Asthma in children

Richard J Chavasse

Maya Kerr

Abstract

Asthma is a common disorder in children and places a high burden on healthcare resources. Despite the publication of evidence-based guidelines, morbidity and mortality remain unacceptably high. Most children and young people can be managed with relatively straightforward management plans. Consistent implementation of current guidelines with a whole-system approach involving primary, secondary care and community pharmacies is needed to improve outcomes.

Keywords Adherence; asthma; asthma control test; monitoring; personalized asthma action plan

Key points

- Asthma management for children in UK has less good outcomes than European neighbours
- Attention to implementing national guidelines should be encouraged within networks, supported by training and monitoring
- Most asthma in CYP can be controlled with SIMPLE management plans
- Attention to inhaler technique is important
- Primary care practices should monitor uptake and use of preventer inhalers and bronchodilators

Introduction

Asthma in children and young people (CYP) remains a significant burden on all areas of healthcare resource. In the UK, asthma occurs in 1 in 11 children and accounted for >25,000 acute hospital admissions in CYP <14 years old in 2011–2012. However, there is a wide variability in morbidity from asthma in terms of country-wide hospital admissions. In addition, data from individual primary care practices show an equally wide variation between primary care practices within the same region (Figure 1). Despite advances in treatment, asthma remains a life-threatening condition and a number of children still die each year. Asthma mortality figures vary across the developed world. In the UK, mortality from asthma is significantly higher than in nearby European and Scandinavian countries (Figure 2), but similar to mortality in the USA and Australasia. Not all of this variation can be assigned to socioeconomic differences and probably reflects variable quality of care.

The 2013 National Review of Asthma Deaths (NRAD)[1] reviewed 28 CYP who had died from asthma. The findings suggested that one or more preventable factors had contributed to 95% of deaths, intimating that some deaths could have been prevented by different management. Only 60% of CYP had a diagnosis of severe asthma before the terminal event, and overall there was an underestimation of risk status. With the terminal event, only 20% of CYP reached hospital alive, reflecting poor recognition of the severity of the attack or suboptimal self-management plans. Expert review considered that only one of the 28 CYP who died had received an adequate overall standard of asthma care. Many clinicians did not seem to know or did not follow clinical guidelines. Sadly, this review showed little improvement from the findings of previous confidential enquiries and reflects poor implementation of the national guidelines.

In Finland between 1994 and 2004, a systematic, national asthma programme for all ages improved asthma care, lessening the health burden on individuals and reducing the cost burden on the health service.[2] There was a significant impact on asthma control across the country. Despite an increase in the incidence of asthma, the number of days in hospital decreased by 54% and the overall cost per patient per year decreased by 36%. Mortality was significantly reduced and is now fivefold less than in the UK.

Combining lessons learnt from NRAD and the success of the Finnish programme, it should be possible to improve asthma outcomes for CYP in the UK, impacting on the health and social economy and reducing unnecessary childhood morbidity and mortality. This would not require the use of novel therapies (although these might be needed in future) but standard asthma care and a high-quality, networked approach that is adhered to by clinicians and provides consistent advice for patients and their parents. A whole-system approach to asthma management is necessary to ensure high-quality, standardized care.

Service organization

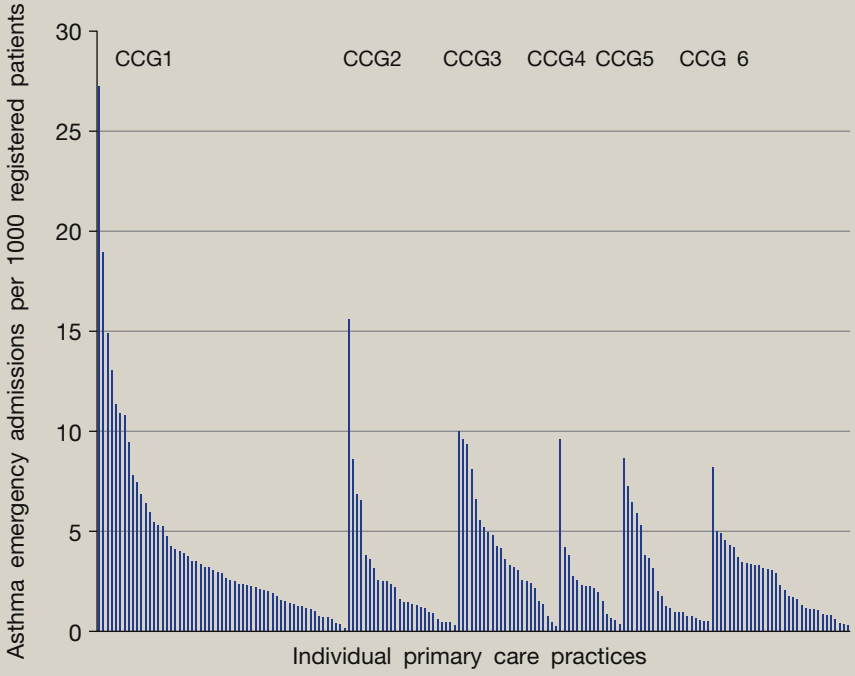
In Finland before the study, most CYP with asthma were managed almost exclusively by paediatricians. The study showed the importance of involving primary care and community pharmacies. The key implementation was to create a network of lead professionals with responsibility for asthma in primary and hospital care. Networks developed clear referral pathways, updated and disseminated guidelines, and ensured the quality and continuity of asthma management. Communication between sectors was improved. The model required that clinicians were appropriately trained and regularly updated in the management of asthma in CYP.

All CYP with asthma should be on a primary care asthma register and should at minimum have a structured, annual review. Sufficient time should be available to perform a full review. The primary care leads should be responsible for ensuring the quality and uptake of these reviews. Secondary care leads should

Richard J Chavasse ***BM MD MRCP FRCPCH*** *is Consultant Respiratory Paediatrician, St George's University Hospitals NHS Foundation Trust, Honorary Senior Lecturer, St George's University of London, UK. Competing interests: Member of the BTS/SIGN Asthma Steering Group. Member of the London Specialist Clinical Network for Asthma working group.*

Maya Kerr ***MBBS BSc(hon) MRCPCH*** *is a Paediatric Registrar, St George's University Hospitals NHS Foundation Trust, London, UK. Competing interests: none.*

Annual non-elective admissions for asthma per 1000 population (0–19 years of age) by general practice in six South West London Collaborative Commissioning Group (CCG) groups, 2013/2014 –2014/2015



Adapted from SUS data accessed June 2014 for SW London Collaborative Commissioning Group.

Figure 1

be responsible for in-hospital care, coordinate asthma training both within the acute settings and regionally, and have responsibility for updating guidelines. Systems should be in place to ensure that information is easily passed from emergency services to primary care in a timely fashion.

In addition, systems to standardize care and abolish unacceptable variations, such as the recently published Standards for Children with Asthma in London,[3] should drive patients, commissioners and healthcare providers to ensure better outcomes. Steps to improve diagnosis, ensure regular structured reviews, strengthen monitoring of control and improve medicines management should be mandated. These should be provided by clinicians trained in asthma management for CYP, driven by regional networks and overseen by nominated leads with accountability for outcomes. Regular monitoring of morbidity and mortality statistics should be published to identify good practice.

Diagnosis

To improve outcomes, clarity of diagnosis is important and should be associated with consistent education for CYP and their families, empowering them to manage their condition. The diagnosis of asthma, particularly in preschool children, remains a challenge as there is no universally accepted gold standard definition or test for asthma. The diagnosis remains clinical but can be strengthened by objective measures.

A structured clinical history of wheeze, cough, difficulty in breathing and tightness in the chest should be taken. Ideally, the presence of wheeze should be confirmed by a medical practitioner. If wheeze is not audible at the consultation, recordings can differentiate wheeze from other respiratory sounds and symptoms that are often confused with it. The frequency of symptoms, identifiable provoking factors and the presence or absence of a personal and/or family history of atopy should be documented. Symptoms that make asthma less likely (e.g. persistent wet cough, symptoms from birth) must also be considered. Stratification into a high, intermediate or low probability of asthma should then be documented, as should the factors that have informed the decision; this will aid future review of the diagnosis (Figure 3). Although logistically challenging, the use of objective measures, particularly spirometry with bronchodilator reversibility and non-invasive measures of airway inflammation (fractional exhaled nitric oxide [FeNO]) should be attempted to strengthen the confidence of the diagnosis in all patients. Results within normal limits do not, however, exclude the diagnosis when symptoms are strongly suggestive, especially if the child is asymptomatic at the time of