

# Asthma

This chapter should be read in conjunction with Tobacco Control.

## Summary

- Asthma is the commonest long term condition and affects adults and children.
- It is estimated that 1 in 11 children has asthma.
- The prevalence of asthma in Hampshire is 6.1% - significantly higher than the England prevalence.
- Prevalence is highest in Fareham and Gosport, South Eastern and West Hampshire CCGs.
- Achievement of general practice quality (Quality and Outcome Framework) indicators for asthma is generally good across Hampshire but there are a high number of people with asthma who are not included and who are likely to be missing out on structured asthma care.
- The population of Hampshire has generally low rates of emergency admissions for asthma when compared to other areas of England, however, there is room for improvement as every admission represents a serious loss of control of a person's asthma and represents avoidable cost to the individual and the NHS.
- The goal of asthma care is to control symptoms such that people with asthma can lead as normal a life as possible.
- Premature mortality from asthma in adults in England is one and a half times higher than the European average (EU-15).
- The mortality rate from asthma in Hampshire (1.41/100,000) is higher than the England average and there are 28 deaths a year on average in Hampshire.
- It is estimated that 90% of deaths could be prevented.

## Recommendations

1. To reduce the high mortality rate from asthma and reduce the rate of emergency admissions everyone with asthma should be receiving high quality evidence-based care in line with the SIGN guidelines:
  - Review the current care pathway and services for asthma in primary and secondary care to identify any gaps in services and areas where quality improvement and service redesign are needed.
  - Conduct an audit against the NICE quality standards to inform the development and commissioning of asthma services.
  - Investigate the age breakdown of emergency asthma admissions.
  - CCGs with higher admission rates should investigate these further.
  - Ensure everyone with asthma is encouraged to stop smoking.
  - Ensure everyone with asthma receives an annual flu vaccination.
2. Everyone with asthma should be receiving high quality, structured care in primary care:
  - Investigate and reduce the high rate of exception reporting for QOF indicators.
  - GP practices should consider auditing their asthma management to ensure that it is in line with SIGN guidelines.

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3. Improve local information about asthma and its management to identify those groups of people in Hampshire with asthma who are most at risk of emergency admissions and death from asthma.
4. We need to seek the views of users and carers to inform our understanding of where services could be improved

# Asthma

## 1. Introduction

Asthma is the most common long term condition. According to Asthma UK, 5.4 million people in the UK are currently receiving treatment for asthma and 1 in 11 children <sup>1</sup><sup>2</sup> has it. There are around 1,000 deaths a year from asthma, about 90% of which are associated with preventable factors. Almost 40% of these deaths are in people under 75. Asthma is responsible for large numbers of accident and emergency department attendances and hospital admissions. Most admissions are emergencies and 70% may have been preventable with appropriate early interventions<sup>2</sup>.

Asthma is a chronic inflammatory condition of the airways, the cause of which is not completely understood. The airways are hyper-responsive and constrict easily in response to a wide range of stimuli. This may result in coughing, wheezing, chest tightness, and shortness of breath: Narrowing of the airways is usually reversible (either spontaneously or with medication), leading to intermittent symptoms, but in some people with chronic asthma, the inflammation may lead to irreversible airflow obstruction.

Asthma can vary markedly in severity, clinical course and response to treatment.<sup>3</sup> Each year, a GP with 2,000 patients will see approximately 85 people with asthma, and each of these will consult three times on average<sup>4</sup>].

Premature mortality from asthma in adults in England is one and a half times higher than the European average (EU-15). The prevalence of asthma has increased in most countries since the 1970s. England has one of the highest prevalences of asthma in the world.<sup>5</sup> The proportion of adolescents aged 13–14 years reporting wheeze in the previous 12 months in Western Europe was 14.3%, and the proportion reporting severe asthma was 6.2%. In contrast, self-reported symptoms of asthma in children 13–14 years of age decreased by about 20% in the UK between 1995 and 2002

In early childhood, asthma is more common in boys than in girls, but by adulthood, the sex ratio is reversed. The mechanism for this is not clear. Approximately 60% of adults diagnosed with asthma in the UK are women.<sup>3</sup>

### 1.1 Risk Factors

Various risk factors may increase the likelihood of the development or persistence of asthma:

- Family history of atopic disease (for example asthma, eczema, allergic rhinitis, or allergic conjunctivitis).

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<sup>1</sup> Asthma UK

<sup>2</sup> Department of Health (2011) [Outcomes strategy for chronic obstructive pulmonary disease \(COPD\) and asthma in England](#)

<sup>3</sup> Nice Clinical Knowledge [Summary](#) – Asthma <http://cks.nice.org.uk/asthma#!backgroundsub>

<sup>4</sup> McCormick, A., Fleming, D. and Charlton, J. (1995) *Morbidity statistics from general practice. Fourth national study 1991-1992.* ...Office of Population Censuses and Surveys. [www.statistics.gov.uk](http://www.statistics.gov.uk)

<sup>5</sup> An Outcomes Strategy for Chronic Obstructive Pulmonary Disease and Asthma in England 2011

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- Co-existence of atopic disease.
- Male sex (for pre-pubertal asthma) and female sex (for persistence of asthma from childhood to adulthood).
- Bronchiolitis in infancy.
- Parental smoking, including perinatal exposure to tobacco smoke.
- Low birthweight (associated with intrauterine growth retardation)
- Premature birth (especially in extreme-preterm infants who required ventilatory support, with consequent chronic lung disease of prematurity).

Occupational asthma may account for 9–15% of adult-onset asthma. It is reported to be the most common industrial lung disease in the developed world.<sup>6</sup>

## 2. Level of need in the population

### 2.1 Prevalence

The prevalence of asthma has increased in the western world in the last four decades but is now stabilising or decreasing.<sup>7</sup> Asthma is common in adolescence with a prevalence of wheeze<sup>8</sup> in Western Europe in the past 12 months in 13-14 year olds of 14.3%. For more severe asthma the prevalence was 6.2%. There is evidence of under-diagnosis of asthma in adolescents, with estimates of 20-30% of all asthma present in this age group being undiagnosed. This has been attributed to under-reporting of symptoms. Asthma can be difficult to diagnose in children because other conditions can cause similar symptoms. Most children develop the symptoms of asthma by the time they reach school age. Children with undiagnosed frequent wheezing do not receive adequate healthcare for their illness and the health consequences of not being diagnosed with asthma are substantial.<sup>6</sup>

The registered prevalence of asthma for all ages in Hampshire is 6.1% (QOF data) which was significantly higher than the England rate of 5.9% in 2011/12. We do not have local prevalence data for asthma by age.

The rates in Fareham and Gosport, South Eastern and West Hampshire CCGs are significantly higher than the England rate while the rate in North East Hampshire and Farnham is significantly lower (figure 1) This is likely to be due to the demography of the CCG populations – deprivation and age profile - and to variations in clinical practice in identifying and diagnosing asthma.

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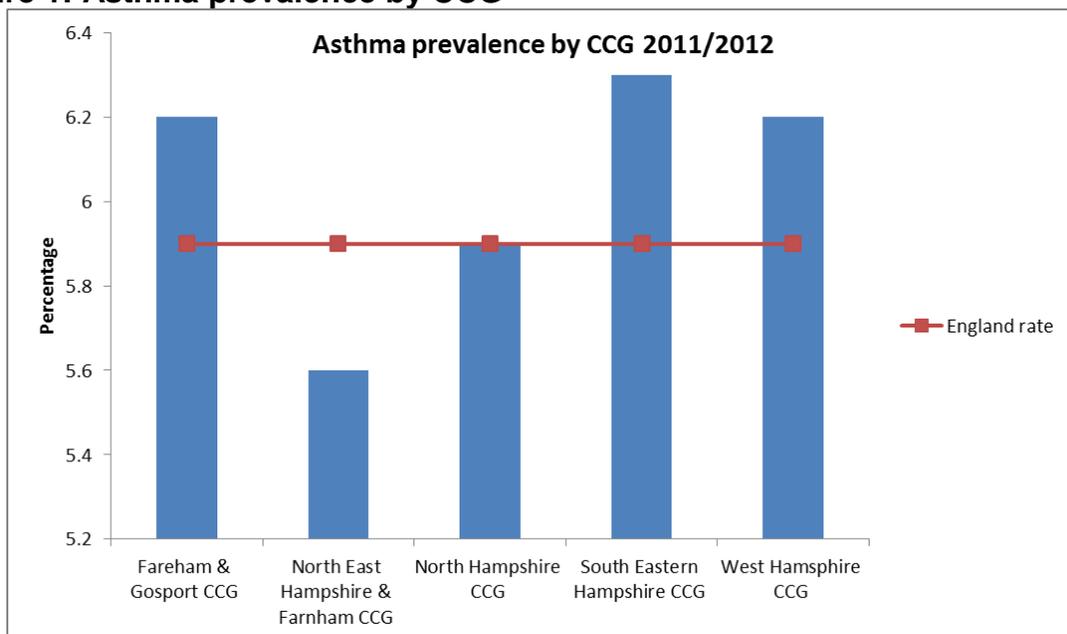
<sup>6</sup> [SIGN and BTS, 2011](#)

<sup>7</sup> Deprivation, smoking and quality of life in asthma Austin et al. *.Arch Dis Child*2005;**90**:253-257  
doi:10.1136/adc.2004.049346

<sup>8</sup> Asthma in children causes recurrent respiratory symptoms of wheezing, cough, difficulty breathing and chest tightness. Presence of wheeze does not equate to a diagnosis of asthma but it can be an important symptom.

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**Figure 1: Asthma prevalence by CCG**



Source: QOF data from GP practice profiles

## 2.2 Mortality

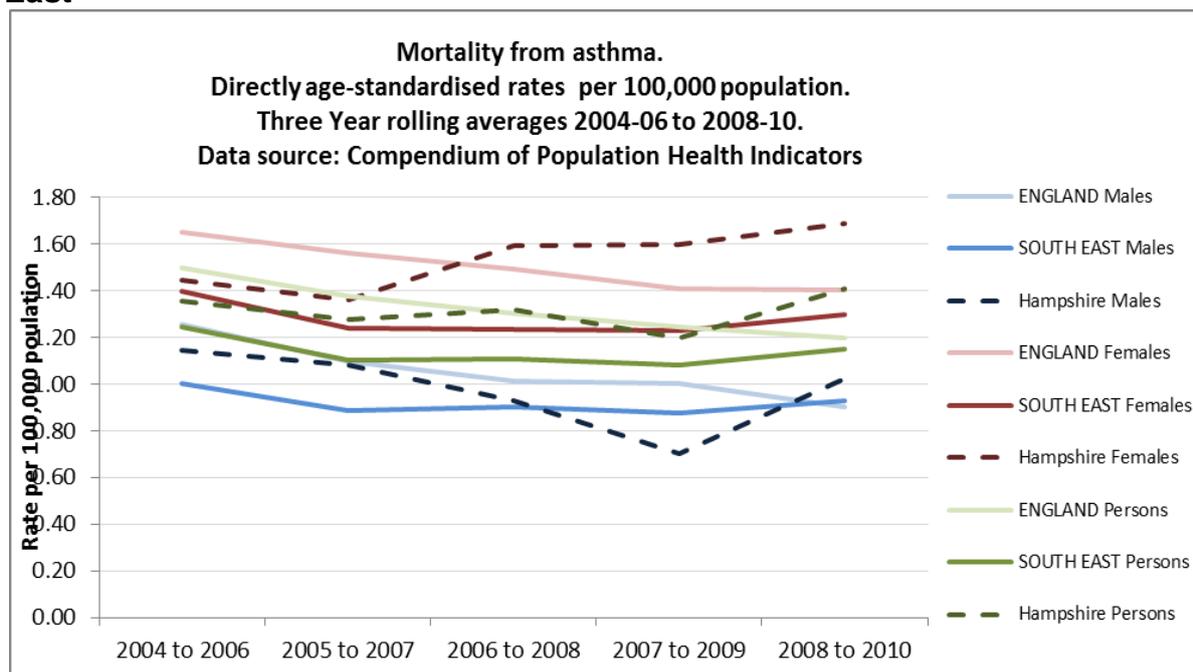
Premature mortality from asthma was 1.5 times higher in England than in the EU in 2008. Deaths from asthma in England have plateaued at between 1,000 and 1,200 deaths a year since 2000, yet it is estimated that 90% of deaths could have been prevented<sup>6</sup>.

Figure 2 shows asthma mortality rates from 2004 to 2010. Due to the relatively small numbers (an average of 28 per year from 2004 to 2010) asthma mortality rates fluctuate considerably over the time period. Overall the Hampshire female rate is higher than the male rate which is the same as the national and regional picture.

From 2008 to 2010 there were 94 deaths with an underlying cause of death recorded as asthma - 68 were female and 26 male. The Hampshire rate of 1.41 per 100,000 population is higher than the national and regional averages however due to the small number of deaths the rates are not significantly higher.

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**Figure 2: Asthma mortality in Hampshire compared to England and the South East**



### 3. Projected service use

A large national study published in 2010 using data from 2001-2005 concluded that the rate of new diagnoses of asthma appears to have passed its peak; however, the number of adults with a lifetime asthma diagnosis continues to rise. Whether these trends are genuine or are a result of the introduction of incentives and guidelines to improve the identification and recording of asthma or changing diagnostic trends is a question with important public health implications to which we do not have the definitive answer.<sup>9</sup>

The recorded prevalence of asthma in Hampshire has stayed static at 6.1% during the three year period from 2009/10 to 2011/12.

### 4. Current level of need in relation to services

The goal of asthma care is to control symptoms such that people with asthma can lead as normal a life as possible which should be achievable in the majority of patients. Asthma services should ensure that people with asthma across all social groups are free of symptoms because of prompt and accurate diagnosis, shared decision making regarding treatment and on-going support as they self manage their own condition and to reduce the need for unscheduled health care and the risk of death<sup>6</sup>. Services should be commissioned that meet the NICE quality standard<sup>10</sup> and clinical management should be in line with BTS/SIGN guidance<sup>7</sup>

<sup>9</sup> Trends in the epidemiology of asthma in England: a national study of 333,294 patients  
Colin R Simpson and Aziz Sheikh J R Soc Med. 2010 March 1; 103(3): 98–106

<sup>10</sup> [Quality standard for asthma Introduction and overview QS25](#)

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## **4.1 Smoking and asthma**

Many young people start to smoke at an early age – this is the rationale for the QOF indicator (see later in this section) to ask about smoking on an annual basis in this age group. Starting smoking as a teenager increases the risk of persisting asthma. There are very few studies that have considered the question of whether smoking affects asthma severity. One controlled cohort study suggested that exposure to passive smoke at home delayed recovery from an acute attack. There is also epidemiological evidence that smoking is associated with poor asthma control.

Smoking cessation should be strongly encouraged in everyone who has asthma as not only is it good for general health it may decrease asthma severity.<sup>11</sup>

## **4.2 Flu immunisation and asthma**

People with asthma, including children, are at increased risk of developing severe complications from influenza infection and severe symptoms from their asthma and should be immunised annually to reduce the risk of acute illness and hospitalisation.

## **4.3 Management in primary care**

The majority of asthma is managed in primary care.

The performance across the majority of QOF indicators for asthma: diagnosis (the percentage of patients aged eight years and over diagnosed as having asthma with measures of variability or reversibility); smoking (the percentage of patients with asthma between the ages of 14 and 19 years in whom there is a record of smoking status in the preceding 15 months), and review (the percentage of patients with asthma who have had an asthma review in the preceding 15 months) is not significantly different from the England average for Hampshire or any of Hampshire's CCGs .

North Hampshire and North East Hampshire and Farnham CCGs fall below the England rate for the asthma review indicator and West Hampshire falls below the England rate for recording of smoking status in young people aged 14-19 and is in the lowest quintile.

However, exception reporting rates are very high for all the asthma indicators. The rates are significantly above the England rate for Hampshire and for all the CCGs except in North East and Farnham CCG (figure 3). This means that although there is a high rate of achievement of QOF indicators for asthma almost 8% of people with asthma are being excluded from proactive assessment of their asthma.

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<sup>11</sup> Quality and Outcomes Framework 2011-2012

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**Figure 3: Asthma – Exception reporting rate for asthma QOF indicators by CCG**

	England	Hampshire	F&G CCG	NE&F CCG	NH CCG	SE CCG	West CCG
<b>Exception reporting rate %</b>	<b>5.3</b>	<b>7.9</b>	<b>7.6</b>	<b>5.4</b>	<b>7.1</b>	<b>7.1</b>	<b>8.3</b>

The evidence for an association between higher quality of primary care (as measured by routine data) and reduced rates of admission is mixed. Lower rates of admission for asthma were found in practices whose prescribing patterns suggest better preventive care. However, the evidence is not conclusive. More recent research did not find any association between Quality and Outcomes Framework (QOF) scores and hospital admission for patients with asthma.<sup>12</sup>

The QOF indicators do not measure all the elements of high quality asthma care that we would expect to see in primary care:

- assessment for occupational asthma;
- referral rates to smoking cessation services for people with asthma who smoke;
- flu vaccination rates in people with asthma;
- written personalised action plans;
- training and assessment of inhaler technique;
- the components of the annual review;
- assessment of asthma control and assessment of severity of attacks;
- treatment of acute asthma; and
- follow up in primary care within two days of treatment of an exacerbation.

We do not have local data relating to these elements.

### **4.4 Emergency Care for Asthma**

Every seven minutes someone is admitted to hospital because of asthma. Children aged under 15 make up 40% of admissions. Three of these people will die. An emergency attendance or admission to hospital represents a serious loss of control of a person's asthma.

A report for Asthma UK has shown that there is widespread geographical variation in standards of emergency care services for people with asthma in the UK<sup>13</sup> and it has been estimated that around three quarters of admissions in the UK are preventable.<sup>14</sup>

The Respiratory Atlas of Variation which presents data from 2010/11<sup>15</sup> shows that Hampshire has low rates of admission for adults over 18 with asthma at 58.5/100,000 (fourth quintile). Local data show that the rate of emergency admissions in Hampshire for asthma in all ages is 88 per 100,000 population (figure

<sup>12</sup> Avoiding hospital admissions – what does the evidence say? Sarah Purdy, The Kings Fund 2010.

<sup>13</sup> Barriers to effective emergency asthma care- Asthma UK

<sup>14</sup> Asthma UK ( 2008) Wish You Were Here?

<sup>15</sup> [Atlas of Variation for Respiratory Disease](#)

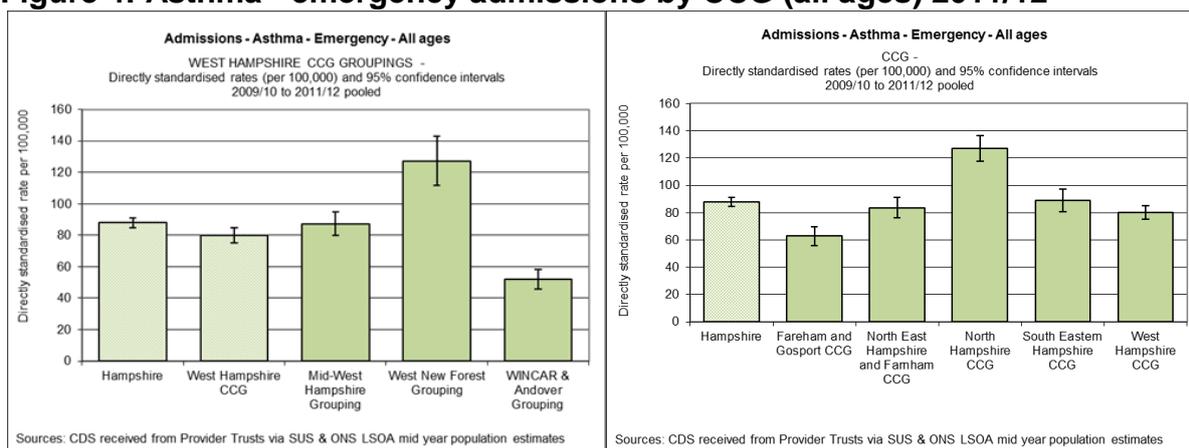
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4) There is no national comparison rate. There has been a small downward trend since 2008/09 (figure 6). Rates are significantly higher for North Hampshire CCG (127 per 100,000 population).

Although admissions are generally low for West Hampshire CCG, the admission rate in the West New Forest grouping is significantly higher than in other parts of the CCG (figure 4). Across the local authorities Basingstoke and Deane has the highest admission rate with significantly higher rates also in Havant, New Forest and Rushmoor (figure 5).

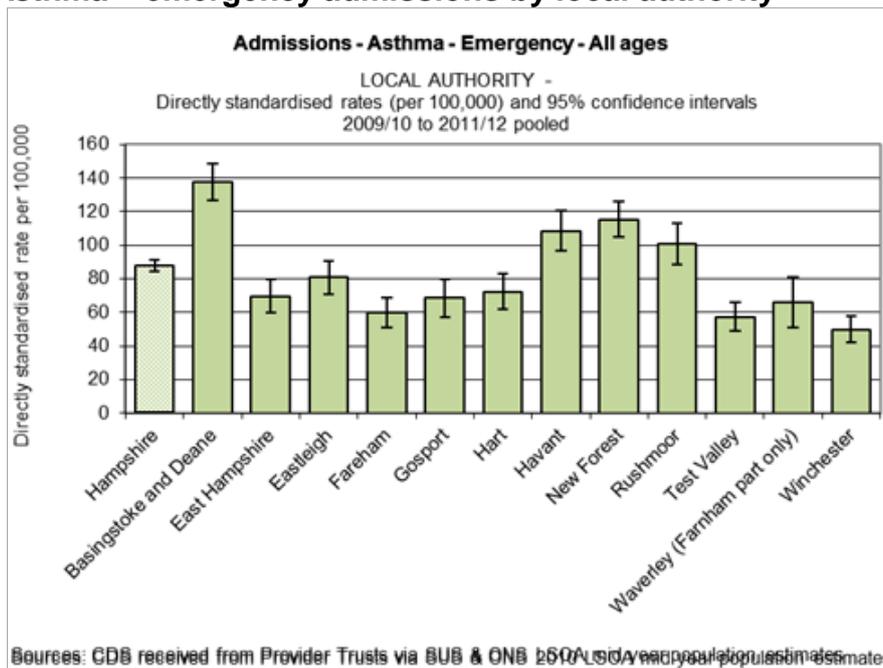
Emergency admission rates are not related to the prevalence of asthma with the areas of highest prevalence, Fareham and Gosport having the lowest emergency admission rate and North Hampshire with a prevalence rate in line with the national average having the highest admission rate. Emergency admissions in under 18s are significantly higher in North Hampshire – see figure 7 – and it is likely that these are the major contributor to the excess in emergency asthma admissions. The barriers to effective emergency care that will affect emergency admission rates are discussed later in this section.

**Figure 4: Asthma - emergency admissions by CCG (all ages) 2011/12**

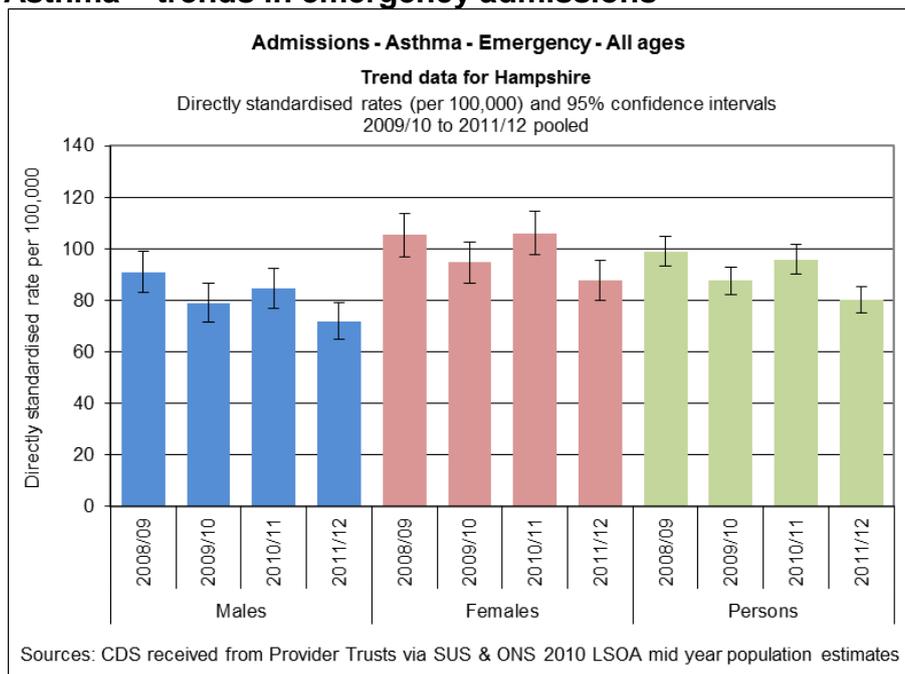


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**Figure 5: Asthma – emergency admissions by local authority**



**Figure 6: Asthma – trends in emergency admissions**



## 4.5 Asthma in Children

Figure 7 shows emergency admission rates for under 18s by CCG. The rate is significantly higher for North Hampshire CCG. We know that this is likely to be related to the way in which paediatric services are organised in North Hampshire. Admission rates are higher in boys than girls which is what we would expect as asthma is more prevalent in boys in this age group.

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National data show that child asthma admissions peak in September – the reasons for this are not fully understood. The increase occurs in pre-school children as well as school age children.

Research shows that using a written personal asthma action plan is one of the most effective ways of controlling asthma in children and it is essential that all children with asthma have such a plan.

**Figure 7: Asthma- emergency admissions in under 18s**

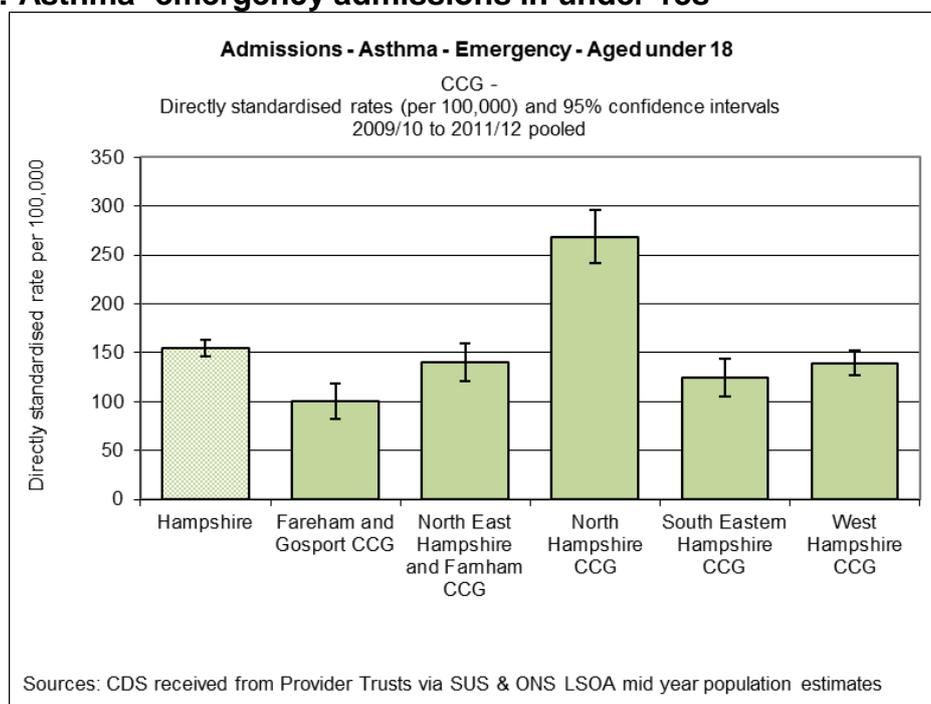


Figure 8 shows the relationship between emergency admission rates and deprivation quintile with the higher rates in the most deprived quintiles. Although the rate is highest in the second quintile this is not significantly higher than the rate for the most deprived quintile due to the wide confidence intervals. Although rates are higher in the more deprived population with asthma there will be more admissions in the least deprived quintiles due to the socio economic profile of the Hampshire population. This is in line with the national picture - in the UK, emergency admission rates are significantly correlated with measures of social deprivation.<sup>16</sup>

Increased admissions in lower socio economic groups are likely to be due to a combination of factors, for example:

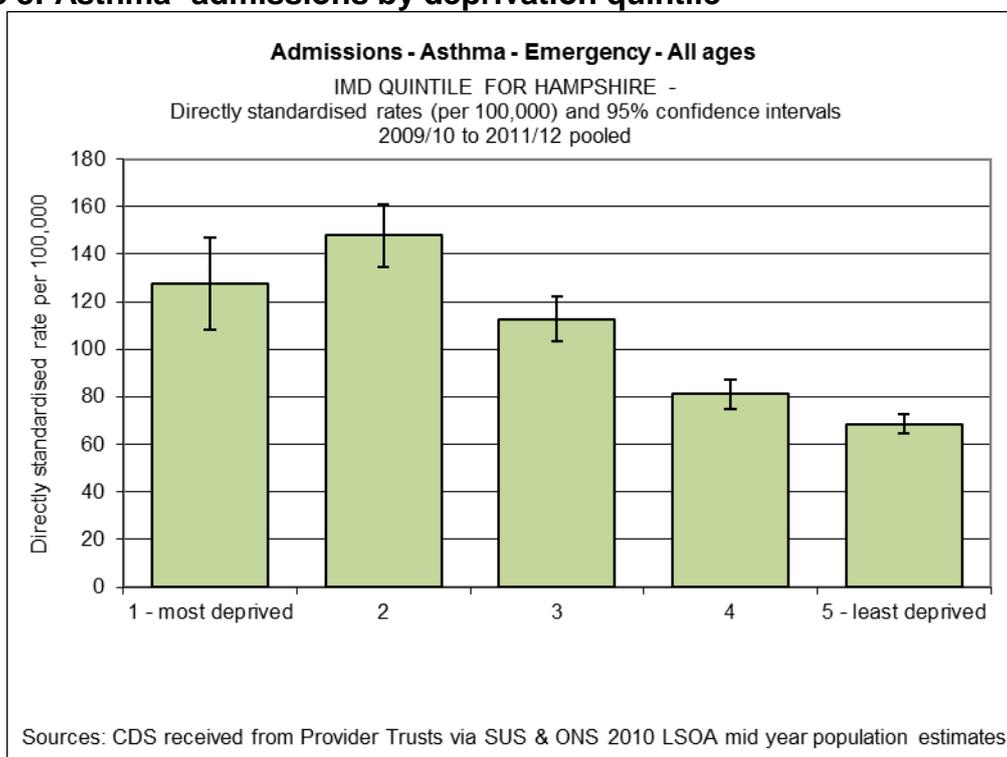
- higher rates of smoking/passive smoking resulting in aggravation of asthma symptoms;
- poor air quality in urban areas;
- poor housing;

<sup>16</sup> Majeed A, Bardsley M, Morgan D, O'Sullivan C, Bindman A (2000). 'Cross-sectional study of primary care groups in London: association of measures of socioeconomic and health status with hospital admission rates'. *British Medical Journal*, vol 321, no 7268, pp 1057-60.

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- accessibility of services; and
- differences in asthma management.

**Figure 8: Asthma- admissions by deprivation quintile**



The report for Asthma UK <sup>6</sup> identified a number of barriers to effective emergency care in asthma:

- Many healthcare professionals lack the skills and confidence in dealing with asthma, from assessing severity to identifying those most at risk.
- There can be limited access to vital treatment in many locations, including equipment and steroids.
- People with asthma may be waiting too long to act on warning signs of an exacerbation or worsening symptoms.
- Complexities exist in gathering evidence and data on asthma hospitalisations.
- Often, no asthma care pathway is known or adhered to, creating disparities in people's experiences of emergency asthma care.
- Healthcare professionals may not be aware of how to change practice within their working culture for dealing with asthma.

We do not know the extent to which these contribute to variations in emergency care in Hampshire. High quality and effective emergency care is essential to prevent asthma deaths, reduce the financial burden of treating asthma to the NHS and improve quality of life for patients.

### 5. Patient and user views

Asthma UK has carried out opinion research demonstrating some of the problems faced by people with asthma living in areas of deprivation. These people are the

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most likely to feel that their asthma is out of control, to say that the condition has limited their lives and to have lower expectations of what their asthma treatment can do for them. Many also have more difficulty in accessing their health services<sup>4</sup>. They also face multiple problems, making it even more important that their local NHS does not sideline their asthma care.

Locally people with asthma have told us that they want better coordination of care with rapid access to professional help if their asthma is out of control and more support to manage their own asthma or that of their children. They want to be able to go on holiday without worrying about asthma.

### 6. Evidence of what works

The British guideline on the management of asthma produced jointly by SIGN and the British Thoracic Society provides recommendations based on current international evidence for best practice<sup>17</sup>. It makes recommendations on the management of adults, including pregnant women, adolescents, and children with asthma. The guideline considers asthma management in all patients with a diagnosis of asthma irrespective of age or gender (although there is less available evidence for people at either age extreme).

The NICE Quality Standard for asthma describes high priority areas for improvement in asthma care and draws on existing evidence-based guidance.

#### 6.1 Smoking legislation

The number of adults admitted to hospital for emergency treatment for asthma in England fell approximately five per cent annually, equivalent to 2,000 cases per year, after workplaces and public places became smoke-free by law in 2007. Analysis of monthly numbers of emergency admissions for asthma (excluding children under 16) in nine regions of the country, between April 1997 and December 2010, indicated that smoking prohibition was associated with an immediate 4.9% reduction in admissions (95% CI: 0.6% to 9.0%), implying that approximately 1,900 emergency admissions were prevented in each of the three years immediately following introduction of the legislation. The reduction did not vary significantly across regions.<sup>18</sup>

### 7. Recommendations

1. In order to reduce the high mortality rate from asthma and reduce the rate of emergency admissions we need to ensure that everyone with asthma is receiving high quality evidence-based care in line with the SIGN guidelines:
  - We should review the current care pathway and services for asthma in primary and secondary care to identify any gaps in services and areas where quality improvement and service redesign are needed.

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<sup>17</sup> SIGN guideline

<sup>18</sup> Short-term impact of the smokefree legislation in England on emergency hospital admissions for asthma among adults: a population-based study, Thorax Online First, 15 April 2013,

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- Conduct an audit against the NICE quality standards to inform the development and commissioning of asthma services.
  - Investigate the age breakdown of emergency asthma admissions.
  - CCGs with higher admission rates should investigate these further.
  - Ensure everyone with asthma is encouraged to stop smoking.
  - Ensure everyone with asthma receives an annual flu vaccination.
2. To ensure that everyone with asthma is receiving high quality, structured care in primary care:
    - We should investigate and reduce the high rate of exception reporting for QOF indicators in primary care.
    - GP practices should consider auditing their asthma management to ensure that it is in line with SIGN guidelines.
  3. Improve our local information about asthma and its management in order to identify those groups of people with asthma who are most at risk of emergency admissions and death from asthma.
  4. We need to seek the views of users and carers to inform our understanding of where services could be improved.