place mask over the child’s nose and mouth (do not press hard).
6. Press canister down.
7. Allow child to breathe in and out slowly for 5-10 breaths (approx. 30 seconds).
8. If a second dose is required repeat steps 2-7.
9. If it is a steroid inhaler that is being used ensure child rinses mouth or drinks some water and also has face wiped to reduce local effects of steroids.

**Care of spacers**

SIGN advice is that these should be washed monthly (not weekly as manufacturer leaflet says) in soapy water. Rinse the soap off the mask/mouth
piece only (leave on the chamber) and let it air dry. Do not dry with a cloth as this increases static, which reduces drug delivery. Spacers should be changed at least every 12 months. (Some packaging recommends replacement after 6 months. Provided they are still working well, this is unnecessary).

**Parental Information Leaflet About Multi-Dosing**

**Why use a spacer device?**

A spacer device is a much more reliable way to deliver inhaled medication to children as it does not require co-ordination of hands and breathing as traditional inhalers do. There have been a large number of studies which show that spacer devices deliver just as an effective dose of medication as nebulisers do with fewer side effects. (Nebulisers are when the medication is given as a liquid through a face mask with oxygen or air to make it bubble and mist). Treating with spacers early may prevent the need for some children to come into hospital.

**‘Preventers’**

Many children with asthma will have regular medicines to take through the spacer device, ‘preventers’. This medicine if prescribed must always be taken and only reduced or stopped on consultation with your doctor. This is important because even though your child may appear well it is very likely to be the ‘preventer’ medicine that is keeping them well. If you stop this it may mean their asthma symptoms will get worse.

N.B. After using a preventer inhaler your child should rinse out mouth or drink some water. If a mask has been used with a spacer they should also have their face wiped to ensure that traces of the medicine are removed.

**‘Relievers’**

If your child has asthma they will always have a reliever inhaler, this is usually blue in colour. This should be taken if your child is experiencing asthma symptoms. The usual dose is one or two puffs, the inhaler will be labelled to tell you the dose. The reliever inhaler can also be used prior to exercise or going out in the cold.

**Multi-dosing**

This is inhaling 2 puffs of reliever every 2 minutes up to a maximum of 10 puffs via the spacer device or as per instructions on your asthma plan. The number of puffs your child requires will depend on their response to the reliever. Each puff is given separately into their spacer and inhaled with 5-10 breaths. Shake the inhaler in between each puff. This may be prescribed on discharge from hospital after an acute asthma attack or as an emergency treatment for an acute attack.

**Multi-dosing of reliever on discharge from hospital**

Follow Appendix 5 - Going Home with Wheeze or Asthma Plan then revert to usual dose if well.
Multi-dosing of reliever in an Emergency

How do I know if my child’s asthma is getting worse?

They are experiencing symptoms of cough wheeze or shortness of breath and their normal reliever dose is not lasting 3-4 hours. They may also be showing any of the following signs:

- Breathing faster than normal.
- Cannot talk or feed properly due to shortness of breath.
- Change in their normal colour.

If this is happening you can use the spacer device and the ‘reliever’ medicine (blue inhaler) to give an emergency rescue dose.

Emergency rescue treatment

Give 2 puffs via the spacer (1 puff at a time, at least 5 breaths for each puff) every 2 minutes in the usual way until you have delivered 10 puffs.

How long should this emergency rescue dose last?

It should last for 3-4 hours.

What should I do if my child does not improve or requires more reliever treatment before 3 hours since their last dose?

- If your child does not improve within 5 minutes after 10 puffs call 999 and request an ambulance.
- Stay calm. Keep your child sitting up straight. Talk to your child in a soothing way and try to relax them.
- You can repeat the 10 puffs every few minutes until help arrives.
- If your child has improved after 10 puffs but this reliever dose is not lasting 3-4 hours seek medical help and advice from your GP in the first instance or Accident and Emergency if this is not possible.
- Repeat the emergency dose of the reliever whilst you are getting your child to the doctors or hospital.
Appendix 1 - Asthma Assessment Score (AAS)

The asthma assessment score is to be completed at 0, 1, 2 and 4 hours, then 4 hourly and documented in the notes. The asthma assessment score is not used to categorise the severity of an acute exacerbation but a guide as to whether a patient’s asthma symptoms are improving/deteriorating. The AAS is scored by attributing scores of 0-3 for each component. The total score is then calculated by adding the sum of each component. The total score should be recorded on the patient’s PEWS chart (Paediatric Early warning Score).

<table>
<thead>
<tr>
<th>Increased Work of Breathing</th>
<th>Wheeze</th>
<th>Heart Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0 None</td>
<td>0 &lt; 80/min</td>
</tr>
<tr>
<td>+ Soft tissue retraction only</td>
<td>1 Expiratory</td>
<td>1 81-110/min</td>
</tr>
<tr>
<td>++ Mild retraction of lower ribs</td>
<td>2 Expiratory and inspiratory</td>
<td>2 111-140/min</td>
</tr>
<tr>
<td>+++ Marked retraction of lower ribs</td>
<td>3 Heard without stethoscope</td>
<td>3 &gt;140/min</td>
</tr>
</tbody>
</table>
### Appendix 2 - Child Asthma Plan

**Child Asthma Plan**

**Well Level**
- No day or night time cough or wheeze.
- Child’s best peak flow.

<table>
<thead>
<tr>
<th>What medicines do I give?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventer</td>
</tr>
<tr>
<td>Reliever (usually blue)</td>
</tr>
</tbody>
</table>

- Give this every day. Ask your doctor/nurse - when can the medicine be decreased?
- Give this before exercise or activity AND as soon as any asthma symptoms appear.
- Other treatments

**Early Signs Level**
- Give Reliever (usually blue): 5 puffs every 3 to 4 hours.
- Other asthma medicines: Give as normal.

**Asthma Attack Level**
- Give Reliever (usually blue): 10 puffs every 3 to 4 hours (called multi-dosing).
- Other asthma medicines: Give as normal if the asthma is getting worse and your child needs to start steroid tablets.

**Emergency**
- Distressed, gasping for breath, finding it hard to speak, skin pale or lips blue, ‘hot with it.’

<table>
<thead>
<tr>
<th>What do I do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dial 999 for an ambulance.</td>
</tr>
<tr>
<td>While you are waiting for the ambulance:</td>
</tr>
<tr>
<td>- Stay calm. Keep your child sitting up straight. Talk to your child in a soothing way.</td>
</tr>
<tr>
<td>- Give your child 10 puffs of their reliever using a spacer (1 puff at a time - your child should take 6 breaths for each puff).</td>
</tr>
<tr>
<td>- Keep giving the reliever every few minutes until the ambulance arrives.</td>
</tr>
</tbody>
</table>

**Please Note:**

---

**NHSG Staff Guidelines For The In-Patient Hospital Management Of Acute Asthma In Children In Grampian – Version 3**
Appendix 3 - Teenage Asthma Plan

### Teenage Asthma Plan

<table>
<thead>
<tr>
<th>Name:</th>
<th>[HN:]</th>
<th>[CHI:]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given: / /</td>
<td>Expires: / /</td>
<td>Doctor/nurse signature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teenage signature</td>
</tr>
</tbody>
</table>

#### Well Level
- No day or night time cough or wheeze.

**My best peak flow:**

#### Early Signs Level
- Give Reliever (usually blue)
  - How much?
  - Take 5 puffs every 3 to 4 hours

**Other asthma medicines:** Take as normal

**Peak flow:** [75% of best]

#### Asthma Attack Level
- Give Reliever (usually blue)
  - How much?
  - Take 10 puffs every 3 to 4 hours (called multi-dosing)

**Other asthma medicines:** Take as normal

**Steroid tablets:**
- Take ___ tablets ___ mg once a day for ___ days

As soon as you start giving steroids, get an emergency doctor review.

**Peak flow:** [60% of best]

#### Emergency
- Distressed, gasping for breath, finding it hard to speak, skin pale or lips blue, "not with it"

**Dial 999 for an ambulance**

**While you are waiting for the ambulance**
- Stay calm. Keep sitting up straight.
- Take 10 puffs of your reliever using a spacer (1 puff at a time - you should take 5 breaths for each puff).
- Keep taking your reliever every few minutes until the ambulance arrives.

### Extra advice
- Can still go to school/college at this stage.
- Avoid colds and viruses can set off asthma attacks.

**Consultant:**

---

*I. M. Love & P. Hedges, Department of Respiratory Medicine, RHSC, Yorkhill/Stobswell G3 ISJ, January 2005
Based on Child Asthma Plan, Asthma & Respiratory Foundation of New Zealand
Updated Oct 2005 / March 2012*
Appendix 4 - Checkpoints For Inhaler Technique

<table>
<thead>
<tr>
<th>CHECKPOINTS</th>
<th>METERED DOSE INHALERS</th>
<th>TURBOHALER</th>
<th>BREATH ACTUATED INHALERS (Easibreathe®/Autohaler)</th>
<th>ACCUHALER®/DISKHALER®</th>
<th>SPACER without MASK</th>
<th>SPACER with MASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remove dust cap</td>
<td>For disk inhaler only</td>
<td>Fit spacer together</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Shake inhaler</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hold inhaler upright/level as appropriate</td>
<td></td>
<td></td>
<td>Insert inhaler into spacer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Load inhaler with dose</td>
<td></td>
<td></td>
<td>Load one puff into spacer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Breathe out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Place mouthpiece in mouth and close lips around it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Just after starting to breathe in through mouth press down top of inhaler and continue to breathe in slowly and deeply</td>
<td>No pressing down on top of inhaler</td>
<td>Breathe in and out to click valve 5 times</td>
<td></td>
<td></td>
<td>Allow child to breathe for 5-10 breaths (15-30 seconds)-see package insert</td>
<td></td>
</tr>
<tr>
<td>8. Hold breath for about 10 seconds and breathe out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. If a second dose is prescribed wait a minute then repeat steps 1 to 8.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CI RCLE SPACER USED: Volumatic® AeroChamber® Plus

Does patient require counselling by pharmacist/asthma nurse? YES/NO
Counselling by:........................................Designation:.................................

Standards for testing inhaler technique
1. All nursing staff assessing inhaler technique should be familiar with each inhaler procedure.
2. Before discharge, all patients on inhalers should have their technique assessed by a member of nursing staff using this checklist. It should then be signed and filed in the patient’s nursing Kardex.
3. If a patient fails to use the inhaler device appropriately then the pharmacist or asthma nurse should be contacted to counsel the patient.
4. Inhaler technique should be assessed at EVERY hospital admission for asthma.

March 2011, Pharmacy, RACH
Appendix 5 - Going Home with Wheeze or Asthma Plan

1st 24 Hours After Discharge

Reliever:
**Give 10 puffs every 3-4 hours**

Preventer:

Steroid Tablets:

What if my child needs their reliever more often?
- Give the reliever as often as you think it’s needed
- AND get urgent medical advice

What do I do if my child is sleeping?
- Do not wake them. If your child does wake during the night give the reliever then.

Days 2-3

If improving:

Reliever: **Cut to 2-5 puffs every 4-6 hours**

Preventer: **Give agreed dose**

Steroid Tablets:

How will I know if my child is improving?
- Breathing will be quieter, slower & easier
- Less cough & wheeze
- Eating, drinking & talking better

Can I cut down the number of puffs of the reliever?
- Yes, as your child improves cut down the number of puffs and then increase the time between doses

If not getting better:

Reliever: **Keep giving 10 puffs every 3-4 hours**

Preventer: **Give agreed dose**

Steroid Tablets:

How will I know if my child is getting worse?
- Faster breathing or too breathless to walk or play
- Cannot talk or feed easily
- Skin colour may become pale or grey

What should I do if my child does not seem to be getting better?
- Get medical advice
- In the meantime continue to giving the reliever as often as you think is needed

Day 4

If fully recovered:

Reliever: **Give 2 puffs as required**

Preventer: **Give agreed dose**

Steroids Tablets:

How do I know if my child is fully recovered?
- Child will have no asthma or wheeze symptoms

If not getting better:

Reliever: **Keep giving 10 puffs every 3-4 hours**

Preventer: **Give agreed dose**

Steroid Tablets:

What do I do if my child is not better by day 4?
- Get medical advice
- In the meantime continue to giving the reliever as often as you think is needed
Appendix 6 - IV Salbutamol Monograph – For Asthma Only

Action and Uses:

Salbutamol is a short acting beta-2-agonist, which is used as a rapid acting bronchodilator in asthma. The injection should be used in the treatment of severe asthma in HDU. IV salbutamol infusions are only to be administered in PICU settings and are therefore not recommended for use within RACH.

Dose:

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE</th>
<th>FREQUENCY</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 month – 2 years</td>
<td>5 microgram/kg</td>
<td>single dose</td>
<td>Slow IV bolus over 5 minutes</td>
</tr>
<tr>
<td>2 years – 18 years</td>
<td>15micrograms/kg (max 250micrograms)</td>
<td>single dose</td>
<td>Slow IV bolus over 5 minutes</td>
</tr>
</tbody>
</table>

- IV Salbutamol can be used at different doses for the treatment of hyperkalaemia – see BNFC
- Salbutamol should not be injected undiluted unless it is through a Central Venous Catheter – see Administration section
- Salbutamol should not be given if the patient is already on beta-blockers, e.g. propranolol

Preparations

500micrograms/1mL injection, available as 1mL ampoules.

Compatibilities:

Glucose 5%, sodium chloride 0.9%, water for injection.

Administration:

For intravenous injection dilute to a concentration of 50micrograms/mL with sodium chloride 0.9%, glucose 5% or water for injection.

Monitoring/Side Effects:

Continuous ECG monitoring must be in place due to potential electrolyte disturbances causing arrhythmias. Serum potassium and blood glucose should be measured also.

Potentially serious hypokalaemia may result from β2-agonist therapy, mainly from parenteral and nebulised administration. This effect may be potentiated by hypoxia and by concomitant treatment with xanthine derivatives (aminophylline, theophylline), steroids and diuretics.
Lactic acidosis has been reported. This may lead to dyspnoea and compensatory hyperventilation, which could be misinterpreted as a sign of asthma treatment failure and lead to inappropriate intensification of short-acting beta-agonist treatment. It is therefore recommended that patients are monitored for the development of elevated serum lactate and consequent metabolic acidosis in this setting.

Side effects include fine tremor, nervous tension, headache, peripheral vasodilatation and palpitation, hypokalaemia, tachycardia, muscle cramps, hyperactivity, nausea and vomiting.

Example:

A 12 year old child, weighing 39kg, requires a 250microgram dose. Remove 0.5mL (250micrograms) from a 500microgram/1mL ampoule and make up to 5mL with sodium chloride 0.9%. Give by slow IV injection over 5 minutes.
Appendix 7 - IV Hydrocortisone Sodium Succinate Monograph - For Asthma Only

Action and Uses:

Intravenous hydrocortisone is used when it is not possible to administer oral prednisolone, e.g. due to vomiting or for a severe asthma exacerbation. IV hydrocortisone is not superior to oral prednisolone and should only be used when oral prednisolone is not tolerated by the patient.

Hydrocortisone is a corticosteroid and is used to reduce inflammation. For other indications see BNFC.

Dose:

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE</th>
<th>FREQUENCY</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ages</td>
<td>4mg/kg</td>
<td>Every 6 hours</td>
<td>Give by slow IV injection over 2-3 minutes</td>
</tr>
<tr>
<td>(max 100mg)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use the following doses for age if the patient's weight is not available:

| Under 2 years | 25mg     | Every 6 hours | Give by slow IV injection over 2-3 minutes    |
| 2-5 years     | 50mg     | Every 6 hours | Give by slow IV injection over 2-3 minutes    |
| 5-18 years    | 100mg    | Every 6 hours | Give by slow IV injection over 2-3 minutes    |

Use with caution in diabetes mellitus (including family history), epilepsy, previous psychiatric symptoms, history of tuberculosis, growth restriction, ulcerative colitis. Unless already immune, avoid contact with children with chickenpox and measles. It is contra-indicated in patients with systemic infections.

(Patients should carry a steroid card for 3 months after their last injection).

Reconstitution Guidelines:

<table>
<thead>
<tr>
<th>VIAL SIZE</th>
<th>DISPLACEMENT VALUE</th>
<th>RECONSTITUTE WITH</th>
<th>FINAL VOLUME</th>
<th>COMMENTS</th>
<th>MANUFACTURER</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 mg</td>
<td>0.1mL</td>
<td>1.9mL WFI</td>
<td>2mL</td>
<td>Use reconstituted solutions immediately</td>
<td>Solu-cortef® PHARMACIA</td>
</tr>
</tbody>
</table>

Note: WFI = water for injection

Compatibilities:

Sodium chloride 0.9%, Glucose 5%, Water for Injection.
Administration:

Give as an IV bolus injection over 2 to 3 minutes.

Monitoring/Side Effects:

Although adverse effects associated with high dose, short-term corticoid therapy are uncommon, peptic ulceration may occur. Prophylactic antacid therapy may be indicated.

The possibility of side-effects attributable to corticosteroid therapy should be recognised. For a full list of precautions, side effects and drug interactions consult the Summary of Product Characteristics.

- Anaphylactic reaction, e.g. bronchospasm, hypopigmentation or hyperpigmentation, subcutaneous and cutaneous atrophy, sterile abscess, laryngeal oedema and urticaria.
- Suppression of the hypothalamo-pituitary-adrenal axis; growth suppression in infancy, childhood and adolescence; Cushingoid facies, hirsutism, weight gain, impaired carbohydrate tolerance with increased requirement for antidiabetic therapy.
- Increased appetite.
- A wide range of psychiatric reactions, confusion, irritability, delusion and suicidal thoughts can occur.
- Increased intra-ocular pressure, gastro-intestinal and musculoskeletal side effects can also occur.

Example:

For a 5 year old child, add 1.9mL of water for injection to a 100mg vial and then draw back 1mL (50mg). Dilute this further up to 5mL with sodium chloride 0.9% to allow easier administration.
Appendix 8 - IV Aminophylline Monograph

Action and Uses:
Theophylline is given by injection as aminophylline, a mixture of theophylline and ethylenediamine, which is 20 times more soluble than theophylline alone. It is a xanthine used as a bronchodilator in the treatment of severe acute asthma.

Dose:
To avoid excessive dosage in obese children, dose should be calculated on the basis of ideal weight for height.

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE</th>
<th>FREQUENCY</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 1 month-18 years</td>
<td>5mg/kg (max 500mg)</td>
<td>Intravenous infusion over at least 20 minutes then by continuous infusion</td>
<td>Loading dose Do not exceed an infusion rate of 25mg per minute Patients taking oral theophylline on admission should not receive a loading dose</td>
</tr>
</tbody>
</table>

CONTINUOUS INFUSION (start after loading dose)

<table>
<thead>
<tr>
<th>Child 1 month–12 years</th>
<th>1mg/kg/hour</th>
<th>Continuous Infusion</th>
<th>Adjust dose according to plasma-theophylline concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 12-18 years</td>
<td>800 micrograms/kg/hour</td>
<td>Continuous Infusion</td>
<td></td>
</tr>
</tbody>
</table>

- Not licensed in children under 6 months of age.
- Reduce dose in hepatic impairment.
- Do not give if allergic to ethylenediamine.
- Smokers may need a higher dose.

Preparation:
Available as ampoules containing 250mg/10mL which is 25mg/1mL.

Compatibilitys:
Glucose 5% or sodium chloride 0.9%.

Incompatibilities:
Aminophylline injection is not stable in solutions having a pH of substantially less than 8. However, the drug appears to be relatively stable in large volume parenteral solutions over a wide pH range (3.5-8.6) if aminophylline concentrations do not exceed 40mg per mL. The activity of alkali-sensitive drugs will be reduced by aminophylline, these drugs should not be added to IV fluids containing aminophylline.
Administration:

Remove 20mL from a 500mL infusion bag of either sodium chloride 0.9% or glucose 5%. Add 500mg of aminophylline (2x10mL ampoules) to the infusion bag to make a 1mg/1mL solution.

The loading dose (5mg/kg, max 500mg) should be infused at the appropriate rate over 20 minutes. The rate of the infusion must then be reduced for the continuous infusion at the appropriate dose for the child’s age. Use ideal body weight to calculate the doses if the child is obese.

Monitoring/Side Effects:

Levels should be taken 24 hours after the start of the infusion.
A plasma theophylline concentration of 10 – 20mg/litre is required for adequate bronchodilation but concentrations of 5-15mg/litre may be effective.
Monitor potassium levels, heart rate and blood pressure. Continuous ECG monitoring is required due to potential to cause arrhythmias.
Hypotension, arrhythmias and convulsions may follow intravenous injection, particularly if the injection is too rapid, and sudden deaths have been reported.
Side effects such as arrhythmias and convulsions can precede other signs of toxicity.

Side effects include: nausea, vomiting, gastric irritation, diarrhoea, palpitations, tachycardia, arrhythmia, headache, CNS stimulation, insomnia, convulsions.

Example:

An 18.3kg 5 year old child who has never had theophylline requires IV aminophylline.
Remove 20mL from a 500mL bag of either sodium chloride 0.9% or glucose 5%.
Add 500mg of aminophylline (2x10mL ampoules) to the bag to give a 1mg/1mL solution.

A loading dose of 90mg (90mL) should be infused over 20 minutes at a rate of 270mL/hour with appropriate assessment of the patient’s response. The continuous infusion should then be started using the same 1mg/1mL infusion bag at a reduced rate of 18mL/hour.
Appendix 9 - Example Discharge Prescription

NHS Grampian

PATIENT DISCHARGE INFORMATION

Admission Date: 23/07/2013  Discharge Date: 25/07/2013 11:00 AM

Name: Ben Ten  D.O.B.: 01/01/1999
Address: 38 Beech Hill Gardens  Aberdeen
Postcode: A815 7OH

HOSPITAL  Royal Aberdeen Childrens Hospital

THE PEOPLE WHO WERE IN CHARGE OF YOUR CARE

Consultant:  Ward: RACH - Paediatric Assessment Unit
Tel: 

This document is for you to take home and keep.
It contains important information about your treatment and any medicines you may have been given. If you have any questions once you have left the ward, please telephone the number above.

This form must be completed / signed off by medical staff.

WHY YOU WERE IN HOSPITAL

Wheeze

Other Problems:  Procedure / Treatment:

Diagnosis:

WHAT HAPPENS NEXT?

Name of Prescriber: ADMIN_ADMIN  Dispensed By:  Drug / Medicine Sensitivity:
Date: 06/02/2014 1:35:43 PM  Date:

Bleep / Contact No:  Ward Pharmacist: Paula Thomson  Checked By:

© NHS Grampian  PHARMACY DISCHARGE SUMMARY  Date Printed: 06/02/2014 1:52:24 PM  Page 1 of 2
### Changes to Admission Medication

#### About the Medicines That You Have Been Given

<table>
<thead>
<tr>
<th>Name Of Medicine</th>
<th>Dose</th>
<th>Unit</th>
<th>How to take it</th>
<th>Frequency</th>
<th>What is it for?</th>
<th>How long to take</th>
<th>Hospital Pharmacy to dispense?</th>
<th>Pharmacy use only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salbutamol 100 microgram MDI</td>
<td>10</td>
<td>puff(s)</td>
<td>Inhaler</td>
<td>every 3 to 4 hours for 1 day</td>
<td>Wheeze, use via spacer device</td>
<td>Reduce to 2-5 puffs every 4 to 6 hours or days 0-3</td>
<td>Y</td>
<td>From day 4 give 2 puffs as required for wheeze</td>
</tr>
<tr>
<td>Bedmetasone (CLENIL) 100 micrograms MDI</td>
<td>2</td>
<td>puff(s)</td>
<td>Inhaler</td>
<td>Morning and Night</td>
<td>Asthma</td>
<td>Y</td>
<td>Via spacer</td>
<td></td>
</tr>
<tr>
<td>Prednisolone 5mg Soluble Tablets</td>
<td>40</td>
<td>mg</td>
<td>Oral</td>
<td>Morning</td>
<td>Asthma</td>
<td>1 day</td>
<td>Y</td>
<td>Completes 3 day course</td>
</tr>
<tr>
<td>Prednisolone 5mg Soluble Tablets</td>
<td>40</td>
<td>mg</td>
<td>Oral</td>
<td>Morning</td>
<td>Asthma exacerbation</td>
<td>3 days</td>
<td>Y</td>
<td>Emergency course. Start as indicated on care plan</td>
</tr>
</tbody>
</table>

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**Name of Prescriber:** ADMIN_ADMIN  
**Dispensed By:**  
**Date:** 06/02/2014 1:35:43 PM  
**Drug / Medicine Sensitivity:** NKDA  
**Bleep / Contact No:**  
**Ward Pharmacist:** Paula Thomson  
**Checked By:**  
**Date Printed:** 06/02/2014 1:52:24 PM  
**Page:** 2 of 2