

MANAGEMENT OF WHEEZE IN CHILDREN (AGED LESS THAN 2 YEARS) IN HOSPITAL	Type: Clinical Guideline Register No: 09056 Status: Public
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Distribution Method	Hard Copies to all wards; electronic copy to all appropriate staff Intranet & Website; notification in Staff Focus
Related Trust Policies (to be read in conjunction with)	04072 Hand Hygiene 08038 Aseptic ANTT 09005: Transferring children 0-16 years 04071: Standard Infection Prevention Precautions Policies 11046: Observation policy CYP 08076 Clinical Audit Strategy and Policy

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1.0		2009
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Appendix A - Algorithm for the Management of Acute Asthma in Children aged <2yrs in Hospital

1.0 Purpose

1.1 The aim of this guideline is to help junior or non-medical staff to assess and manage children aged less than 2 years presenting with acute episodes of wheeze, to standardize and improve patient care and to comply with national guidance.

2.0 Background

2.1 Wheeze in children aged 2 years and under is a symptom and is not always Asthma, hence the need for a separate guideline. The differential diagnoses include RSV bronchiolitis, post bronchiolitis respiratory symptoms and other forms of viral induced wheeze, asthma, aspiration due to gastro esophageal reflux, foreign bodies and congenital abnormalities of the airway.

3.0 Assessment of severity of wheeze/Asthma

3.1 Objective measurements of Oxygen saturations (SpO_2), pulse and respiratory rate are essential. In small children their ability to feed gives important clues to the severity of their problem and the need for admission to hospital. The following table outlines the different grades of severity.

Moderate bronchoconstriction	Severe bronchoconstriction	Life threatening bronchoconstriction
Wheeze Normal air entry Use of accessory neck muscles	Marked use of accessory muscles of respiration	Poor respiratory effort Cyanosis
$SpO_2 > 92\%$ Still feeding	$SpO_2 < 92\%$ Too breathless to feed	$SpO_2 < 92\%$ Apnoea Bradycardia

3.2 Important points when assessing severity of wheeze/asthma

3.3 It is not necessary for all the clinical criteria to be met for a patient to be considered to have severe or life threatening asthma.

3.4 Chest x-rays and arterial blood gas measurements rarely provide additional useful information and are not routinely indicated.

3.5 A CXR should be considered if this is the first presentation of wheeze, the diagnosis is not clear or the child has features of severe asthma which do not improve with treatment.

4.0 Management

4.1 Asthma management algorithm for aged < 2 years (Appendix A)

4.1.1 Bronchodilator delivery

- Bronchodilator treatment may not be as efficient as in older children with typical asthma but should be tried.
- Metered dose inhalers (MDI) + spacer + mask are the preferred option for delivering bronchodilators in asthma for children who are not oxygen dependent. Children receiving agonists via spacer are less likely to have tachycardia and hypoxia than with nebulised bronchodilators.
- Inhalers should be actuated into the spacer in individual puffs and inhaled immediately by tidal breathing (five breaths). Remember to shake the MDI between actuations.
- Doses can be repeated every 20 minutes. Up to 10 puffs of salbutamol may be required in severe asthma.
- Nebulised Salbutamol should be administered in children who are requiring oxygen. It can be given continuously in children with severe acute asthma. Consider adding nebulised ipratropium bromide four hourly.
- The frequency of inhaled bronchodilators is determined by the severity of the attack and can range from continuous to 4 hourly.

4.2 Steroids

4.2.1 Early use of oral prednisolone can reduce the need for hospital admission and prevent a relapse in symptoms after initial presentation.

4.2.2 The dose for children under 2 years is 10 mg once a day for three days.

4.2.3 Intravenous fluids - Children with prolonged severe respiratory distress not tolerating oral fluids may require intravenous hydration. Electrolytes should be checked in every case. The results should be requested urgently in order to rule out the possibility of inappropriate secretion of antidiuretic hormone (SIADH) or hypokalaemia.

4.2.4 In the case of SIADH the child will need fluid restriction, hypokalaemia needs correction.

4.2.1 Maintenance potassium should be added to all intravenous fluids that are not available already prepared (20mmol KCl /L).

5.0 Recommendations for Admission

4.1 Children with the following features should be admitted to wards as inpatients:

- Life threatening asthma
- Inability to feed
- Patients known to the department with previously prolonged attacks.
- Oxygen requirements on presentation with SpO₂ of < 92%

- An oxygen requirement after four hours of treatment with bronchodilators and steroids.
- Moderate to severe asthma
- No response to treatment after four hours of bronchodilators and steroids.
- Concerns with regards to the ability of the carers to manage asthma at home and over-night.
- Children's Early Warning Tool (CEWT) score of above 3 following treatment

6.0 Continued Monitoring

- 6.1 The child requires close continual monitoring.
- 6.2 Recording of pulse rate, respiratory rate and pattern, pulse oximetry and CEWT score
- 6.3 Supportive nursing care with adequate hydration

7.0 Recommendations for Discharge

- 7.1 Mild asthma
- 7.2 Moderate asthma, responsive to treatment
- 7.3 No oxygen requirements (oxygen saturations >94%).
- 7.4 Bronchodilators needed four hourly or less. Parents/carers are able to manage their child at home.
- 7.5 **Information giving**- Nurses provide written management plan for the carers and also train the family in use of inhaler device.
- 7.7 Open access for 24 hours post discharge from the ward.

8.0 Staff Training

- 8.1 All medical and nursing staff are to ensure that their knowledge, competencies and skills are up-to-date in order to complete their portfolio for appraisal.
- 8.2 During induction all staff will receive instruction on current policy and guidelines and how to access them.
- 8.3 Staff will regularly receive updated guidelines to read.

9.0 Infection Prevention

- 9.1 All staff should follow Trust guidelines on infection prevention ensuring that they effectively 'decontaminate their hands' before and after procedures.

10.0 Audit and Monitoring

- 10.1 Where a Patient's notes have demonstrated that the appropriate action has not been taken then a 'DATIX' form is to be completed. This will highlight further staff training needs.
- 10.2 A quarterly DATIX audit will be examined by the Lead Nurse and the clinical director and risk lead for CYP.
- 10.3 Where a child's notes have demonstrated that the appropriate action has not been taken a 'risk event form' is to be completed. This will address any further training needs for staff that require updating.
- 10.4 Audit of compliance with this guideline will be considered on an annual audit basis in accordance with the Clinical Audit Strategy and Policy, the Women's and Children's Directorate annual audit work plan and the NHSLA/CNST requirements. The Audit Lead in liaison with the Risk Management Group will identify a lead for the audit.
- 10.5 The findings of the audit will be reported to and approved by the Maternity Risk Management Group (MRMG) and an action plan with named leads and timescales will be developed to address any identified deficiencies. Performance against the action plan will be monitored by this group at subsequent meetings.
- 10.6 The audit report will be reported to the monthly Maternity Directorate Governance Meeting (MDGM) and significant concerns relating to compliance will be entered on the local Risk Assurance Framework.
- 10.7 Key findings and learning points from the audit will be submitted to the Patient Safety Group within the integrated learning report.
- 10.8 Key findings and learning points will be disseminated to relevant staff.

11.0 Communication

- 11.1 Approved guidelines are published monthly in the Trust's Focus Magazine that is sent via email to all staff.
- 11.2 Ratified guidelines will be uploaded to the intranet and website.
- 11.3 It is the responsibility of the author to ensure that all clinical staff working with children are individually notified by email.

12.0 References

Scottish intercollegiate Guidelines Network. British guideline on the management of asthma. SIGN Guideline 101 May 2008.

Royal College of Paediatrics and Child Health. Medicines for Children. 2 edition, 2003.

BNF for Children 2008

Management of acute asthma in infants aged < 2 years in hospital

ASSESS ASTHMA SEVERITY

NB: If a patient has signs and symptoms across categories, always treat according to their most severe features

Moderate

- SpO₂ ≥ 92%
- Audible wheezing
- Using accessory muscles
- Still feeding

Moderate

- SpO₂ < 92%
- Cyanosis
- Marked respiratory distress
- Too breathless to feed

Most infants are audibly wheezy with intercostal recession but not distressed
Life threatening features include apnoea, bradycardia and poor respiratory effort

Immediate management

Oxygen via close fitting face mask or nasal prongs to achieve normal saturations

Give trial of β_2 agonist: salbutamol up to 10 puffs via spacer and face mask
or nebulised salbutamol 2.5mg or nebulized terbutaline 5mg

Repeat β_2 agonist every 1-4 hours if responding

If poor response;

Add nebulized ipratropium bromide 0.25mg

Consider: soluble prednisolone 10mg daily for up to 3 days

Continuous close monitoring

- Heart rate
- Pulse rate
- Pulse oximetry
- Supportive nursing care with adequate hydration
- Consider the need for chest x-ray

If not responding or any life threatening features, discuss with senior paediatrician or PICU team

In cases of life threatening asthma, please follow algorithm for 2-5 years in guideline for management of asthma in children > 2 years.