# Children’s Asthma Clinical Service Specification:

# Primary, Acute, Secondary (DGH), and Tertiary (Regional) Care

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This document has been developed as part of the National Paediatric Asthma Initiative, by a collaborative of organisations:

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# Overview

Asthma is a long-term, inflammatory disorder affecting the airways. It is characterised by symptoms including breathlessness, wheezing and coughing, particularly at night. Allergic asthma is the most common type of asthma and is triggered by immunoglobulin E (IgE) antibodies produced in response to environmental allergens such as pollen, dust mites, or moulds. There are currently more than 5.4 million people in the UK being treated for asthma; about 1.1 million of these are children, and it remains responsible for more than 1,200 deaths per year.

Asthma exacerbations lead to over 80,000 hospital admissions (Of these, 30,000 were children under 14) with an annual spend of over £800 million on pharmaceutical costs alone. In addition, it is estimated that asthma leads to a direct cost to the NHS of £1 billion and an indirect cost to society, due to time off work and loss of productivity, of £6 billion.

The vast majority of patients with asthma have mild to moderate disease and have the potential to be well controlled with existing therapies, assuming that well established national guidelines are followed. A small proportion of patients, estimated at less than 5% of all asthmatics, have severe difficult to control asthma. These patients have ongoing daily symptoms despite maximal medical therapy and are more likely to be admitted to hospital and to access out of hours’ emergency healthcare than asthmatics with mild or moderate disease. There is a common misconception that severe difficult to control asthma patients are an extreme example of the milder version of the disease. There is a growing body of evidence to support the presence of several different phenotypes of severe asthma, some of which have markedly different mechanisms driving their symptoms. It is therefore essential to differentiate severe from milder versions of the disease and to consider it as a separate condition that requires specialist services to improve the health of this patient group which continues to have a clear unmet need.

In 2014 the National Confidential Enquiry into Asthma Deaths, described 195 asthma deaths, 28 under the age of 18, the youngest of whom was 4. The expert panels identified factors that could have avoided death in relation to the health professional’s implementation

of asthma guidelines in: 46% of the 195 deaths, 17% indicated a lack of specific asthma expertise and in there was 25% lack of knowledge of the UK asthma guidelines

The report shows, it is not just those with severe asthma who die. Whilst one appreciates the diversity of medical conditions looked after in primary care, and indeed the diversity of respiratory illnesses looked after by chest physicians and paediatricians, some of the failings with regards to asthma care represent a general failing to diagnose and treat the most common chronic medical condition of childhood.

This document refers to 4 main publications, and simplifies the guidance and recommendations into simple check boxes, outlining the service specifications that are required to deliver good asthma care in Primary, Acute, Secondary (DGH) and Tertiary (region) centres.

# Reference Sources

1. **National Review of Asthma Deaths (NRAD)**

**Published date May 2014**

**Web: https://www.rcplondon.ac.uk/projects/national-review-asthma-deaths**

There are messages for doctors, nurses, patients, parents and carers in the findings and recommendations of the report. Deficiencies were found in routine asthma care and the review outlines recommendations to be taken forward by not only those who treat patients with this chronic condition but also pharmacists, NHS service managers, policy makers, commissioners and patient and professional bodies.

Why asthma still kills calls for an end to the complacency around asthma care in order to save lives and highlights four key messages:

* Every hospital and GP practice should have designated named clinicians for asthma services.
* Better monitoring of asthma control; where loss of control is identified, immediate action is required including escalation of responsibility, treatment change and arrangements for follow-up.
* Better education is needed for doctors, nurses, patients and carers to make them aware of the risks. They need to be able to recognise the warning signs of poor asthma control and know what to do during an attack.
* All patients should be provided with a personal asthma action plan (PAAP), which can help them to identify if their asthma is worsening and tell them how and when to seek help.

**2. NICE quality standards [QS25] (NICE QS25)**

**Published date: February 2013**

**Web: http://www.nice.org.uk/Guidance/QS25**

The new quality standard on asthma consists of a prioritised set of specific, concise and measurable statements that, when delivered collectively, should contribute to improving the effectiveness, quality, safety and experience of care for people with the condition.

The quality standard contains 11 statements. These include:

* Adults with new onset asthma are assessed for occupational causesi.
* People with asthma receive a structured review at least annually.
* People aged 5 years or older presenting to a healthcare professional with a severe or life-threatening acute exacerbation of asthma receive oral or intravenous steroids within 1 hour of presentationii.
* People with difficult asthma are offered an assessment by a multidisciplinary difficult asthma service.

**3. Designing and commissioning services for children and young people with asthma: A good practice guide (D&C)**

**Published date December 2012**

**Web: http://www.pcc-cic.org.uk/sites/default/files/articles/attachments/asthma\_e-guide\_child\_1-8-13.pdf**

This document focuses on the design of services for children and young people with asthma. Delivering excellent child-centred services requires co-operation and partnership between clinicians, children’s professionals in health and education, strategic leaders in local services and children, young people and families.

**4. British Guideline on the Management of Asthma - A national clinical guideline (BTS/SIGN n101)**

**Published date January 2012**

**Web: https://www.brit-thoracic.org.uk/document-library/clinical-information/asthma/btssign-guideline-on-the-management-of-asthma/**

This guideline provides recommendations based on current evidence for best practice in the management of asthma. It makes recommendations on management of adults, including pregnant women, adolescents, and children with asthma. In sections 4 and 5 on pharmacological management and inhaler devices respectively, each recommendation has been graded and the supporting evidence assessed for adults and adolescents over 12 years old, children 5-12 years, and children under 5 years.

**5. European / American Joint Steering Group Recommendation on Asthma Care, European Respiratory Journal 2011/14. (Eur Respir J 2011, Eur Respir J 2014).**

Further information is resourced from European / American Joint steering Group recommendation on Asthma Care published in the European Respiratory Journal 2011/14.

# Workforce

| **Service Specification** | **Ref.** | **Justification** | **Primary Care Clinic** | **Acute Care** | **Secondary Care Clinic** | **Tertiary Care Clinic** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Respiratory Lead (with an interest in asthma ) | NRAD, NICE QS25, D&C | NRAD, NICE QS25, D&C | x | x | x | x | This could be a nurse specialist |
| Lead with an interest in Paediatric Asthma | NRAD, NICE QS25, D&C | NRAD, NICE QS25, D&C |  | x | x | x | Primary care might find a solution with a Respiratory lead and a paediatric lead as 2 positions |
| Specialist Nurse with Asthma Diploma and CPD | NRAD, NICE QS25, D&C | NRAD, NICE QS25, D&C | x | x | x | x | Ideally – a link nurse between primary and secondary / acute care |
| Specialist Nurse with Asthma Diploma and CPD in Paediatric asthma | NRAD, NICE QS25, D&C | NRAD, NICE QS25, D&C |  | x | *x* | x | Ideally – a link nurse between primary and secondary / acute care |
| Paediatric Asthma Link Nurse |  |  | x | x | *x* |  |  |
| Paediatric Allergy Service | NRAD, NICE QS25, D&C | NRAD, NICE QS25, D&C |  |  | *x* | x |  |
| Paediatric Respiratory Physiotherapist with an interest in dysfunctional breathing | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x | Ideally a referral might be made directly to this service from primary care |
| Paediatric Respiratory Physiotherapist (referral to) |  |  |  |  | x |  | Ideally a referral might be made directly to this service from primary care |
| Pulmonary Technician in clinic | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x |  |
| Paediatric Psychologist with interest in chronic paediatric conditions / asthma | Eur Respir J 2011, Eur Respir J 2014 |  | x | x | x | x | Ideally a referral might be made directly to this service from primary care |
| Referral to Paediatric Psychologist |  |  | x | x | x |  | Ideally a referral might be made directly to this service from primary care |
| Paediatric Pharmacist | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x |  |
| Paediatric Dietitian | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x | Ideally all services to be able to access. |
| Tobacco Cessation referral | NRAD |  | x | x | x | x |  |
| Safeguarding Referral |  |  | x | x | x | x |  |

# In Clinic Equipment

| **Service Specification** | **Ref** | **Justification** | **Primary Care Clinic** | **Acute Care** | **Secondary Care Clinic** | **Tertiary Care Clinic** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Height and Weight assessment | BTS/Sign101 | Growth (height and weight centile) should be monitored at least annually in children with asthma. | x | x | x | x | With knowledge of how to use, plotting, and how to interpret results |
| Peak Flow Meter | NRAD, NICE QS25, D&C, BTS/Sign101 | PEF should be recorded as the best of three forced expiratory blows from total lung capacity with a maximum pause of two seconds before blowing. | x | x | x | x | With knowledge of how to use, plotting, and how to interpret results |
| Spirometer | NRAD, NICE QS25, D&C, BTS/Sign101 |  | x |  | x | x | With knowledge of Standard for cleaning and calibration |
| Pulse Oximeter with Adult and Paediatric leads | NRAD, NICE QS25, D&C, BTS/Sign101 | Measure oxygen saturation (SpO2) with a pulse oximeter to determine the adequacy of oxygen therapy and the need for arterial blood gas (ABG) measurement. The aim of oxygen therapy is to maintain SpO2 94-98%. | x | x | x | x |  |
| Oxygen | BTS/Sign101 | Many patients with acute severe asthma are hypoxaemic. Supplementary oxygen should be given urgently to hypoxaemic patients, using a face mask, Venturi mask or nasal cannulae with flow rates adjusted as necessary to maintain SpO2 of 94-98%. | x | x | x | x | Nebulisers can be run on Oxygen  2 Oxygen cylinders: 1 for use, 1 spare. |
| Placebo Inhaler devices | NRAD, NICE QS25, D&C, BTS/Sign101 |  | x | x | x | x | Recognises enhanced training requirement  Ongoing work: need to agree cleaning standards. |
| "Live" - Bronchodilator and Device | BTS/Sign 101 |  | x | x | x | x |  |
| Oral Steroids | BTS/Sign101 |  | x | x | x | x | Education on dose.  Refer to Management Plans and Assessment Tools |
| Inhaler Device Training Time  20 mins | NRAD, NICE QS25, D&C, BTS/Sign101 |  | x | x | x | x | Medical Professional to Child / Parent |
| National Paediatric Asthma Initiative Standardised Asthma Assessment Tools | NRAD, NICE QS25, D&C, BTS/Sign101 |  | x | x | x | x |  |
| National Paediatric Asthma Initiative Standardised Asthma PAPs | NRAD, NICE QS25, D&C, BTS/Sign101 |  | x | x | x | x | Further work: Need standardised discharge criteria and letter. |
| Access to Radiology - CXR | BTS/Sign101 | A study in primary care in children age 0-6 years concluded that a chest X-ray (CXR), in the absence of a clinical indication, need not be part of the initial diagnostic work up. Reserve chest X-rays for children with severe disease or clinical clues suggesting other conditions. |  | x | x | x |  |
| Physician Clinic / Assessment Duration Time |  |  | 20 | 20 | 30 / 20 | 45 / 25 | First / Follow up appointment  May require more |
| Specialist Nurse Assessment duration time |  |  | 20 -30 | 20-30 | 20-30 | 20-30 | May be shorter if combined with Physician |
| Other professional (Physiotherapist and Psychologist) |  |  |  |  |  | 60 x 6 |  |
| Age appropriate asthma management plans for routine and post exacerbation |  |  | x | x | x | x |  |
| Nebuliser O2 driven |  |  | x | x | x | x |  |

# Lung Function Assessment and Interpretation

| **Service Specification** | **Ref** | **Justification** | **Primary Care Clinic** | **Acute Care** | **Secondary Care Clinic** | **Tertiary Care Clinic** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Spirometry | BTS/Sign101 | In children, as in adults, tests of airflow obstruction, airway responsiveness and airway inflammation may provide support for a diagnosis of asthma. However, normal results on testing, especially if performed when the child is asymptomatic, do not exclude a diagnosis of asthma. Abnormal results may be seen in children with other respiratory diseases. Measuring lung function in young children is difficult and requires techniques which are not widely available. Above five years of age, conventional lung function testing is possible in most children in most settings. This includes measures of airway obstruction (spirometry and peak flow), reversibility with bronchodilators, and airway hyper-responsiveness. |  |  | x | x |  |
| One stop clinic - Tests of Broncho reversibility | BTS/Sign101 | A significant increase in FEV1 (>12% from baseline) or PEF after bronchodilator indicates reversible airflow obstruction and supports the diagnosis of asthma. It is also predictive of a good response to inhaled corticosteroids.50. However, an absent response to bronchodilators does not exclude asthma. | x | x | x | x |  |
| eNO | BTS/Sign101 | It is feasible to measure FENO in unsedated children from the age of 3-4 years. A raised FENO is neither a sensitive nor a specific marker of asthma with overlap with children who do not have asthma. FENO is closely linked with atopic status, age and height. |  |  | x | x |  |
| Complex / Infant Respiratory Function, IOS and other non-invasive measurements | BTS/Sign101 | Between 2-5 years of age, many children can perform several newer lung function tests that do not rely on their cooperation or the ability to perform a forced expiratory manoeuvre. In general, these tests have not been evaluated as diagnostic tests for asthma. There is often substantial overlap between the values in children with and without asthma. Of the tests available, specific airways resistance (sRaw), impulse oscillometry (IOS), and measurements of residual volume (RV) appear the most promising. Most have only been used in specialist centres and are not widely available elsewhere. It is often not practical to measure variable airway obstruction in children below the age of five. |  |  |  | x |  |
| Skin Prick & Tests of Allergy | BTS/Sign101 | Positive skin tests, blood eosinophilia ≥4%, or a raised specific IgE to cat, dog or mite, increase the probability of asthma in a child with wheeze, particularly in children over five years of age. It is important to recognise that non-atopic wheezing is as frequent as atopic wheezing in school-age children. |  |  | x | x | Depending on allied service availability |
| Cardiopulmonary Assessment |  |  |  |  |  | x |  |
| Sputum Induction or Paediatric Bronchoscopy | BTS/Sign101 | Sputum induction is feasible in school age children. Higher sputum eosinophil counts are associated with more marked airways obstruction and reversibility, greater asthma severity and atopy. In children with newly diagnosed mild asthma, sputum eosinophilia is present and declines with inhaled steroid treatment. Sputum induction is possible in approximately 75% of children tested, but it is technically demanding and time consuming. |  |  |  | x |  |
| Paediatric Sleep Assessment |  |  |  |  | x | x | Requires interpretation by qualified professional. |

# Other Medical Assessments

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Service Specification** | **Ref** | **Justification** | **Primary Care Clinic** | **Acute Care** | **Secondary Care Clinic** | **Tertiary Care Clinic** | **Comments** |
| Paediatric ENT | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x |  |
| Paediatric Allergy | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x |  |
| Dysfunction Breathing Assessment | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x |  |
| Paediatric Immunology | Eur Respir J 2011, Eur Respir J 2014 |  |  |  |  | x |  |
| Paediatric Radiology- HRCT and other investigations | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x | Should be done in Specialist Centre or under guidance with Specialist Centre |
| Paediatric Gastroenterology | Eur Respir J 2011, Eur Respir J 2014 |  |  |  | x | x | Paediatrician with Interest in secondary centre |
| Dysfunction Breathing Assessment | Eur Respir J 2011, Eur Respir J 2014 |  |  |  |  | x |  |
| Speech and Language |  |  |  |  |  | x |  |
| Paediatric Endocrinology Tests of Adrenal Insufficiency |  |  |  |  |  |  |  |
| Transition Clinic (Adult Service) | NRAD, NICE QS25, D&C, BTS/Sign101 |  |  |  | x | x |  |
| Patient Home Monitoring / Asthma Diary | BTS / Sign 101, Eur Respir J 2011, Eur Respir J 2014 | PEF is best used to provide an estimate of variability of airflow from multiple measurements made over at least two weeks. Increased variability may be evident from twice daily readings. More frequent readings will result in a better estimate but the improved precision is likely to be achieved at the expense of reduced patient compliance. | x | x | x | x |  |
| Rapid Communication between Health Providers |  |  | x | x | x | x |  |
| IT Infrastructure and Reporting | NRAD, NICE QS25, D&C, BTS/Sign101 |  | x | x | x | x | With regional standardised reporting tools |
| Research and Clinical Trials |  |  | x | x | x | x |  |